Model Tuning

June 1, 2022

```
[1]: import numpy as np
  import h5py
  import torch
  from torch.utils.data import Dataset, DataLoader
  import torch.nn as nn
  from collections.abc import Iterable
  import time
  import math

batchSize = 32 #Batch size of training set
```

```
[2]: def trainNetwork(model, loss_function, optimizer, numEpochs, dataloader,__
     →numOutputs):
         #Set model to training mode
         model.train()
         for epoch in range(numEpochs):
             # Print epoch
             print(f'Starting epoch {epoch+1}')
             # Set current loss value
             current_loss = 0.0
             #Reset model parameters
             # Iterate over the DataLoader for training data
             for i, data in enumerate(dataloader, 0):
                 # Get and prepare input
                 preProcessedInputs = data[:, 0:4] #This line doesn't really do⊔
     → anything, delete later?
                 targets = data[:, 4:(4+numOutputs)]
                 #Process intensity by putting it on a log scale
```

```
intens = data[:, 0:1]
        intens = np.log(intens)
        inputs = torch.cat((intens, data[:,1:4]), axis = 1)
        #Process targets by putting them on a log scale
        targets = np.log(targets)
        #print(type(inputs))
        #Comment the next two lines out if not using GPU
        inputs = inputs.to('cuda')
        targets = targets.to('cuda')
        #Normalize inputs
        inputs, targets = inputs.float(), targets.float()
        targets = targets.reshape((targets.shape[0], numOutputs))
        # Zero the gradients
        optimizer.zero_grad()
        # Perform forward pass
        inputs = inputs
        outputs = model(inputs)
        #The following two lines are for debugging only
#
          if i \% 10 == 0:
             print("Targets:", targets[0:2])
             print("Outputs:", outputs[0:2])
#
              print()
             print()
        # Compute loss
        loss = loss_function(outputs, targets)
        # Perform backwards propagation
        loss.backward()
        # Perform optimization
        optimizer.step()
        # Print statistics
        current_loss += loss.item()
        if i % 10 == 0:
           print('Loss after mini-batch %5d: %.3f' %
                 (i + 1, current_loss / 500))
            current_loss = 0.0
```

```
# Process is complete.
         print('Training process has finished.\n')
[3]: def calc_MSE_Error(target, output, index):
         targetNP = np.exp(target[:, index].cpu().detach().numpy())
         outputNP = np.exp(output[:, index].cpu().detach().numpy())
           print(targetNP)
           print(outputNP)
         result = np.square(np.subtract(targetNP, outputNP)).mean()
          print("Index: ", index)
     #
          print(target)
          print(output)
         print("Result:", result)
         return result
[4]: def calc_Avg_Percent_Error(target, output, index):
         targetNP = np.exp(target[:, index].cpu().detach().numpy())
         outputNP = np.exp(output[:, index].cpu().detach().numpy())
         difference = targetNP - outputNP
         difference = np.abs(difference)
         error = np.divide(difference, outputNP) * 100
         result = error.mean()
         return result
[5]: def getModelError(model, epochList, loss_function, trainDataset, testDataset):
         mseErrorList = []
         avgErrorList = []
         mseTrainList = []
         avgTrainList = []
         timeList = □
         #print("Epochs to test:", epochList)
         for numEpochs in epochList:
             #Reset model parameters
```

```
for layer in model.children():
           if hasattr(layer, 'reset_parameters'):
               layer.reset_parameters()
       print("Training with", numEpochs, "epochs.")
       #Define optimizer
       optimizer = torch.optim.Adam(model.parameters(), lr=1e-2)
       #Create dataloader for training set
       dataloader = DataLoader(trainDataset, batch size=batchSize,
→shuffle=True)
       #Start clock
       startTime = time.time()
       #First train the network
       trainNetwork(model, loss_function, optimizer, numEpochs, dataloader, __
\rightarrownumOutputs = 3)
       #End clock
       endTime = time.time()
       timeSpent = endTime - startTime #In seconds
       #Next test the network
       model.eval()
       #Create dataloader for testing set
       testDataloader = DataLoader(testDataset, batch_size=math.floor(0.
→1*numPoints), shuffle=True)
       iterDataLoader = iter(testDataloader)
       testData = next(iterDataLoader)
       #Process the intens value so it is in a log scale
       intens = testData[:, 0:1]
       logIntens = np.log(intens)
       #Create the final tensor of inputs we will feed into the model
       inputs = torch.cat((logIntens, testData[:,1:4]), axis = 1)
       #Create the tensor of our actual values
       target = testData[:, 4:7]
       target = np.log(target)
       #Push our tensors to the GPU
       inputs = inputs.to('cuda')
       target = target.to('cuda')
```

```
inputs, target = inputs.float(), target.float()
       target = target.reshape((target.shape[0], 3))
       #Get the model predictions and apply a log-scale to our actual values
       #(Model predictions already have a log-scale applied to them)
       output = model(inputs)
       target = np.log(testData[:, 4:7])
         print(output)
         print(target)
        print(' \ n')
       #Initialize error lists
       #Index mappings:
       \#O = Max KE
       #1 = Total Energy
       #2 = Average Energy
       error = [0., 0., 0.]
      percentError = [0., 0., 0.]
      print("Calculate error for test")
       for index in range(3):
           error[index] = calc_MSE_Error(target, output, index)
           percentError[index] = calc_Avg_Percent_Error(target, output, index)
       #Append error values into our list
       mseErrorList.append(error)
       avgErrorList.append(percentError)
       timeList.append(timeSpent)
       #Also retrieve the testing error
       dataloader = DataLoader(trainDataset, batch_size=math.floor(0.1 *_
→numPoints), shuffle=True)
       iterDataLoader = iter(dataloader)
       trainData = next(iterDataLoader)
       #Process the intens value so it is in a log scale
       intens = trainData[:, 0:1]
       logIntens = np.log(intens)
       #Create the final tensor of inputs we will feed into the model
       inputs = torch.cat((logIntens, trainData[:,1:4]), axis = 1)
```

```
#Create the tensor of our actual values
       target = trainData[:, 4:7]
       target = np.log(target)
       #Push our tensors to the GPU
       inputs = inputs.to('cuda')
       target = target.to('cuda')
       inputs, target = inputs.float(), target.float()
       target = target.reshape((target.shape[0], 3))
       #Get the model predictions and apply a log-scale to our actual values
       #(Model predictions already have a log-scale applied to them)
       trainOutput = model(inputs)
       trainTarget = np.log(trainData[:, 4:7])
         print(output)
        print(target)
      print("Calculate error for train")
      trainError = [0., 0., 0.]
       trainPercentError = [0., 0., 0.]
      for index in range(3):
           trainError[index] = calc_MSE_Error(trainTarget, trainOutput, index)
           trainPercentError[index] = calc_Avg_Percent_Error(trainTarget,_
→trainOutput, index)
       #Append error values
      mseTrainList.append(trainError)
       avgTrainList.append(trainPercentError)
  return mseErrorList, avgErrorList, mseTrainList, avgTrainList, timeList
```

1 Define our neural networks

```
super().__init__()
  self.norm0 = nn.BatchNorm1d(4)
  self.linear1 = nn.Linear(in_features=4, out_features=64)
  self.norm1 = nn.BatchNorm1d(64)
  self.act1 = nn.LeakyReLU()
  self.dropout = nn.Dropout()
  self.linear2 = nn.Linear(in_features=64, out_features=16)
  self.norm2 = nn.BatchNorm1d(16)
  #self.dropout = nn.Dropout()
  self.act2 = nn.LeakyReLU()
  self.linear3 = nn.Linear(in_features=16, out_features=8)
  self.act3 = nn.LeakyReLU()
  #self.dropout = nn.Dropout()
  self.output = nn.Linear(in_features=8, out_features = 3)
def forward(self, x):
   Forward pass
  x = self.norm0(x)
  x = self.linear1(x)
 x = self.norm1(x)
 x = self.act1(x)
 \#x = self.dropout(x)
  x = self.linear2(x)
 x = self.norm2(x)
  \#x = self.dropout(x)
 x = self.act2(x)
 x = self.linear3(x)
  x = self.act3(x)
  \#x = self.dropout(x)
  x = self.output(x)
  return x
```

```
[7]: #Neural network with 1 hidden layer

class MultiRegressor1Layer(nn.Module):
    '''
    Multilayer Perceptron for regression.
    '''
    def __init__(self):
        super().__init__()
        self.norm0 = nn.BatchNorm1d(4)
```

```
self.linear1 = nn.Linear(in_features=4, out_features=64)
  self.norm1 = nn.BatchNorm1d(64)
  self.act1 = nn.LeakyReLU()
  self.dropout = nn.Dropout()
  self.linear2 = nn.Linear(in_features=64, out_features=16)
  self.norm2 = nn.BatchNorm1d(16)
  #self.dropout = nn.Dropout()
  self.act2 = nn.LeakyReLU()
  self.output = nn.Linear(in_features=16, out_features = 3)
def forward(self, x):
  111
   Forward pass
  111
  x = self.norm0(x)
  x = self.linear1(x)
 x = self.norm1(x)
  x = self.act1(x)
 \#x = self.dropout(x)
 x = self.linear2(x)
  x = self.norm2(x)
  \#x = self.dropout(x)
  x = self.act2(x)
  x = self.output(x)
  return x
```

2 Read in the data

```
[9]: #Read columns

intens = h5File['Intensity_(W_cm2)']
duration = h5File['Pulse_Duration_(fs)']
```

```
thickness = h5File['Target_Thickness (um)']
spotSize = h5File['Spot_Size_(FWHM um)']
maxEnergy = h5File['Max_Proton_Energy_(MeV)']
totalEnergy = h5File['Total_Proton_Energy_(MeV)']
avgEnergy = h5File['Avg_Proton_Energy_(MeV)']
#Convert columns into numpy arrays
npIntens = np.fromiter(intens, float)
npDuration = np.fromiter(duration, float)
npThickness = np.fromiter(thickness, float)
npSpot = np.fromiter(spotSize, float)
npMaxEnergy = np.fromiter(maxEnergy, float)
npTotalEnergy = np.fromiter(totalEnergy, float)
npAvgEnergy = np.fromiter(avgEnergy, float)
#Join all of those arrays into one big numpy array
npFile = np.dstack((npIntens, npDuration, npThickness, npSpot, npMaxEnergy, u
→npTotalEnergy, npAvgEnergy))
npFile = npFile.reshape(numPoints, 7)
npTrain = npFile[:math.floor(.9*numPoints), 0:7]
npTest = npFile[math.floor(.9*numPoints):, 0:7]
print(npFile.shape)
```

(100000, 7)

3 Prepare our dataset

```
[10]: training_dataset = h5File.create_dataset(name=None, data=npTrain)
test_dataset = h5File.create_dataset(name=None, data=npTest)
```

```
[11]: #Choose our loss function
loss_function = nn.MSELoss()
```

```
[12]: #List which epochs we should test

#epochList = [1]
#epochList = [1, 2, 3]
#epochList = [1, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 40, 45, 90, 100, 150, 200, 250]
#epochList = [1, 5, 10, 15, 20, 25, 50, 75, 100, 150, 200]
epochList = [1, 5, 10, 15, 20, 50]
```

Training with 1 epochs. Starting epoch 1 Loss after mini-batch 1: 0.222 Loss after mini-batch 11: 2.209 Loss after mini-batch 21: 2.001 Loss after mini-batch 31: 1.630 Loss after mini-batch 41: 1.308 Loss after mini-batch 51: 0.921 Loss after mini-batch 61: 0.630 Loss after mini-batch 71: 0.336 Loss after mini-batch 81: 0.150 Loss after mini-batch 91: 0.040 Loss after mini-batch 101: 0.013 Loss after mini-batch 111: 0.010 Loss after mini-batch 121: 0.008 Loss after mini-batch 131: 0.008 Loss after mini-batch 141: 0.010 Loss after mini-batch 151: 0.008 Loss after mini-batch 161: 0.005 Loss after mini-batch 171: 0.004 Loss after mini-batch 181: 0.005 Loss after mini-batch 191: 0.005 Loss after mini-batch 201: 0.007 Loss after mini-batch 211: 0.006 Loss after mini-batch 221: 0.007 Loss after mini-batch 231: 0.006 Loss after mini-batch 241: 0.005 Loss after mini-batch 251: 0.007 Loss after mini-batch 261: 0.003 Loss after mini-batch 271: 0.005 Loss after mini-batch 281: 0.005 Loss after mini-batch 291: 0.006 Loss after mini-batch 301: 0.003 Loss after mini-batch 311: 0.002 Loss after mini-batch 321: 0.003 Loss after mini-batch 331: 0.004 Loss after mini-batch 341: 0.004 Loss after mini-batch 351: 0.008

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Loss after mini-batch 2761: 0.001
Loss after mini-batch 2771: 0.002
Loss after mini-batch 2781: 0.003
Loss after mini-batch 2791: 0.001
Loss after mini-batch 2801: 0.003
Loss after mini-batch 2811: 0.002
Training process has finished.

Calculate error for test

Result: 5.6978141831636326e-06 Result: 1.826553267105639e-15 Result: 1.328771315295793e-07 Calculate error for train Result: 5.751722253465613e-06 Result: 1.780939927964189e-15 Result: 1.3323290120690164e-07 Training with 5 epochs.

Starting epoch 1

Loss after mini-batch 1: 0.227 Loss after mini-batch 11: 2.150 21: 1.823 Loss after mini-batch 31: 1.534 Loss after mini-batch Loss after mini-batch 41: 1.058 Loss after mini-batch 51: 0.807 Loss after mini-batch 61: 0.454 Loss after mini-batch 71: 0.224 Loss after mini-batch 81: 0.089 Loss after mini-batch 91: 0.028 Loss after mini-batch 101: 0.011 Loss after mini-batch 111: 0.011 Loss after mini-batch 121: 0.009 Loss after mini-batch 131: 0.012 Loss after mini-batch 141: 0.009 Loss after mini-batch 151: 0.011 Loss after mini-batch 161: 0.010 Loss after mini-batch 171: 0.007 Loss after mini-batch 181: 0.005 Loss after mini-batch 191: 0.006 Loss after mini-batch 201: 0.009 Loss after mini-batch 211: 0.004 Loss after mini-batch 221: 0.007 Loss after mini-batch 231: 0.005 Loss after mini-batch 241: 0.007 Loss after mini-batch 251: 0.005 Loss after mini-batch 261: 0.004 Loss after mini-batch 271: 0.008 Loss after mini-batch 281: 0.005 Loss after mini-batch 291: 0.005

Loss	after	mini-batch	301:	0.006
Loss	after	${\tt mini-batch}$	311:	0.003
Loss	after	${\tt mini-batch}$	321:	0.006
Loss	after	${\tt mini-batch}$	331:	0.004
Loss	after	${\tt mini-batch}$	341:	0.008
Loss	after	${\tt mini-batch}$	351:	0.007
Loss	after	${\tt mini-batch}$	361:	0.005
Loss	after	${\tt mini-batch}$	371:	0.003
Loss	after	${\tt mini-batch}$	381:	0.003
Loss	after	${\tt mini-batch}$	391:	0.002
Loss	after	${\tt mini-batch}$	401:	0.003
Loss	after	${\tt mini-batch}$	411:	0.004
Loss	after	${\tt mini-batch}$	421:	0.006
Loss	after	${\tt mini-batch}$	431:	0.005
Loss	after	${\tt mini-batch}$	441:	0.006
Loss	after	${\tt mini-batch}$	451:	0.004
Loss	after	${\tt mini-batch}$	461:	0.003
Loss	after	${\tt mini-batch}$	471:	0.004
Loss	after	${\tt mini-batch}$	481:	0.003
Loss	after	mini-batch	491:	0.005
Loss	after	mini-batch	501:	0.004
Loss	after	${\tt mini-batch}$	511:	0.005
Loss	after	mini-batch	521:	0.007
Loss	after	${\tt mini-batch}$	531:	0.003
Loss	after	${\tt mini-batch}$	541:	0.003
Loss	after	mini-batch	551:	0.002
Loss	after	${\tt mini-batch}$	561:	0.004
Loss	after	${\tt mini-batch}$	571:	0.003
Loss	after	${\tt mini-batch}$	581:	0.005
Loss	after	${\tt mini-batch}$	591:	0.006
Loss	after	${\tt mini-batch}$	601:	0.005
Loss	after	${\tt mini-batch}$	611:	0.003
Loss	after	${\tt mini-batch}$	621:	0.004
Loss	after	mini-batch	631:	0.006
Loss	after	mini-batch	641:	0.002
Loss	after	${\tt mini-batch}$	651:	0.003
Loss	after	mini-batch	661:	0.003
Loss	after	mini-batch	671:	0.004
Loss	after	mini-batch	681:	0.003
Loss	after	mini-batch	691:	0.005
Loss	after	mini-batch	701:	0.006
Loss	after	mini-batch	711:	0.003
Loss	after	mini-batch	721:	0.003
Loss	after	mini-batch	731:	0.002
Loss	after	mini-batch	741:	0.004
Loss	after	mini-batch	751:	0.003
Loss	after	mini-batch	761:	0.004
Loss	after	mini-batch	771:	0.005

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Loss after mini-batch
                        781: 0.005
Loss after mini-batch
                        791: 0.002
Loss after mini-batch
                        801: 0.004
Loss after mini-batch
                        811: 0.003
Loss after mini-batch
                        821: 0.003
Loss after mini-batch
                        831: 0.003
Loss after mini-batch
                        841: 0.003
Loss after mini-batch
                        851: 0.003
Loss after mini-batch
                        861: 0.002
Loss after mini-batch
                        871: 0.004
Loss after mini-batch
                        881: 0.005
Loss after mini-batch
                        891: 0.002
Loss after mini-batch
                        901: 0.004
Loss after mini-batch
                        911: 0.004
Loss after mini-batch
                        921: 0.002
Loss after mini-batch
                        931: 0.003
Loss after mini-batch
                        941: 0.004
Loss after mini-batch
                        951: 0.003
Loss after mini-batch
                        961: 0.005
Loss after mini-batch
                        971: 0.005
Loss after mini-batch
                        981: 0.003
Loss after mini-batch
                        991: 0.003
Loss after mini-batch
                       1001: 0.004
Loss after mini-batch
                       1011: 0.004
Loss after mini-batch
                       1021: 0.003
Loss after mini-batch
                       1031: 0.003
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Loss after mini-batch
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Loss after mini-batch
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Loss after mini-batch
                       1101: 0.006
Loss after mini-batch
                       1111: 0.003
Loss after mini-batch
                       1121: 0.004
Loss after mini-batch
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Loss after mini-batch
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Loss after mini-batch
                       1151: 0.003
                       1161: 0.004
Loss after mini-batch
Loss after mini-batch
                       1171: 0.002
Loss after mini-batch
                       1181: 0.004
Loss after mini-batch
                       1191: 0.003
Loss after mini-batch
                       1201: 0.003
Loss after mini-batch
                       1211: 0.003
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.002
Loss after mini-batch
                       1241: 0.003
Loss after mini-batch 1251: 0.003
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1261: 0.003
Loss after mini-batch
Loss after mini-batch
                       1271: 0.002
Loss after mini-batch
                       1281: 0.002
Loss after mini-batch
                       1291: 0.003
Loss after mini-batch
                       1301: 0.002
Loss after mini-batch
                       1311: 0.003
Loss after mini-batch
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Loss after mini-batch
                       1331: 0.004
Loss after mini-batch
                       1341: 0.002
Loss after mini-batch
                       1351: 0.002
Loss after mini-batch
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Loss after mini-batch
                       1371: 0.004
                       1381: 0.003
Loss after mini-batch
Loss after mini-batch
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Loss after mini-batch
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Loss after mini-batch
Loss after mini-batch
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Loss after mini-batch
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Loss after mini-batch
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Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
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Loss after mini-batch
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Loss after mini-batch
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Loss after mini-batch
                       1501: 0.003
Loss after mini-batch
                       1511: 0.002
                       1521: 0.003
Loss after mini-batch
Loss after mini-batch
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Loss after mini-batch
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Loss after mini-batch
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Loss after mini-batch
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Loss after mini-batch
                       1581: 0.002
Loss after mini-batch
                       1591: 0.003
Loss after mini-batch
                       1601: 0.004
Loss after mini-batch
                       1611: 0.002
Loss after mini-batch
                       1621: 0.002
Loss after mini-batch
                       1631: 0.002
                       1641: 0.004
Loss after mini-batch
Loss after mini-batch
                       1651: 0.003
                       1661: 0.002
Loss after mini-batch
Loss after mini-batch
                       1671: 0.003
Loss after mini-batch
                       1681: 0.003
Loss after mini-batch
                       1691: 0.002
Loss after mini-batch
                       1701: 0.005
Loss after mini-batch
                       1711: 0.002
Loss after mini-batch
                       1721: 0.002
Loss after mini-batch 1731: 0.003
```

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Loss after mini-batch
                       1741: 0.002
Loss after mini-batch
                       1751: 0.002
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.004
Loss after mini-batch
                       1781: 0.003
Loss after mini-batch
                       1791: 0.004
Loss after mini-batch
                       1801: 0.004
Loss after mini-batch
                       1811: 0.002
Loss after mini-batch
                       1821: 0.002
Loss after mini-batch
                       1831: 0.003
Loss after mini-batch
                       1841: 0.002
Loss after mini-batch
                       1851: 0.002
                       1861: 0.003
Loss after mini-batch
Loss after mini-batch
                       1871: 0.002
Loss after mini-batch
                       1881: 0.003
                       1891: 0.004
Loss after mini-batch
Loss after mini-batch
                       1901: 0.003
Loss after mini-batch
                       1911: 0.003
Loss after mini-batch
                       1921: 0.003
Loss after mini-batch
                       1931: 0.003
Loss after mini-batch
                       1941: 0.002
Loss after mini-batch
                       1951: 0.003
Loss after mini-batch
                       1961: 0.003
Loss after mini-batch
                       1971: 0.002
Loss after mini-batch
                       1981: 0.002
Loss after mini-batch
                       1991: 0.002
                       2001: 0.003
Loss after mini-batch
Loss after mini-batch
                       2011: 0.004
Loss after mini-batch
                       2021: 0.003
Loss after mini-batch
                       2031: 0.002
Loss after mini-batch
                       2041: 0.004
Loss after mini-batch
                       2051: 0.003
Loss after mini-batch
                       2061: 0.004
Loss after mini-batch
                       2071: 0.003
Loss after mini-batch
                       2081: 0.002
Loss after mini-batch
                       2091: 0.003
Loss after mini-batch
                       2101: 0.005
Loss after mini-batch
                       2111: 0.003
Loss after mini-batch
                       2121: 0.002
Loss after mini-batch
                       2131: 0.004
Loss after mini-batch
                       2141: 0.002
Loss after mini-batch
                       2151: 0.002
Loss after mini-batch
                       2161: 0.002
Loss after mini-batch
                       2171: 0.002
Loss after mini-batch
                       2181: 0.003
Loss after mini-batch
                       2191: 0.003
Loss after mini-batch 2201: 0.002
Loss after mini-batch 2211: 0.003
```

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Loss after mini-batch 2221: 0.002
Loss after mini-batch 2231: 0.003
Loss after mini-batch
                      2241: 0.002
Loss after mini-batch
                      2251: 0.003
Loss after mini-batch
                      2261: 0.002
                       2271: 0.003
Loss after mini-batch
Loss after mini-batch
                       2281: 0.003
Loss after mini-batch 2291: 0.004
Loss after mini-batch 2301: 0.001
Loss after mini-batch
                      2311: 0.004
Loss after mini-batch
                       2321: 0.002
Loss after mini-batch
                       2331: 0.003
                       2341: 0.002
Loss after mini-batch
Loss after mini-batch
                       2351: 0.004
Loss after mini-batch
                       2361: 0.003
Loss after mini-batch
                      2371: 0.002
Loss after mini-batch
                       2381: 0.003
Loss after mini-batch
                       2391: 0.002
Loss after mini-batch
                      2401: 0.003
Loss after mini-batch
                      2411: 0.002
Loss after mini-batch
                       2421: 0.002
Loss after mini-batch
                      2431: 0.002
Loss after mini-batch 2441: 0.002
Loss after mini-batch
                      2451: 0.003
Loss after mini-batch
                      2461: 0.002
Loss after mini-batch
                      2471: 0.003
                      2481: 0.003
Loss after mini-batch
Loss after mini-batch
                       2491: 0.004
Loss after mini-batch
                       2501: 0.002
Loss after mini-batch
                       2511: 0.002
Loss after mini-batch
                       2521: 0.003
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.002
Loss after mini-batch
                       2551: 0.003
Loss after mini-batch
                       2561: 0.003
Loss after mini-batch
                       2571: 0.003
Loss after mini-batch
                       2581: 0.003
Loss after mini-batch
                       2591: 0.003
                       2601: 0.002
Loss after mini-batch
Loss after mini-batch
                      2611: 0.003
                      2621: 0.002
Loss after mini-batch
                       2631: 0.002
Loss after mini-batch
Loss after mini-batch
                       2641: 0.004
Loss after mini-batch
                       2651: 0.003
Loss after mini-batch
                       2661: 0.002
Loss after mini-batch
                       2671: 0.003
Loss after mini-batch
                      2681: 0.002
Loss after mini-batch 2691: 0.002
```

```
Loss after mini-batch 2701: 0.002
Loss after mini-batch 2711: 0.002
Loss after mini-batch 2721: 0.003
Loss after mini-batch 2731: 0.002
Loss after mini-batch 2741: 0.002
Loss after mini-batch 2751: 0.004
Loss after mini-batch 2761: 0.002
Loss after mini-batch 2771: 0.002
Loss after mini-batch 2781: 0.002
Loss after mini-batch 2791: 0.002
Loss after mini-batch 2801: 0.002
Loss after mini-batch 2811: 0.003
Starting epoch 2
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.002
Loss after mini-batch
                         21: 0.003
Loss after mini-batch
                         31: 0.003
Loss after mini-batch
                         41: 0.002
Loss after mini-batch
                         51: 0.004
Loss after mini-batch
                         61: 0.004
Loss after mini-batch
                         71: 0.003
Loss after mini-batch
                         81: 0.002
Loss after mini-batch
                         91: 0.002
Loss after mini-batch
                        101: 0.003
Loss after mini-batch
                        111: 0.002
Loss after mini-batch
                        121: 0.002
Loss after mini-batch
                        131: 0.002
Loss after mini-batch
                        141: 0.001
Loss after mini-batch
                        151: 0.002
Loss after mini-batch
                        161: 0.002
Loss after mini-batch
                        171: 0.004
Loss after mini-batch
                        181: 0.002
Loss after mini-batch
                        191: 0.001
Loss after mini-batch
                        201: 0.004
Loss after mini-batch
                        211: 0.001
Loss after mini-batch
                        221: 0.002
Loss after mini-batch
                        231: 0.002
Loss after mini-batch
                        241: 0.002
Loss after mini-batch
                        251: 0.002
Loss after mini-batch
                        261: 0.001
Loss after mini-batch
                        271: 0.003
Loss after mini-batch
                        281: 0.003
Loss after mini-batch
                        291: 0.003
Loss after mini-batch
                        301: 0.002
Loss after mini-batch
                        311: 0.002
Loss after mini-batch
                        321: 0.001
Loss after mini-batch
                        331: 0.002
Loss after mini-batch
                        341: 0.002
```

Loss	after	${\tt mini-batch}$	351:	0.002
Loss	after	${\tt mini-batch}$	361:	0.002
Loss	after	${\tt mini-batch}$	371:	0.003
Loss	after	${\tt mini-batch}$	381:	0.002
Loss	after	${\tt mini-batch}$	391:	0.002
Loss	after	${\tt mini-batch}$	401:	0.003
Loss	after	${\tt mini-batch}$	411:	0.002
Loss	after	mini-batch	421:	0.003
Loss	after	mini-batch	431:	0.002
Loss	after	mini-batch	441:	0.002
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.002
Loss	after	mini-batch	481:	0.002
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.002
Loss	after	mini-batch	511:	0.002
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.002
Loss	after	mini-batch	551:	0.005
Loss	after	mini-batch	561:	0.004
Loss	after	mini-batch	571:	0.002
Loss	after	mini-batch	581:	0.004
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.002
Loss	after	mini-batch	611:	0.003
Loss	after	mini-batch	621:	0.002
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.002
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.002
Loss	after	mini-batch	681:	0.002
Loss	after	mini-batch	691:	0.002
Loss	after	mini-batch	701:	0.002
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.002
Loss	after	mini-batch	731:	0.002
Loss	after	mini-batch	741:	0.003
Loss	after	mini-batch	751:	0.002
Loss	after	mini-batch	761:	0.002
Loss	after	mini-batch	771:	0.004
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.002
Loss	after	mini-batch	811:	0.002
Loss	after	mini-batch	821:	0.002
порр	OT OCT	mini batch	021.	0.001

```
Loss after mini-batch
                        831: 0.003
Loss after mini-batch
                        841: 0.002
Loss after mini-batch
                        851: 0.003
Loss after mini-batch
                        861: 0.002
Loss after mini-batch
                        871: 0.002
Loss after mini-batch
                        881: 0.002
Loss after mini-batch
                        891: 0.001
Loss after mini-batch
                        901: 0.001
Loss after mini-batch
                        911: 0.001
Loss after mini-batch
                        921: 0.001
Loss after mini-batch
                        931: 0.002
Loss after mini-batch
                        941: 0.005
Loss after mini-batch
                        951: 0.002
Loss after mini-batch
                        961: 0.002
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.002
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.002
Loss after mini-batch
                       1021: 0.003
                       1031: 0.003
Loss after mini-batch
Loss after mini-batch
                       1041: 0.002
Loss after mini-batch
                       1051: 0.002
Loss after mini-batch
                       1061: 0.003
Loss after mini-batch
                       1071: 0.003
Loss after mini-batch
                       1081: 0.002
                       1091: 0.002
Loss after mini-batch
Loss after mini-batch
                       1101: 0.002
Loss after mini-batch
                       1111: 0.002
Loss after mini-batch
                       1121: 0.002
Loss after mini-batch
                       1131: 0.002
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.002
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.002
                       1181: 0.002
Loss after mini-batch
Loss after mini-batch
                       1191: 0.002
Loss after mini-batch
                       1201: 0.003
                       1211: 0.002
Loss after mini-batch
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.002
Loss after mini-batch
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Loss after mini-batch
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Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
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Loss after mini-batch
                       1281: 0.002
Loss after mini-batch
                       1291: 0.002
Loss after mini-batch 1301: 0.004
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1311: 0.004
Loss after mini-batch
Loss after mini-batch
                       1321: 0.006
Loss after mini-batch
                       1331: 0.004
Loss after mini-batch
                       1341: 0.002
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
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Loss after mini-batch
                       1371: 0.002
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.002
                       1411: 0.002
Loss after mini-batch
Loss after mini-batch
                       1421: 0.002
                       1431: 0.003
Loss after mini-batch
Loss after mini-batch
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Loss after mini-batch
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Loss after mini-batch
                       1461: 0.003
Loss after mini-batch
                       1471: 0.002
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.002
Loss after mini-batch
                       1511: 0.002
Loss after mini-batch
                       1521: 0.003
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.002
Loss after mini-batch
                       1551: 0.002
Loss after mini-batch
                       1561: 0.003
                       1571: 0.002
Loss after mini-batch
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.002
Loss after mini-batch
                       1601: 0.002
Loss after mini-batch
                       1611: 0.002
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.002
Loss after mini-batch
                       1641: 0.002
Loss after mini-batch
                       1651: 0.002
Loss after mini-batch
                       1661: 0.002
Loss after mini-batch
                       1671: 0.002
Loss after mini-batch
                       1681: 0.001
                       1691: 0.002
Loss after mini-batch
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.002
Loss after mini-batch
                       1721: 0.003
Loss after mini-batch
                       1731: 0.002
Loss after mini-batch
                       1741: 0.003
Loss after mini-batch
                       1751: 0.003
Loss after mini-batch
                       1761: 0.002
Loss after mini-batch
                       1771: 0.003
Loss after mini-batch 1781: 0.002
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1791: 0.003
Loss after mini-batch
Loss after mini-batch
                       1801: 0.003
Loss after mini-batch
                       1811: 0.002
Loss after mini-batch
                       1821: 0.002
Loss after mini-batch
                       1831: 0.002
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.002
Loss after mini-batch
                       1861: 0.002
Loss after mini-batch
                       1871: 0.002
Loss after mini-batch
                       1881: 0.002
                       1891: 0.004
Loss after mini-batch
Loss after mini-batch
                       1901: 0.002
                       1911: 0.002
Loss after mini-batch
Loss after mini-batch
                       1921: 0.002
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.002
Loss after mini-batch
                       1951: 0.003
Loss after mini-batch
                       1961: 0.002
Loss after mini-batch
                       1971: 0.002
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.002
Loss after mini-batch
                       2001: 0.003
Loss after mini-batch
                       2011: 0.002
Loss after mini-batch
                       2021: 0.003
Loss after mini-batch
                       2031: 0.002
Loss after mini-batch
                       2041: 0.002
                       2051: 0.001
Loss after mini-batch
Loss after mini-batch
                       2061: 0.003
Loss after mini-batch
                       2071: 0.002
Loss after mini-batch
                       2081: 0.002
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.004
Loss after mini-batch
                       2141: 0.002
Loss after mini-batch
                       2151: 0.002
Loss after mini-batch
                       2161: 0.005
Loss after mini-batch
                       2171: 0.004
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
                       2201: 0.002
Loss after mini-batch
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.003
Loss after mini-batch
                       2231: 0.002
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch 2251: 0.001
Loss after mini-batch 2261: 0.002
```

```
Loss after mini-batch 2271: 0.001
Loss after mini-batch
                       2281: 0.002
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.003
                       2321: 0.002
Loss after mini-batch
Loss after mini-batch
                       2331: 0.002
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.002
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
                       2391: 0.003
Loss after mini-batch
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.002
Loss after mini-batch
                       2461: 0.002
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.002
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.002
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.002
Loss after mini-batch
                       2541: 0.002
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.002
Loss after mini-batch
                       2571: 0.002
Loss after mini-batch
                       2581: 0.003
Loss after mini-batch
                       2591: 0.003
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.002
Loss after mini-batch
                       2621: 0.005
Loss after mini-batch
                       2631: 0.002
Loss after mini-batch
                       2641: 0.001
                       2651: 0.001
Loss after mini-batch
Loss after mini-batch
                       2661: 0.002
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.002
Loss after mini-batch
                       2691: 0.002
Loss after mini-batch
                       2701: 0.002
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.003
Loss after mini-batch 2731: 0.002
Loss after mini-batch 2741: 0.003
```

Loss	after	mini-batch	2751:	0.002
Loss	after	mini-batch	2761:	0.002
Loss	after	mini-batch	2771:	0.001
Loss	after	mini-batch	2781:	0.002
Loss	after	mini-batch	2791:	0.002
Loss	after	mini-batch	2801:	0.004
Loss	after	mini-batch	2811:	0.002
Start	ting e	ooch 3		
Loss	after	mini-batch	1:	0.000
Loss	after	mini-batch	11:	0.002
Loss	after	mini-batch	21:	0.001
Loss	after	mini-batch	31:	0.003
Loss	after	mini-batch	41:	0.002
Loss	after	mini-batch	51:	0.002
Loss	after	mini-batch	61:	0.001
Loss	after	mini-batch	71:	0.004
Loss	after	mini-batch	81:	0.004
Loss	after	mini-batch	91:	0.003
Loss	after	mini-batch	101:	0.002
Loss	after	mini-batch	111:	0.002
Loss	after	mini-batch	121:	0.002
Loss	after	mini-batch	131:	0.002
Loss	after	mini-batch	141:	0.002
Loss	after	mini-batch	151:	0.002
Loss	after	mini-batch	161:	0.002
Loss	after	mini-batch	171:	0.003
Loss	after	mini-batch	181:	0.003
Loss	after	mini-batch	191:	0.003
Loss	after	mini-batch	201:	0.002
Loss	after	mini-batch	211:	0.003
Loss	after	mini-batch	221:	0.002
Loss	after	mini-batch	231:	0.002
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.003
Loss	after	mini-batch	261:	0.002
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.002
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.002
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.002
Loss	after	mini-batch	341:	0.002
Loss	after	mini-batch	351:	0.002
Loss	after	mini-batch	361:	0.002
Loss	after	mini-batch	371:	0.002
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.002
FOSS	arter	mini-parcu	291;	0.002

Loss	after	${\tt mini-batch}$	401:	0.001
Loss	after	${\tt mini-batch}$	411:	0.001
Loss	after	${\tt mini-batch}$	421:	0.001
Loss	after	${\tt mini-batch}$	431:	0.001
Loss	after	${\tt mini-batch}$	441:	0.003
Loss	after	${\tt mini-batch}$	451:	0.002
Loss	after	${\tt mini-batch}$	461:	0.002
Loss	after	mini-batch	471:	0.002
Loss	after	mini-batch	481:	0.001
Loss	after	${\tt mini-batch}$	491:	0.001
Loss	after	mini-batch	501:	0.002
Loss	after	mini-batch	511:	0.002
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.002
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.002
Loss	after	mini-batch	561:	0.002
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.002
Loss	after	mini-batch	591:	0.002
Loss	after	mini-batch	601:	0.002
Loss	after	mini-batch	611:	0.002
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.002
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.002
Loss	after	mini-batch	701:	0.002
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.003
Loss	after	mini-batch	731:	0.002
Loss	after	mini-batch	741:	0.002
Loss	after	mini-batch	751:	0.002
Loss	after	mini-batch	761:	0.003
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.002
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.002
Loss	after	mini-batch	871:	0.003
			J	

```
Loss after mini-batch
                        881: 0.003
Loss after mini-batch
                        891: 0.001
Loss after mini-batch
                        901: 0.002
Loss after mini-batch
                        911: 0.002
Loss after mini-batch
                        921: 0.004
Loss after mini-batch
                        931: 0.002
Loss after mini-batch
                        941: 0.002
Loss after mini-batch
                        951: 0.002
Loss after mini-batch
                        961: 0.002
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.002
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.002
                       1031: 0.002
Loss after mini-batch
Loss after mini-batch
                       1041: 0.002
Loss after mini-batch
                       1051: 0.002
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.002
Loss after mini-batch
                       1091: 0.002
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.000
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.002
Loss after mini-batch
                       1161: 0.002
Loss after mini-batch
                       1171: 0.002
                       1181: 0.002
Loss after mini-batch
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                       1191: 0.002
Loss after mini-batch
                       1201: 0.002
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                       1211: 0.002
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                       1221: 0.002
Loss after mini-batch
                       1231: 0.002
Loss after mini-batch
                       1241: 0.002
Loss after mini-batch
                       1251: 0.001
                       1261: 0.003
Loss after mini-batch
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.002
Loss after mini-batch
                       1311: 0.003
Loss after mini-batch
                       1321: 0.002
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.002
Loss after mini-batch 1351: 0.003
```

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1361: 0.002
Loss after mini-batch
Loss after mini-batch
                       1371: 0.003
Loss after mini-batch
                       1381: 0.002
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.004
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.002
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.002
Loss after mini-batch
                       1451: 0.002
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.002
                       1481: 0.002
Loss after mini-batch
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.002
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.003
Loss after mini-batch
                       1561: 0.002
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.003
Loss after mini-batch
                       1591: 0.003
Loss after mini-batch
                       1601: 0.002
Loss after mini-batch
                       1611: 0.002
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.003
Loss after mini-batch
                       1661: 0.002
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.002
Loss after mini-batch
                       1691: 0.002
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.003
Loss after mini-batch
                       1721: 0.002
Loss after mini-batch
                       1731: 0.002
                       1741: 0.001
Loss after mini-batch
Loss after mini-batch
                       1751: 0.001
                       1761: 0.002
Loss after mini-batch
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.002
Loss after mini-batch
                       1811: 0.002
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch 1831: 0.003
```

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1841: 0.002
Loss after mini-batch
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.002
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.000
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
                       1961: 0.002
Loss after mini-batch
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.002
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.002
Loss after mini-batch
                       2031: 0.002
Loss after mini-batch
                       2041: 0.005
Loss after mini-batch
                       2051: 0.002
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.002
Loss after mini-batch
                       2091: 0.001
                       2101: 0.001
Loss after mini-batch
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.002
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.003
Loss after mini-batch
                       2161: 0.002
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.002
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch 2231: 0.001
Loss after mini-batch
                       2241: 0.003
                       2251: 0.003
Loss after mini-batch
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.002
Loss after mini-batch
                       2281: 0.002
Loss after mini-batch
                       2291: 0.002
Loss after mini-batch 2301: 0.001
Loss after mini-batch 2311: 0.002
```

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Loss after mini-batch 2321: 0.002
Loss after mini-batch
                       2331: 0.002
Loss after mini-batch
                       2341: 0.002
Loss after mini-batch
                       2351: 0.002
Loss after mini-batch
                       2361: 0.001
                       2371: 0.002
Loss after mini-batch
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.002
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.002
Loss after mini-batch
                       2431: 0.001
                       2441: 0.001
Loss after mini-batch
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
                       2491: 0.001
Loss after mini-batch
Loss after mini-batch
                       2501: 0.002
Loss after mini-batch
                       2511: 0.002
Loss after mini-batch
                       2521: 0.002
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.002
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.002
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.002
Loss after mini-batch
                       2671: 0.002
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.002
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
                       2721: 0.001
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.002
Loss after mini-batch
                       2761: 0.002
Loss after mini-batch
                       2771: 0.003
Loss after mini-batch
                       2781: 0.002
Loss after mini-batch 2791: 0.001
```

Loss	after	mini-batch	2801:	0.002
Loss	after	mini-batch	2811:	0.001
Start	ting e	ooch 4		
Loss	after	mini-batch	1:	0.000
Loss	after	mini-batch	11:	0.002
Loss	after	mini-batch	21:	0.001
Loss	after	mini-batch	31:	0.001
Loss	after	mini-batch	41:	0.002
Loss	after	mini-batch	51:	0.001
Loss	after	mini-batch	61:	0.002
Loss	after	mini-batch	71:	0.001
Loss	after	mini-batch	81:	0.001
Loss	after	mini-batch	91:	0.001
Loss	after	mini-batch	101:	0.002
Loss	after	mini-batch	111:	0.001
Loss	after	mini-batch	121:	0.002
Loss	after	mini-batch	131:	0.001
Loss	after	mini-batch	141:	0.001
Loss	after	mini-batch	151:	0.001
Loss	after	mini-batch	161:	0.001
Loss	after	mini-batch	171:	0.001
Loss	after	mini-batch	181:	0.002
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.002
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.002
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.002
Loss	after	mini-batch	251:	0.002
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.002
Loss	after	mini-batch	281:	0.002
Loss	after	mini-batch	291:	0.002
Loss	after	mini-batch	301:	0.002
Loss	after	mini-batch	311:	0.002
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.002
Loss	after	mini-batch	381:	0.002
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.002
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.002
Loss	after	mini-batch	431:	0.002
Loss	after	mini-batch	441:	0.001

Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.003
Loss	after	mini-batch	511:	0.002
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.002
Loss	after	mini-batch	561:	0.002
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.002
Loss	after	mini-batch	621:	0.002
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.002
Loss	after	mini-batch	661:	0.002
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.002
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.003
Loss	after	mini-batch	741:	0.002
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.002
Loss	after	mini-batch	811:	0.002
Loss	after	mini-batch	821:	0.002
Loss	after	mini-batch	831:	0.003
Loss	after	mini-batch	841:	0.003
Loss	after	mini-batch	851:	0.003
Loss	after	mini-batch	861:	0.002
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.002
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001

```
Loss after mini-batch
                        931: 0.001
Loss after mini-batch
                        941: 0.001
Loss after mini-batch
                        951: 0.002
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.002
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.002
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.002
                       1051: 0.002
Loss after mini-batch
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.002
Loss after mini-batch
                       1081: 0.002
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.002
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.002
Loss after mini-batch
                       1301: 0.001
                       1311: 0.001
Loss after mini-batch
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.002
Loss after mini-batch
                       1341: 0.003
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch 1401: 0.001
```

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Loss after mini-batch 1411: 0.003
Loss after mini-batch
                       1421: 0.002
Loss after mini-batch
                       1431: 0.002
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.002
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.002
Loss after mini-batch
                       1511: 0.002
Loss after mini-batch
                       1521: 0.002
                       1531: 0.002
Loss after mini-batch
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.002
Loss after mini-batch
                       1661: 0.001
                       1671: 0.001
Loss after mini-batch
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.003
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.002
Loss after mini-batch
                       1741: 0.002
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
                       1791: 0.001
Loss after mini-batch
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch 1881: 0.002
```

```
1891: 0.001
Loss after mini-batch
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.003
Loss after mini-batch
                       1941: 0.002
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.002
Loss after mini-batch
                       1971: 0.002
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
                       2011: 0.003
Loss after mini-batch
Loss after mini-batch
                       2021: 0.002
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.002
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.002
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.002
Loss after mini-batch
                       2141: 0.001
                       2151: 0.001
Loss after mini-batch
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.002
Loss after mini-batch
                       2261: 0.002
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.002
Loss after mini-batch
                       2291: 0.002
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch 2361: 0.002
```

```
Loss after mini-batch 2371: 0.002
Loss after mini-batch 2381: 0.001
Loss after mini-batch
                      2391: 0.002
Loss after mini-batch 2401: 0.001
Loss after mini-batch 2411: 0.001
Loss after mini-batch 2421: 0.001
Loss after mini-batch 2431: 0.001
Loss after mini-batch 2441: 0.001
Loss after mini-batch 2451: 0.001
Loss after mini-batch 2461: 0.002
Loss after mini-batch
                      2471: 0.001
Loss after mini-batch
                     2481: 0.001
Loss after mini-batch
                      2491: 0.001
Loss after mini-batch
                      2501: 0.001
Loss after mini-batch
                      2511: 0.001
Loss after mini-batch
                      2521: 0.001
Loss after mini-batch
                      2531: 0.001
Loss after mini-batch
                      2541: 0.001
Loss after mini-batch 2551: 0.001
Loss after mini-batch 2561: 0.001
Loss after mini-batch
                      2571: 0.001
Loss after mini-batch
                      2581: 0.001
Loss after mini-batch 2591: 0.001
Loss after mini-batch
                      2601: 0.002
Loss after mini-batch
                      2611: 0.001
Loss after mini-batch
                      2621: 0.002
Loss after mini-batch
                      2631: 0.001
Loss after mini-batch
                      2641: 0.001
Loss after mini-batch
                      2651: 0.002
Loss after mini-batch
                      2661: 0.001
Loss after mini-batch
                      2671: 0.001
Loss after mini-batch
                      2681: 0.002
Loss after mini-batch
                      2691: 0.001
Loss after mini-batch
                      2701: 0.001
Loss after mini-batch 2711: 0.001
Loss after mini-batch 2721: 0.002
Loss after mini-batch 2731: 0.001
Loss after mini-batch 2741: 0.002
Loss after mini-batch
                      2751: 0.002
Loss after mini-batch 2761: 0.003
Loss after mini-batch
                      2771: 0.001
Loss after mini-batch
                      2781: 0.001
Loss after mini-batch
                      2791: 0.001
Loss after mini-batch
                      2801: 0.002
Loss after mini-batch
                      2811: 0.001
Starting epoch 5
Loss after mini-batch
                         1: 0.000
Loss after mini-batch
                        11: 0.001
```

Loss	after	${\tt mini-batch}$	21:	0.001
Loss	after	${\tt mini-batch}$	31:	0.001
Loss	after	${\tt mini-batch}$	41:	0.002
Loss	after	${\tt mini-batch}$	51:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	61:	0.001
Loss	after	${\tt mini-batch}$	71:	0.001
Loss	after	${\tt mini-batch}$	81:	0.001
Loss	after	mini-batch	91:	0.000
Loss	after	mini-batch	101:	0.001
Loss	after	mini-batch	111:	0.001
Loss	after	mini-batch	121:	0.001
Loss	after	mini-batch	131:	0.001
Loss	after	mini-batch	141:	0.001
Loss	after	mini-batch	151:	0.000
Loss	after	mini-batch	161:	0.002
Loss	after	mini-batch	171:	0.002
Loss	after	mini-batch	181:	0.002
Loss	after	mini-batch	191:	0.002
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.002
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.003
Loss	after	mini-batch	291:	0.002
Loss	after	mini-batch	301:	0.002
Loss	after	mini-batch	311:	0.002
Loss	after	mini-batch	321:	0.002
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.002
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.002
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.002
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.002
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.002
Loss	after	mini-batch	491:	0.002
	001		-01.	

```
Loss after mini-batch
                         501: 0.001
Loss after mini-batch
                         511: 0.001
Loss after mini-batch
                         521: 0.001
Loss after mini-batch
                         531: 0.001
Loss after mini-batch
                         541: 0.001
Loss after mini-batch
                         551: 0.001
Loss after mini-batch
                         561: 0.002
                         571: 0.003
Loss after mini-batch
Loss after mini-batch
                         581: 0.001
Loss after mini-batch
                         591: 0.002
Loss after mini-batch
                         601: 0.001
Loss after mini-batch
                         611: 0.001
Loss after mini-batch
                         621: 0.001
Loss after mini-batch
                         631: 0.001
Loss after mini-batch
                         641: 0.001
Loss after mini-batch
                         651: 0.002
Loss after mini-batch
                         661: 0.001
Loss after mini-batch
                         671: 0.001
Loss after mini-batch
                         681: 0.001
Loss after mini-batch
                         691: 0.001
Loss after mini-batch
                         701: 0.002
Loss after mini-batch
                         711: 0.002
Loss after mini-batch
                        721: 0.001
Loss after mini-batch
                        731: 0.002
Loss after mini-batch
                        741: 0.002
Loss after mini-batch
                         751: 0.001
Loss after mini-batch
                         761: 0.001
Loss after mini-batch
                         771: 0.002
Loss after mini-batch
                         781: 0.001
Loss after mini-batch
                         791: 0.001
Loss after mini-batch
                         801: 0.001
Loss after mini-batch
                         811: 0.001
Loss after mini-batch
                         821: 0.001
Loss after mini-batch
                         831: 0.001
Loss after mini-batch
                         841: 0.002
Loss after mini-batch
                         851: 0.001
Loss after mini-batch
                         861: 0.002
Loss after mini-batch
                         871: 0.001
                         881: 0.002
Loss after mini-batch
Loss after mini-batch
                         891: 0.001
Loss after mini-batch
                         901: 0.001
Loss after mini-batch
                         911: 0.001
Loss after mini-batch
                         921: 0.001
Loss after mini-batch
                         931: 0.001
Loss after mini-batch
                         941: 0.001
Loss after mini-batch
                         951: 0.001
Loss after mini-batch
                         961: 0.001
Loss after mini-batch
                        971: 0.001
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Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.003
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.001
                       1081: 0.001
Loss after mini-batch
Loss after mini-batch
                       1091: 0.001
                       1101: 0.001
Loss after mini-batch
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.002
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
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Loss after mini-batch
                       1151: 0.002
Loss after mini-batch
                       1161: 0.002
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.000
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
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Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.000
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Loss after mini-batch
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Loss after mini-batch
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Loss after mini-batch
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Loss after mini-batch
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                       1341: 0.002
Loss after mini-batch
                       1351: 0.000
                       1361: 0.001
Loss after mini-batch
Loss after mini-batch
                       1371: 0.001
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch 1451: 0.001
```

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1461: 0.001
Loss after mini-batch
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.002
Loss after mini-batch
                       1491: 0.002
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.002
                       1581: 0.001
Loss after mini-batch
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.002
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.002
Loss after mini-batch
                       1651: 0.002
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.000
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.002
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.000
Loss after mini-batch
                       1831: 0.001
                       1841: 0.001
Loss after mini-batch
Loss after mini-batch
                       1851: 0.001
                       1861: 0.001
Loss after mini-batch
                       1871: 0.002
Loss after mini-batch
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.002
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch 1931: 0.001
```

```
Loss after mini-batch 1941: 0.001
Loss after mini-batch
                       1951: 0.002
Loss after mini-batch
                       1961: 0.002
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
                       2061: 0.002
Loss after mini-batch
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.000
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.000
Loss after mini-batch
                       2151: 0.002
Loss after mini-batch 2161: 0.001
Loss after mini-batch
                       2171: 0.002
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.002
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.002
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.002
                       2321: 0.001
Loss after mini-batch
Loss after mini-batch
                       2331: 0.001
                       2341: 0.001
Loss after mini-batch
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch 2401: 0.001
Loss after mini-batch 2411: 0.001
```

Loss after mini-batch 2421: 0.001 Loss after mini-batch 2431: 0.001 Loss after mini-batch 2441: 0.001 Loss after mini-batch 2451: 0.002 Loss after mini-batch 2461: 0.001 Loss after mini-batch 2471: 0.001 Loss after mini-batch 2481: 0.001 Loss after mini-batch 2491: 0.002 Loss after mini-batch 2501: 0.002 Loss after mini-batch 2511: 0.001 2521: 0.001 Loss after mini-batch Loss after mini-batch 2531: 0.002 Loss after mini-batch 2541: 0.001 Loss after mini-batch 2551: 0.000 Loss after mini-batch 2561: 0.001 Loss after mini-batch 2571: 0.001 Loss after mini-batch 2581: 0.001 Loss after mini-batch 2591: 0.002 Loss after mini-batch 2601: 0.001 Loss after mini-batch 2611: 0.001 Loss after mini-batch 2621: 0.001 Loss after mini-batch 2631: 0.001 Loss after mini-batch 2641: 0.001 Loss after mini-batch 2651: 0.001 Loss after mini-batch 2661: 0.001 Loss after mini-batch 2671: 0.001 Loss after mini-batch 2681: 0.001 Loss after mini-batch 2691: 0.001 Loss after mini-batch 2701: 0.001 Loss after mini-batch 2711: 0.001 Loss after mini-batch 2721: 0.001 Loss after mini-batch 2731: 0.001 Loss after mini-batch 2741: 0.002 Loss after mini-batch 2751: 0.001 Loss after mini-batch 2761: 0.001 Loss after mini-batch 2771: 0.001 Loss after mini-batch 2781: 0.001 Loss after mini-batch 2791: 0.001 Loss after mini-batch 2801: 0.001 Loss after mini-batch 2811: 0.002 Training process has finished.

Calculate error for test

Result: 1.8739067296662588e-05 Result: 2.733749983124259e-15 Result: 2.9702573796996083e-07 Calculate error for train Result: 1.828420918622595e-05 Result: 2.6569664252781055e-15 Result: 2.891211371696739e-07 Training with 10 epochs. Starting epoch 1

Loss after mini-batch 1: 0.240 Loss after mini-batch 11: 2.160 Loss after mini-batch 21: 1.903 Loss after mini-batch 31: 1.499 Loss after mini-batch 41: 1.156 Loss after mini-batch 51: 0.764 Loss after mini-batch 61: 0.467 Loss after mini-batch 71: 0.222 Loss after mini-batch 81: 0.073 Loss after mini-batch 91: 0.023 Loss after mini-batch 101: 0.010 Loss after mini-batch 111: 0.008 Loss after mini-batch 121: 0.007 Loss after mini-batch 131: 0.004 Loss after mini-batch 141: 0.006 Loss after mini-batch 151: 0.004 Loss after mini-batch 161: 0.006 Loss after mini-batch 171: 0.016 Loss after mini-batch 181: 0.003 Loss after mini-batch 191: 0.004 Loss after mini-batch 201: 0.003 Loss after mini-batch 211: 0.005 Loss after mini-batch 221: 0.005 Loss after mini-batch 231: 0.007 Loss after mini-batch 241: 0.004 Loss after mini-batch 251: 0.005 Loss after mini-batch 261: 0.005 Loss after mini-batch 271: 0.010 Loss after mini-batch 281: 0.007 Loss after mini-batch 291: 0.005 Loss after mini-batch 301: 0.005 Loss after mini-batch 311: 0.005 Loss after mini-batch 321: 0.004 Loss after mini-batch 331: 0.010 Loss after mini-batch 341: 0.005 Loss after mini-batch 351: 0.006 Loss after mini-batch 361: 0.006 Loss after mini-batch 371: 0.004 Loss after mini-batch 381: 0.006 Loss after mini-batch 391: 0.004 Loss after mini-batch 401: 0.004 Loss after mini-batch 411: 0.003 Loss after mini-batch 421: 0.003 Loss after mini-batch 431: 0.004

Loss	after	${\tt mini-batch}$	441:	0.007
Loss	after	${\tt mini-batch}$	451:	0.010
Loss	after	${\tt mini-batch}$	461:	0.005
Loss	after	${\tt mini-batch}$	471:	0.004
Loss	after	${\tt mini-batch}$	481:	0.002
Loss	after	${\tt mini-batch}$	491:	0.005
Loss	after	${\tt mini-batch}$	501:	0.004
Loss	after	${\tt mini-batch}$	511:	0.003
Loss	after	${\tt mini-batch}$	521:	0.006
Loss	after	${\tt mini-batch}$	531:	0.006
Loss	after	${\tt mini-batch}$	541:	0.006
Loss	after	${\tt mini-batch}$	551:	0.004
Loss	after	${\tt mini-batch}$	561:	0.003
Loss	after	${\tt mini-batch}$	571:	0.005
Loss	after	${\tt mini-batch}$	581:	0.002
Loss	after	${\tt mini-batch}$	591:	0.004
Loss	after	${\tt mini-batch}$	601:	0.005
Loss	after	${\tt mini-batch}$	611:	0.002
Loss	after	${\tt mini-batch}$	621:	0.006
Loss	after	${\tt mini-batch}$	631:	0.006
Loss	after	${\tt mini-batch}$	641:	0.003
Loss	after	${\tt mini-batch}$	651:	0.004
Loss	after	${\tt mini-batch}$	661:	0.003
Loss	after	${\tt mini-batch}$	671:	0.003
Loss	after	${\tt mini-batch}$	681:	0.004
Loss	after	${\tt mini-batch}$	691:	0.002
Loss	after	${\tt mini-batch}$	701:	0.003
Loss	after	${\tt mini-batch}$	711:	0.004
Loss	after	${\tt mini-batch}$	721:	0.002
Loss	after	${\tt mini-batch}$	731:	0.002
Loss	after	${\tt mini-batch}$	741:	0.005
Loss	after	${\tt mini-batch}$	751:	0.002
Loss	after	${\tt mini-batch}$	761:	0.004
Loss	after	${\tt mini-batch}$	771:	0.006
Loss	after	${\tt mini-batch}$	781:	0.004
Loss	after	${\tt mini-batch}$	791:	0.001
Loss	after	${\tt mini-batch}$	801:	0.003
Loss	after	${\tt mini-batch}$	811:	0.005
Loss	after	${\tt mini-batch}$	821:	0.005
Loss	after	${\tt mini-batch}$	831:	0.003
Loss	after	${\tt mini-batch}$	841:	0.003
Loss	after	${\tt mini-batch}$	851:	0.004
Loss	after	${\tt mini-batch}$	861:	0.006
Loss	after	${\tt mini-batch}$	871:	0.002
Loss	after	${\tt mini-batch}$	881:	0.002
Loss	after	${\tt mini-batch}$	891:	0.003
Loss	after	${\tt mini-batch}$	901:	0.004
Loss	after	${\tt mini-batch}$	911:	0.003

```
Loss after mini-batch
                        921: 0.003
Loss after mini-batch
                        931: 0.005
Loss after mini-batch
                        941: 0.003
Loss after mini-batch
                        951: 0.002
Loss after mini-batch
                        961: 0.004
Loss after mini-batch
                        971: 0.004
Loss after mini-batch
                        981: 0.004
Loss after mini-batch
                        991: 0.002
Loss after mini-batch
                       1001: 0.003
Loss after mini-batch
                       1011: 0.002
                       1021: 0.004
Loss after mini-batch
Loss after mini-batch
                       1031: 0.003
                       1041: 0.003
Loss after mini-batch
Loss after mini-batch
                       1051: 0.002
Loss after mini-batch
                       1061: 0.003
                       1071: 0.004
Loss after mini-batch
Loss after mini-batch
                       1081: 0.003
Loss after mini-batch
                       1091: 0.004
Loss after mini-batch
                       1101: 0.003
Loss after mini-batch
                       1111: 0.003
Loss after mini-batch
                       1121: 0.003
Loss after mini-batch
                       1131: 0.004
Loss after mini-batch
                       1141: 0.002
Loss after mini-batch
                       1151: 0.003
Loss after mini-batch
                       1161: 0.003
Loss after mini-batch
                       1171: 0.002
                       1181: 0.003
Loss after mini-batch
Loss after mini-batch
                       1191: 0.005
Loss after mini-batch
                       1201: 0.003
Loss after mini-batch
                       1211: 0.004
Loss after mini-batch
                       1221: 0.003
Loss after mini-batch
                       1231: 0.002
Loss after mini-batch
                       1241: 0.002
Loss after mini-batch
                       1251: 0.002
Loss after mini-batch
                       1261: 0.003
Loss after mini-batch
                       1271: 0.005
Loss after mini-batch
                       1281: 0.005
Loss after mini-batch
                       1291: 0.004
                       1301: 0.003
Loss after mini-batch
Loss after mini-batch
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Loss after mini-batch
                       1331: 0.003
Loss after mini-batch
                       1341: 0.002
Loss after mini-batch
                       1351: 0.003
Loss after mini-batch
                       1361: 0.003
Loss after mini-batch
                       1371: 0.004
Loss after mini-batch
                       1381: 0.002
Loss after mini-batch 1391: 0.003
```

```
1401: 0.003
Loss after mini-batch
Loss after mini-batch
                       1411: 0.003
Loss after mini-batch
                       1421: 0.002
Loss after mini-batch
                       1431: 0.003
Loss after mini-batch
                       1441: 0.003
Loss after mini-batch
                       1451: 0.002
Loss after mini-batch
                       1461: 0.003
Loss after mini-batch
                       1471: 0.003
Loss after mini-batch
                       1481: 0.002
Loss after mini-batch
                       1491: 0.002
Loss after mini-batch
                       1501: 0.003
Loss after mini-batch
                       1511: 0.003
                       1521: 0.002
Loss after mini-batch
Loss after mini-batch
                       1531: 0.002
Loss after mini-batch
                       1541: 0.003
Loss after mini-batch
                       1551: 0.003
Loss after mini-batch
                       1561: 0.002
Loss after mini-batch
                       1571: 0.003
Loss after mini-batch
                       1581: 0.004
Loss after mini-batch
                       1591: 0.003
Loss after mini-batch
                       1601: 0.005
Loss after mini-batch
                       1611: 0.003
Loss after mini-batch
                       1621: 0.003
Loss after mini-batch
                       1631: 0.004
Loss after mini-batch
                       1641: 0.003
Loss after mini-batch
                       1651: 0.005
                       1661: 0.003
Loss after mini-batch
Loss after mini-batch
                       1671: 0.004
Loss after mini-batch
                       1681: 0.004
Loss after mini-batch
                       1691: 0.002
Loss after mini-batch
                       1701: 0.002
Loss after mini-batch
                       1711: 0.002
Loss after mini-batch
                       1721: 0.002
Loss after mini-batch
                       1731: 0.002
Loss after mini-batch
                       1741: 0.003
Loss after mini-batch
                       1751: 0.002
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.002
                       1781: 0.004
Loss after mini-batch
Loss after mini-batch
                       1791: 0.004
                       1801: 0.003
Loss after mini-batch
                       1811: 0.002
Loss after mini-batch
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.003
Loss after mini-batch
                       1841: 0.003
Loss after mini-batch
                       1851: 0.002
Loss after mini-batch
                       1861: 0.002
Loss after mini-batch 1871: 0.002
```

```
1881: 0.004
Loss after mini-batch
Loss after mini-batch
                       1891: 0.003
Loss after mini-batch
                       1901: 0.002
Loss after mini-batch
                       1911: 0.002
Loss after mini-batch
                       1921: 0.004
Loss after mini-batch
                       1931: 0.004
Loss after mini-batch
                       1941: 0.003
Loss after mini-batch
                       1951: 0.003
Loss after mini-batch
                       1961: 0.005
Loss after mini-batch
                       1971: 0.005
                       1981: 0.003
Loss after mini-batch
Loss after mini-batch
                       1991: 0.004
                       2001: 0.002
Loss after mini-batch
Loss after mini-batch
                       2011: 0.002
Loss after mini-batch
                       2021: 0.004
Loss after mini-batch
                       2031: 0.002
Loss after mini-batch
                       2041: 0.003
Loss after mini-batch
                       2051: 0.003
Loss after mini-batch
                       2061: 0.003
Loss after mini-batch
                       2071: 0.002
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.002
Loss after mini-batch
                       2101: 0.002
Loss after mini-batch
                       2111: 0.002
Loss after mini-batch
                       2121: 0.002
Loss after mini-batch
                       2131: 0.002
                       2141: 0.003
Loss after mini-batch
Loss after mini-batch
                       2151: 0.003
Loss after mini-batch
                       2161: 0.003
Loss after mini-batch
                       2171: 0.003
Loss after mini-batch
                       2181: 0.002
Loss after mini-batch
                       2191: 0.002
Loss after mini-batch
                       2201: 0.003
Loss after mini-batch
                       2211: 0.003
Loss after mini-batch
                       2221: 0.003
Loss after mini-batch
                       2231: 0.003
Loss after mini-batch
                       2241: 0.004
Loss after mini-batch
                       2251: 0.003
Loss after mini-batch
                       2261: 0.002
Loss after mini-batch
                       2271: 0.003
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.003
Loss after mini-batch
                       2301: 0.003
Loss after mini-batch
                       2311: 0.003
Loss after mini-batch
                       2321: 0.002
Loss after mini-batch
                       2331: 0.002
Loss after mini-batch 2341: 0.002
Loss after mini-batch 2351: 0.003
```

```
Loss after mini-batch 2361: 0.002
Loss after mini-batch
                      2371: 0.003
Loss after mini-batch
                      2381: 0.003
Loss after mini-batch
                      2391: 0.002
Loss after mini-batch
                      2401: 0.002
Loss after mini-batch
                      2411: 0.001
Loss after mini-batch
                      2421: 0.002
Loss after mini-batch 2431: 0.003
Loss after mini-batch
                      2441: 0.005
Loss after mini-batch
                      2451: 0.003
                       2461: 0.003
Loss after mini-batch
Loss after mini-batch
                      2471: 0.003
Loss after mini-batch
                       2481: 0.003
Loss after mini-batch
                       2491: 0.003
Loss after mini-batch
                       2501: 0.002
Loss after mini-batch
                       2511: 0.002
Loss after mini-batch
                       2521: 0.003
Loss after mini-batch
                       2531: 0.002
Loss after mini-batch
                      2541: 0.001
Loss after mini-batch
                      2551: 0.002
Loss after mini-batch
                       2561: 0.003
Loss after mini-batch
                       2571: 0.002
Loss after mini-batch
                      2581: 0.002
Loss after mini-batch
                       2591: 0.005
Loss after mini-batch
                       2601: 0.003
Loss after mini-batch
                       2611: 0.002
Loss after mini-batch
                       2621: 0.004
Loss after mini-batch
                       2631: 0.003
Loss after mini-batch
                       2641: 0.002
Loss after mini-batch
                       2651: 0.003
Loss after mini-batch
                       2661: 0.002
Loss after mini-batch
                       2671: 0.002
Loss after mini-batch
                       2681: 0.002
Loss after mini-batch
                      2691: 0.002
Loss after mini-batch
                      2701: 0.003
Loss after mini-batch
                       2711: 0.004
Loss after mini-batch
                      2721: 0.002
Loss after mini-batch
                       2731: 0.002
Loss after mini-batch
                      2741: 0.001
Loss after mini-batch
                      2751: 0.003
Loss after mini-batch
                      2761: 0.002
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.003
Loss after mini-batch
                       2791: 0.002
Loss after mini-batch
                       2801: 0.002
Loss after mini-batch
                       2811: 0.002
Starting epoch 2
Loss after mini-batch
                          1: 0.000
```

Loss	after	${\tt mini-batch}$	11:	0.001
Loss	after	${\tt mini-batch}$	21:	0.002
Loss	after	${\tt mini-batch}$	31:	0.001
Loss	after	${\tt mini-batch}$	41:	0.001
Loss	after	${\tt mini-batch}$	51:	0.003
Loss	after	${\tt mini-batch}$	61:	0.003
Loss	after	${\tt mini-batch}$	71:	0.002
Loss	after	${\tt mini-batch}$	81:	0.003
Loss	after	mini-batch	91:	0.003
Loss	after	mini-batch	101:	0.001
Loss	after	mini-batch	111:	0.001
Loss	after	mini-batch	121:	0.002
Loss	after	mini-batch	131:	0.001
Loss	after	mini-batch	141:	0.002
Loss	after	mini-batch	151:	0.001
Loss	after	mini-batch	161:	0.002
Loss	after	mini-batch	171:	0.004
Loss	after	mini-batch	181:	0.003
Loss	after	mini-batch	191:	0.002
Loss	after	mini-batch	201:	0.003
Loss	after	mini-batch	211:	0.004
Loss	after	mini-batch	221:	0.002
Loss	after	mini-batch	231:	0.003
Loss	after	mini-batch	241:	0.002
Loss	after	mini-batch	251:	0.002
Loss	after	mini-batch	261:	0.002
Loss	after	mini-batch	271:	0.003
Loss	after	mini-batch	281:	0.003
Loss	after	mini-batch	291:	0.002
Loss	after	mini-batch	301:	0.004
Loss	after	mini-batch	311:	0.003
Loss	after	mini-batch	321:	0.007
Loss	after	mini-batch	331:	0.004
Loss	after	mini-batch	341:	0.002
Loss	after	mini-batch	351:	0.002
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.002
Loss	after	mini-batch	381:	0.002
Loss	after	mini-batch	391:	0.002
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.002
Loss	after	mini-batch	421:	0.002
Loss	after	mini-batch	431:	0.003
Loss	after	mini-batch	441:	0.002
Loss	after	mini-batch	451:	0.002
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
порр	OT OCT	mini Datell	1 01.	0.002

Loss	after	${\tt mini-batch}$	491:	0.002
Loss	after	${\tt mini-batch}$	501:	0.002
Loss	after	${\tt mini-batch}$	511:	0.003
Loss	after	${\tt mini-batch}$	521:	0.002
Loss	after	${\tt mini-batch}$	531:	0.003
Loss	after	${\tt mini-batch}$	541:	0.002
Loss	after	${\tt mini-batch}$	551:	0.002
Loss	after	${\tt mini-batch}$	561:	0.002
Loss	after	${\tt mini-batch}$	571:	0.003
Loss	after	${\tt mini-batch}$	581:	0.003
Loss	after	${\tt mini-batch}$	591:	0.006
Loss	after	${\tt mini-batch}$	601:	0.003
Loss	after	${\tt mini-batch}$	611:	0.002
Loss	after	${\tt mini-batch}$	621:	0.001
Loss	after	${\tt mini-batch}$	631:	0.002
Loss	after	${\tt mini-batch}$	641:	0.003
Loss	after	${\tt mini-batch}$	651:	0.001
Loss	after	${\tt mini-batch}$	661:	0.002
Loss	after	${\tt mini-batch}$	671:	0.002
Loss	after	${\tt mini-batch}$	681:	0.002
Loss	after	${\tt mini-batch}$	691:	0.001
Loss	after	${\tt mini-batch}$	701:	0.002
Loss	after	${\tt mini-batch}$	711:	0.001
Loss	after	${\tt mini-batch}$	721:	0.001
Loss	after	${\tt mini-batch}$	731:	0.003
Loss	after	${\tt mini-batch}$	741:	0.003
Loss	after	${\tt mini-batch}$	751:	0.002
Loss	after	${\tt mini-batch}$	761:	0.003
Loss	after	${\tt mini-batch}$	771:	0.001
Loss	after	${\tt mini-batch}$	781:	0.003
Loss	after	${\tt mini-batch}$	791:	0.003
Loss	after	${\tt mini-batch}$	801:	0.003
Loss	after	${\tt mini-batch}$	811:	0.003
Loss	after	${\tt mini-batch}$	821:	0.001
Loss	after	${\tt mini-batch}$	831:	0.001
Loss	after	${\tt mini-batch}$	841:	0.002
Loss	after	${\tt mini-batch}$	851:	0.001
Loss	after	${\tt mini-batch}$	861:	0.003
Loss	after	${\tt mini-batch}$	871:	0.002
Loss	after	${\tt mini-batch}$	881:	0.002
Loss	after	${\tt mini-batch}$	891:	0.002
Loss	after	${\tt mini-batch}$	901:	0.001
Loss	after	${\tt mini-batch}$	911:	0.003
Loss	after	${\tt mini-batch}$	921:	0.003
Loss	after	${\tt mini-batch}$	931:	0.002
Loss	after	${\tt mini-batch}$	941:	0.003
Loss	after	${\tt mini-batch}$	951:	0.001
Loss	after	${\tt mini-batch}$	961:	0.002

```
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.002
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
                       1021: 0.002
Loss after mini-batch
Loss after mini-batch
                       1031: 0.002
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
                       1071: 0.002
Loss after mini-batch
Loss after mini-batch
                       1081: 0.003
                       1091: 0.001
Loss after mini-batch
Loss after mini-batch
                       1101: 0.002
Loss after mini-batch
                       1111: 0.003
Loss after mini-batch
                       1121: 0.002
Loss after mini-batch
                       1131: 0.002
Loss after mini-batch
                       1141: 0.002
Loss after mini-batch
                       1151: 0.003
Loss after mini-batch
                       1161: 0.003
Loss after mini-batch
                       1171: 0.002
Loss after mini-batch
                       1181: 0.002
Loss after mini-batch
                       1191: 0.003
Loss after mini-batch
                       1201: 0.003
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
                       1231: 0.004
Loss after mini-batch
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.002
Loss after mini-batch
                       1261: 0.002
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.002
Loss after mini-batch
                       1291: 0.002
Loss after mini-batch
                       1301: 0.003
Loss after mini-batch
                       1311: 0.003
Loss after mini-batch
                       1321: 0.002
Loss after mini-batch
                       1331: 0.002
Loss after mini-batch
                       1341: 0.001
                       1351: 0.002
Loss after mini-batch
Loss after mini-batch
                       1361: 0.002
Loss after mini-batch
                       1371: 0.002
Loss after mini-batch
                       1381: 0.002
Loss after mini-batch
                       1391: 0.003
Loss after mini-batch
                       1401: 0.003
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch 1441: 0.001
```

```
1451: 0.001
Loss after mini-batch
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.002
Loss after mini-batch
                       1481: 0.002
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.002
Loss after mini-batch
                       1511: 0.002
Loss after mini-batch
                       1521: 0.002
Loss after mini-batch
                       1531: 0.002
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.002
Loss after mini-batch
                       1561: 0.002
                       1571: 0.002
Loss after mini-batch
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.002
Loss after mini-batch
                       1601: 0.002
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.003
Loss after mini-batch
                       1651: 0.002
Loss after mini-batch
                       1661: 0.003
Loss after mini-batch
                       1671: 0.003
Loss after mini-batch
                       1681: 0.002
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.002
                       1711: 0.003
Loss after mini-batch
Loss after mini-batch
                       1721: 0.002
Loss after mini-batch
                       1731: 0.003
Loss after mini-batch
                       1741: 0.002
Loss after mini-batch
                       1751: 0.002
Loss after mini-batch
                       1761: 0.002
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.002
Loss after mini-batch
                       1821: 0.003
                       1831: 0.002
Loss after mini-batch
Loss after mini-batch
                       1841: 0.001
                       1851: 0.001
Loss after mini-batch
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.002
Loss after mini-batch
                       1891: 0.002
Loss after mini-batch
                       1901: 0.003
Loss after mini-batch
                       1911: 0.004
Loss after mini-batch 1921: 0.004
```

```
Loss after mini-batch 1931: 0.002
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.003
Loss after mini-batch
                       1961: 0.002
Loss after mini-batch
                       1971: 0.002
Loss after mini-batch
                       1981: 0.002
Loss after mini-batch
                       1991: 0.002
Loss after mini-batch
                       2001: 0.002
Loss after mini-batch
                       2011: 0.003
Loss after mini-batch
                       2021: 0.005
Loss after mini-batch
                       2031: 0.003
Loss after mini-batch
                       2041: 0.003
                       2051: 0.003
Loss after mini-batch
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.002
Loss after mini-batch
                       2091: 0.001
                       2101: 0.001
Loss after mini-batch
Loss after mini-batch
                       2111: 0.002
Loss after mini-batch
                       2121: 0.002
Loss after mini-batch
                       2131: 0.002
Loss after mini-batch
                       2141: 0.002
Loss after mini-batch 2151: 0.002
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.002
Loss after mini-batch
                       2191: 0.002
Loss after mini-batch
                       2201: 0.002
Loss after mini-batch
                       2211: 0.002
Loss after mini-batch
                       2221: 0.003
Loss after mini-batch
                       2231: 0.002
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.002
Loss after mini-batch
                       2261: 0.002
Loss after mini-batch
                       2271: 0.002
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
                       2331: 0.001
Loss after mini-batch
                       2341: 0.002
Loss after mini-batch
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.002
Loss after mini-batch
                       2371: 0.002
Loss after mini-batch
                       2381: 0.002
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch 2401: 0.002
```

```
Loss after mini-batch 2411: 0.002
Loss after mini-batch 2421: 0.002
Loss after mini-batch 2431: 0.002
Loss after mini-batch 2441: 0.001
Loss after mini-batch 2451: 0.002
Loss after mini-batch 2461: 0.001
Loss after mini-batch 2471: 0.002
Loss after mini-batch 2481: 0.001
Loss after mini-batch 2491: 0.002
Loss after mini-batch 2501: 0.002
                      2511: 0.001
Loss after mini-batch
Loss after mini-batch
                      2521: 0.002
Loss after mini-batch
                      2531: 0.001
Loss after mini-batch
                      2541: 0.002
Loss after mini-batch
                      2551: 0.001
Loss after mini-batch
                      2561: 0.002
Loss after mini-batch
                      2571: 0.001
Loss after mini-batch
                      2581: 0.001
Loss after mini-batch 2591: 0.003
Loss after mini-batch 2601: 0.001
Loss after mini-batch
                      2611: 0.001
                      2621: 0.003
Loss after mini-batch
Loss after mini-batch 2631: 0.002
Loss after mini-batch
                      2641: 0.002
Loss after mini-batch
                      2651: 0.003
Loss after mini-batch
                      2661: 0.002
Loss after mini-batch
                      2671: 0.002
Loss after mini-batch
                      2681: 0.002
Loss after mini-batch
                      2691: 0.001
Loss after mini-batch
                     2701: 0.003
Loss after mini-batch 2711: 0.002
Loss after mini-batch 2721: 0.002
Loss after mini-batch 2731: 0.002
Loss after mini-batch 2741: 0.001
Loss after mini-batch 2751: 0.003
Loss after mini-batch 2761: 0.003
Loss after mini-batch 2771: 0.002
Loss after mini-batch 2781: 0.002
Loss after mini-batch 2791: 0.002
Loss after mini-batch 2801: 0.002
Loss after mini-batch
                      2811: 0.004
Starting epoch 3
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.003
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                        31: 0.002
Loss after mini-batch
                        41: 0.001
Loss after mini-batch
                        51: 0.001
```

Loss	after	${\tt mini-batch}$	61:	0.002
Loss	after	${\tt mini-batch}$	71:	0.002
Loss	after	${\tt mini-batch}$	81:	0.001
Loss	after	${\tt mini-batch}$	91:	0.002
Loss	after	${\tt mini-batch}$	101:	0.002
Loss	after	${\tt mini-batch}$	111:	0.001
Loss	after	${\tt mini-batch}$	121:	0.001
Loss	after	mini-batch	131:	0.001
Loss	after	mini-batch	141:	0.001
Loss	after	mini-batch	151:	0.001
Loss	after	mini-batch	161:	0.001
Loss	after	mini-batch	171:	0.002
Loss	after	mini-batch	181:	0.002
Loss	after	mini-batch	191:	0.002
Loss	after	mini-batch	201:	0.002
Loss	after	mini-batch	211:	0.003
Loss	after	mini-batch	221:	0.003
Loss	after	mini-batch	231:	0.002
Loss	after	mini-batch	241:	0.004
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.002
Loss	after	mini-batch	271:	0.002
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.002
Loss	after	mini-batch	301:	0.002
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.002
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.003
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.002
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.002
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.002
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.003
Loss	after	mini-batch	451:	0.002
Loss	after	mini-batch	461:	0.002
Loss	after	mini-batch	471:	0.002
Loss	after	mini-batch	481:	0.002
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.003
Loss	after	mini-batch	521:	0.002
Loss	after	mini-batch	531:	0.002

```
Loss after mini-batch
                        541: 0.002
Loss after mini-batch
                        551: 0.001
Loss after mini-batch
                        561: 0.001
Loss after mini-batch
                        571: 0.001
Loss after mini-batch
                        581: 0.002
Loss after mini-batch
                        591: 0.002
Loss after mini-batch
                        601: 0.002
                        611: 0.001
Loss after mini-batch
Loss after mini-batch
                        621: 0.003
Loss after mini-batch
                        631: 0.001
Loss after mini-batch
                        641: 0.001
Loss after mini-batch
                        651: 0.001
Loss after mini-batch
                        661: 0.001
Loss after mini-batch
                        671: 0.002
Loss after mini-batch
                        681: 0.001
Loss after mini-batch
                        691: 0.002
Loss after mini-batch
                        701: 0.002
Loss after mini-batch
                        711: 0.001
Loss after mini-batch
                        721: 0.002
Loss after mini-batch
                        731: 0.002
Loss after mini-batch
                        741: 0.002
Loss after mini-batch
                        751: 0.001
Loss after mini-batch
                        761: 0.002
Loss after mini-batch
                        771: 0.001
Loss after mini-batch
                        781: 0.001
Loss after mini-batch
                        791: 0.003
Loss after mini-batch
                        801: 0.002
Loss after mini-batch
                        811: 0.003
Loss after mini-batch
                        821: 0.002
Loss after mini-batch
                        831: 0.002
Loss after mini-batch
                        841: 0.002
Loss after mini-batch
                        851: 0.002
Loss after mini-batch
                        861: 0.001
Loss after mini-batch
                        871: 0.001
Loss after mini-batch
                        881: 0.002
Loss after mini-batch
                        891: 0.002
Loss after mini-batch
                        901: 0.002
Loss after mini-batch
                        911: 0.002
                        921: 0.002
Loss after mini-batch
Loss after mini-batch
                        931: 0.002
Loss after mini-batch
                        941: 0.001
Loss after mini-batch
                        951: 0.001
Loss after mini-batch
                        961: 0.002
Loss after mini-batch
                        971: 0.002
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.002
Loss after mini-batch
                       1011: 0.001
```

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1021: 0.001
Loss after mini-batch
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.003
Loss after mini-batch
                       1101: 0.002
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.002
                       1141: 0.002
Loss after mini-batch
Loss after mini-batch
                       1151: 0.002
Loss after mini-batch
                       1161: 0.004
Loss after mini-batch
                       1171: 0.002
Loss after mini-batch
                       1181: 0.002
Loss after mini-batch
                       1191: 0.002
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.002
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.002
Loss after mini-batch
                       1241: 0.002
Loss after mini-batch
                       1251: 0.003
Loss after mini-batch
                       1261: 0.002
Loss after mini-batch
                       1271: 0.001
                       1281: 0.002
Loss after mini-batch
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
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                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
                       1401: 0.002
Loss after mini-batch
Loss after mini-batch
                       1411: 0.002
                       1421: 0.002
Loss after mini-batch
                       1431: 0.003
Loss after mini-batch
Loss after mini-batch
                       1441: 0.002
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch 1491: 0.001
```

```
1501: 0.002
Loss after mini-batch
Loss after mini-batch
                       1511: 0.002
Loss after mini-batch
                       1521: 0.003
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.002
Loss after mini-batch
                       1551: 0.002
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.003
Loss after mini-batch
                       1601: 0.002
Loss after mini-batch
                       1611: 0.002
                       1621: 0.002
Loss after mini-batch
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.002
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.002
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.002
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.002
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.002
Loss after mini-batch
                       1801: 0.002
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.002
Loss after mini-batch
                       1831: 0.002
Loss after mini-batch
                       1841: 0.002
Loss after mini-batch
                       1851: 0.003
Loss after mini-batch
                       1861: 0.002
Loss after mini-batch
                       1871: 0.001
                       1881: 0.002
Loss after mini-batch
Loss after mini-batch
                       1891: 0.002
                       1901: 0.002
Loss after mini-batch
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.003
Loss after mini-batch
                       1931: 0.002
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.002
Loss after mini-batch 1971: 0.001
```

```
1981: 0.001
Loss after mini-batch
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.002
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
                       2031: 0.001
Loss after mini-batch
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.002
Loss after mini-batch
                       2081: 0.002
Loss after mini-batch
                       2091: 0.001
                       2101: 0.001
Loss after mini-batch
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.002
Loss after mini-batch
                       2141: 0.002
                       2151: 0.002
Loss after mini-batch
Loss after mini-batch
                       2161: 0.002
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch 2201: 0.002
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.003
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.002
Loss after mini-batch
                       2281: 0.002
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.002
Loss after mini-batch
                       2331: 0.002
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.002
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.002
                       2381: 0.002
Loss after mini-batch
                       2391: 0.002
Loss after mini-batch
Loss after mini-batch
                       2401: 0.002
Loss after mini-batch
                       2411: 0.000
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch 2441: 0.001
Loss after mini-batch 2451: 0.001
```

```
Loss after mini-batch 2461: 0.001
Loss after mini-batch
                       2471: 0.002
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.002
Loss after mini-batch
                       2521: 0.002
Loss after mini-batch
                       2531: 0.003
                       2541: 0.003
Loss after mini-batch
Loss after mini-batch
                       2551: 0.002
                       2561: 0.001
Loss after mini-batch
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.002
Loss after mini-batch
                       2591: 0.002
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.002
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.002
Loss after mini-batch
                       2671: 0.002
Loss after mini-batch
                       2681: 0.003
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.002
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.003
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.002
Loss after mini-batch
                       2761: 0.003
Loss after mini-batch
                       2771: 0.003
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.003
Loss after mini-batch
                       2811: 0.004
Starting epoch 4
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.002
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.002
                         61: 0.001
Loss after mini-batch
Loss after mini-batch
                         71: 0.002
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
```

Loss	after	${\tt mini-batch}$	111:	0.001
Loss	after	${\tt mini-batch}$	121:	0.001
Loss	after	${\tt mini-batch}$	131:	0.001
Loss	after	${\tt mini-batch}$	141:	0.001
Loss	after	${\tt mini-batch}$	151:	0.002
Loss	after	${\tt mini-batch}$	161:	0.001
Loss	after	${\tt mini-batch}$	171:	0.001
Loss	after	${\tt mini-batch}$	181:	0.001
Loss	after	${\tt mini-batch}$	191:	0.001
Loss	after	${\tt mini-batch}$	201:	0.001
Loss	after	${\tt mini-batch}$	211:	0.002
Loss	after	${\tt mini-batch}$	221:	0.001
Loss	after	${\tt mini-batch}$	231:	0.002
Loss	after	${\tt mini-batch}$	241:	0.002
Loss	after	${\tt mini-batch}$	251:	0.002
Loss	after	${\tt mini-batch}$	261:	0.002
Loss	after	${\tt mini-batch}$	271:	0.003
Loss	after	${\tt mini-batch}$	281:	0.002
Loss	after	${\tt mini-batch}$	291:	0.001
Loss	after	${\tt mini-batch}$	301:	0.002
Loss	after	${\tt mini-batch}$	311:	0.001
Loss	after	${\tt mini-batch}$	321:	0.002
Loss	after	${\tt mini-batch}$	331:	0.003
Loss	after	${\tt mini-batch}$	341:	0.001
Loss	after	${\tt mini-batch}$	351:	0.001
Loss	after	${\tt mini-batch}$	361:	0.001
Loss	after	${\tt mini-batch}$	371:	0.002
Loss	after	${\tt mini-batch}$	381:	0.001
Loss	after	${\tt mini-batch}$	391:	0.001
Loss	after	${\tt mini-batch}$	401:	0.001
Loss	after	${\tt mini-batch}$	411:	0.002
Loss	after	${\tt mini-batch}$	421:	0.001
Loss	after	${\tt mini-batch}$	431:	0.002
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.002
Loss	after	${\tt mini-batch}$	501:	0.002
Loss	after	${\tt mini-batch}$	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.002
Loss	after	mini-batch	571:	0.001
Loss	after	${\tt mini-batch}$	581:	0.001

```
Loss after mini-batch
                         591: 0.001
Loss after mini-batch
                         601: 0.002
Loss after mini-batch
                         611: 0.001
Loss after mini-batch
                         621: 0.001
Loss after mini-batch
                         631: 0.001
Loss after mini-batch
                         641: 0.001
Loss after mini-batch
                         651: 0.001
                         661: 0.001
Loss after mini-batch
Loss after mini-batch
                         671: 0.002
Loss after mini-batch
                         681: 0.001
Loss after mini-batch
                         691: 0.001
Loss after mini-batch
                         701: 0.001
Loss after mini-batch
                         711: 0.002
Loss after mini-batch
                        721: 0.001
Loss after mini-batch
                         731: 0.003
Loss after mini-batch
                         741: 0.003
Loss after mini-batch
                        751: 0.001
Loss after mini-batch
                        761: 0.001
Loss after mini-batch
                         771: 0.001
Loss after mini-batch
                         781: 0.002
Loss after mini-batch
                         791: 0.001
Loss after mini-batch
                         801: 0.002
Loss after mini-batch
                         811: 0.001
Loss after mini-batch
                         821: 0.001
Loss after mini-batch
                         831: 0.001
Loss after mini-batch
                         841: 0.001
Loss after mini-batch
                         851: 0.001
Loss after mini-batch
                         861: 0.001
Loss after mini-batch
                         871: 0.002
Loss after mini-batch
                         881: 0.002
Loss after mini-batch
                         891: 0.001
Loss after mini-batch
                         901: 0.001
Loss after mini-batch
                         911: 0.001
Loss after mini-batch
                         921: 0.001
Loss after mini-batch
                         931: 0.002
Loss after mini-batch
                         941: 0.002
Loss after mini-batch
                         951: 0.000
Loss after mini-batch
                         961: 0.001
                         971: 0.001
Loss after mini-batch
Loss after mini-batch
                         981: 0.002
Loss after mini-batch
                        991: 0.002
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.002
Loss after mini-batch 1061: 0.001
```

```
1071: 0.002
Loss after mini-batch
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
                       1191: 0.001
Loss after mini-batch
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.000
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.003
Loss after mini-batch
                       1271: 0.002
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.002
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.002
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.002
Loss after mini-batch
                       1401: 0.002
Loss after mini-batch
                       1411: 0.003
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
                       1451: 0.002
Loss after mini-batch
Loss after mini-batch
                       1461: 0.001
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.003
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch 1541: 0.001
```

```
1551: 0.002
Loss after mini-batch
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
                       1671: 0.001
Loss after mini-batch
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.002
Loss after mini-batch
                       1731: 0.002
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.002
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.002
Loss after mini-batch
                       1821: 0.002
Loss after mini-batch
                       1831: 0.004
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.002
Loss after mini-batch
                       1901: 0.002
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
                       1931: 0.001
Loss after mini-batch
Loss after mini-batch
                       1941: 0.002
                       1951: 0.002
Loss after mini-batch
Loss after mini-batch
                       1961: 0.002
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch 2021: 0.001
```

```
Loss after mini-batch 2031: 0.002
Loss after mini-batch
                      2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                      2071: 0.001
                       2081: 0.001
Loss after mini-batch
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch 2101: 0.002
Loss after mini-batch
                      2111: 0.002
Loss after mini-batch
                      2121: 0.001
Loss after mini-batch
                      2131: 0.001
Loss after mini-batch
                       2141: 0.002
                       2151: 0.002
Loss after mini-batch
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                      2181: 0.001
Loss after mini-batch
                      2191: 0.001
                       2201: 0.001
Loss after mini-batch
Loss after mini-batch
                      2211: 0.000
Loss after mini-batch
                      2221: 0.001
                      2231: 0.001
Loss after mini-batch
Loss after mini-batch
                      2241: 0.001
Loss after mini-batch 2251: 0.001
Loss after mini-batch
                      2261: 0.000
Loss after mini-batch
                      2271: 0.001
Loss after mini-batch
                      2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                      2321: 0.002
Loss after mini-batch
                      2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                      2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                      2391: 0.002
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                      2411: 0.001
Loss after mini-batch 2421: 0.001
Loss after mini-batch 2431: 0.002
                      2441: 0.002
Loss after mini-batch
Loss after mini-batch
                      2451: 0.002
Loss after mini-batch
                      2461: 0.001
Loss after mini-batch
                      2471: 0.002
Loss after mini-batch
                      2481: 0.001
Loss after mini-batch 2491: 0.001
Loss after mini-batch 2501: 0.001
```

```
Loss after mini-batch 2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.002
Loss after mini-batch
                       2541: 0.002
Loss after mini-batch
                       2551: 0.003
                       2561: 0.003
Loss after mini-batch
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.002
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.002
Loss after mini-batch
                       2691: 0.002
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.002
Loss after mini-batch
                       2721: 0.002
Loss after mini-batch 2731: 0.002
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.002
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.002
Loss after mini-batch
                       2801: 0.003
Loss after mini-batch
                       2811: 0.001
Starting epoch 5
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.002
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.002
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.001
Loss after mini-batch
                        151: 0.002
```

Loss	after	${\tt mini-batch}$	161:	0.001
Loss	after	${\tt mini-batch}$	171:	0.001
Loss	after	${\tt mini-batch}$	181:	0.001
Loss	after	${\tt mini-batch}$	191:	0.001
Loss	after	${\tt mini-batch}$	201:	0.001
Loss	after	${\tt mini-batch}$	211:	0.002
Loss	after	${\tt mini-batch}$	221:	0.001
Loss	after	${\tt mini-batch}$	231:	0.001
Loss	after	${\tt mini-batch}$	241:	0.001
Loss	after	${\tt mini-batch}$	251:	0.001
Loss	after	${\tt mini-batch}$	261:	0.001
Loss	after	${\tt mini-batch}$	271:	0.001
Loss	after	${\tt mini-batch}$	281:	0.001
Loss	after	${\tt mini-batch}$	291:	0.001
Loss	after	${\tt mini-batch}$	301:	0.002
Loss	after	mini-batch	311:	0.002
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.002
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.002
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.002
Loss	after	mini-batch	511:	0.002
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.002
Loss	after	mini-batch	591:	
Loss	after	mini-batch	601:	0.002
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	

```
Loss after mini-batch
                        641: 0.001
Loss after mini-batch
                        651: 0.001
Loss after mini-batch
                        661: 0.001
Loss after mini-batch
                        671: 0.001
Loss after mini-batch
                        681: 0.001
Loss after mini-batch
                        691: 0.001
Loss after mini-batch
                        701: 0.001
                        711: 0.001
Loss after mini-batch
Loss after mini-batch
                        721: 0.002
Loss after mini-batch
                        731: 0.002
Loss after mini-batch
                        741: 0.001
Loss after mini-batch
                        751: 0.001
Loss after mini-batch
                        761: 0.001
Loss after mini-batch
                        771: 0.002
Loss after mini-batch
                        781: 0.001
Loss after mini-batch
                        791: 0.001
Loss after mini-batch
                        801: 0.001
Loss after mini-batch
                        811: 0.001
Loss after mini-batch
                        821: 0.001
Loss after mini-batch
                        831: 0.001
Loss after mini-batch
                        841: 0.001
Loss after mini-batch
                        851: 0.001
Loss after mini-batch
                        861: 0.001
Loss after mini-batch
                        871: 0.000
Loss after mini-batch
                        881: 0.001
Loss after mini-batch
                        891: 0.001
Loss after mini-batch
                        901: 0.001
Loss after mini-batch
                        911: 0.001
Loss after mini-batch
                        921: 0.001
Loss after mini-batch
                        931: 0.001
Loss after mini-batch
                        941: 0.001
Loss after mini-batch
                        951: 0.001
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.003
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
                       1021: 0.002
Loss after mini-batch
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.000
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch 1111: 0.001
```

```
Loss after mini-batch 1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.000
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.002
Loss after mini-batch
                       1211: 0.002
Loss after mini-batch
                       1221: 0.002
Loss after mini-batch
                       1231: 0.002
                       1241: 0.004
Loss after mini-batch
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.002
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.002
Loss after mini-batch
                       1311: 0.002
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.002
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
                       1381: 0.001
Loss after mini-batch
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.002
                       1501: 0.001
Loss after mini-batch
Loss after mini-batch
                       1511: 0.001
                       1521: 0.001
Loss after mini-batch
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.002
Loss after mini-batch
                       1571: 0.002
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch 1591: 0.001
```

```
1601: 0.002
Loss after mini-batch
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.000
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.002
Loss after mini-batch
                       1681: 0.002
Loss after mini-batch
                       1691: 0.002
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
                       1721: 0.002
Loss after mini-batch
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.000
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
                       1801: 0.000
Loss after mini-batch
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.000
Loss after mini-batch
                       1841: 0.002
Loss after mini-batch
                       1851: 0.001
                       1861: 0.001
Loss after mini-batch
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.002
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.002
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
                       1981: 0.001
Loss after mini-batch
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.002
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.002
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch 2071: 0.001
```

```
Loss after mini-batch 2081: 0.001
Loss after mini-batch 2091: 0.002
Loss after mini-batch
                      2101: 0.001
Loss after mini-batch
                      2111: 0.001
Loss after mini-batch 2121: 0.002
                      2131: 0.001
Loss after mini-batch
Loss after mini-batch 2141: 0.002
Loss after mini-batch 2151: 0.001
Loss after mini-batch 2161: 0.001
Loss after mini-batch
                      2171: 0.001
Loss after mini-batch
                      2181: 0.001
Loss after mini-batch
                      2191: 0.001
                      2201: 0.001
Loss after mini-batch
Loss after mini-batch
                      2211: 0.001
Loss after mini-batch
                      2221: 0.001
Loss after mini-batch
                     2231: 0.001
Loss after mini-batch
                      2241: 0.001
Loss after mini-batch
                      2251: 0.001
Loss after mini-batch
                      2261: 0.001
Loss after mini-batch
                      2271: 0.001
                      2281: 0.001
Loss after mini-batch
Loss after mini-batch
                      2291: 0.001
Loss after mini-batch 2301: 0.001
Loss after mini-batch
                      2311: 0.001
Loss after mini-batch
                      2321: 0.000
Loss after mini-batch
                      2331: 0.001
Loss after mini-batch
                      2341: 0.001
Loss after mini-batch
                      2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                      2371: 0.000
Loss after mini-batch
                      2381: 0.001
Loss after mini-batch
                      2391: 0.001
Loss after mini-batch
                      2401: 0.001
Loss after mini-batch
                      2411: 0.001
Loss after mini-batch
                      2421: 0.001
Loss after mini-batch
                      2431: 0.002
Loss after mini-batch 2441: 0.002
Loss after mini-batch
                      2451: 0.001
Loss after mini-batch
                      2461: 0.001
Loss after mini-batch 2471: 0.001
Loss after mini-batch 2481: 0.001
Loss after mini-batch
                      2491: 0.001
Loss after mini-batch
                      2501: 0.001
Loss after mini-batch
                      2511: 0.002
Loss after mini-batch
                      2521: 0.001
Loss after mini-batch
                      2531: 0.002
Loss after mini-batch 2541: 0.001
Loss after mini-batch 2551: 0.001
```

```
Loss after mini-batch 2561: 0.001
Loss after mini-batch 2571: 0.000
Loss after mini-batch
                      2581: 0.001
Loss after mini-batch 2591: 0.002
Loss after mini-batch 2601: 0.001
Loss after mini-batch 2611: 0.001
Loss after mini-batch 2621: 0.001
Loss after mini-batch 2631: 0.001
Loss after mini-batch 2641: 0.001
Loss after mini-batch
                      2651: 0.002
Loss after mini-batch
                      2661: 0.002
Loss after mini-batch
                      2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                      2701: 0.001
Loss after mini-batch 2711: 0.001
Loss after mini-batch 2721: 0.001
Loss after mini-batch 2731: 0.001
Loss after mini-batch 2741: 0.001
Loss after mini-batch 2751: 0.001
Loss after mini-batch 2761: 0.002
Loss after mini-batch 2771: 0.001
Loss after mini-batch 2781: 0.001
Loss after mini-batch 2791: 0.001
Loss after mini-batch 2801: 0.001
Loss after mini-batch 2811: 0.001
Starting epoch 6
Loss after mini-batch
                          1: 0.000
                         11: 0.001
Loss after mini-batch
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.002
Loss after mini-batch
                         61: 0.001
                         71: 0.002
Loss after mini-batch
Loss after mini-batch
                         81: 0.002
Loss after mini-batch
                         91: 0.002
Loss after mini-batch
                        101: 0.002
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.001
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.001
Loss after mini-batch
                        171: 0.000
Loss after mini-batch
                        181: 0.001
Loss after mini-batch
                        191: 0.001
Loss after mini-batch
                        201: 0.000
```

Loss	after	${\tt mini-batch}$	211:	0.000
Loss	after	${\tt mini-batch}$	221:	0.001
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.002
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.002
Loss	after	mini-batch	291:	0.002
Loss	after	mini-batch	301:	0.002
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.000
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.002
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.002
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.002
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.002
Loss	after	mini-batch	571:	0.002
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.002
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.002
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.002
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001

```
Loss after mini-batch
                        691: 0.001
Loss after mini-batch
                        701: 0.001
Loss after mini-batch
                        711: 0.001
Loss after mini-batch
                        721: 0.001
Loss after mini-batch
                        731: 0.001
Loss after mini-batch
                        741: 0.001
Loss after mini-batch
                        751: 0.001
Loss after mini-batch
                        761: 0.001
Loss after mini-batch
                        771: 0.001
Loss after mini-batch
                        781: 0.001
Loss after mini-batch
                        791: 0.002
Loss after mini-batch
                        801: 0.001
Loss after mini-batch
                        811: 0.000
Loss after mini-batch
                        821: 0.000
Loss after mini-batch
                        831: 0.002
Loss after mini-batch
                        841: 0.002
Loss after mini-batch
                        851: 0.001
Loss after mini-batch
                        861: 0.001
Loss after mini-batch
                        871: 0.001
Loss after mini-batch
                        881: 0.002
Loss after mini-batch
                        891: 0.001
Loss after mini-batch
                        901: 0.002
Loss after mini-batch
                        911: 0.002
Loss after mini-batch
                        921: 0.001
Loss after mini-batch
                        931: 0.000
Loss after mini-batch
                        941: 0.002
Loss after mini-batch
                        951: 0.001
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.002
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
                       1071: 0.001
Loss after mini-batch
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch 1161: 0.001
```

```
Loss after mini-batch 1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.002
Loss after mini-batch
                       1211: 0.000
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.000
Loss after mini-batch
                       1241: 0.000
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.000
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
                       1291: 0.000
Loss after mini-batch
Loss after mini-batch
                       1301: 0.000
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.000
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.000
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
                       1431: 0.001
Loss after mini-batch
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.000
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
                       1551: 0.002
Loss after mini-batch
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.000
Loss after mini-batch 1641: 0.001
```

```
1651: 0.001
Loss after mini-batch
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.000
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
                       1771: 0.003
Loss after mini-batch
Loss after mini-batch
                       1781: 0.002
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.002
Loss after mini-batch
                       1841: 0.000
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.000
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
                       1911: 0.000
Loss after mini-batch
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.002
Loss after mini-batch
                       1991: 0.002
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
                       2031: 0.001
Loss after mini-batch
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.002
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch 2121: 0.001
```

```
Loss after mini-batch 2131: 0.001
Loss after mini-batch 2141: 0.002
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch 2171: 0.001
                       2181: 0.001
Loss after mini-batch
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch 2201: 0.001
Loss after mini-batch 2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
                       2251: 0.001
Loss after mini-batch
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
                       2301: 0.000
Loss after mini-batch
Loss after mini-batch
                       2311: 0.002
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.002
Loss after mini-batch
                       2381: 0.003
Loss after mini-batch
                       2391: 0.002
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.002
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.002
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.000
                       2531: 0.000
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
Loss after mini-batch
                       2551: 0.000
Loss after mini-batch
                       2561: 0.002
Loss after mini-batch
                       2571: 0.002
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch 2601: 0.001
```

```
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
                       2711: 0.001
Loss after mini-batch
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.003
Loss after mini-batch
                       2781: 0.002
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 7
Loss after mini-batch
                           1: 0.000
Loss after mini-batch
                          11: 0.001
Loss after mini-batch
                         21: 0.002
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.002
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.000
Loss after mini-batch
                        111: 0.000
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                         141: 0.001
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.000
Loss after mini-batch
                         171: 0.001
Loss after mini-batch
                        181: 0.001
Loss after mini-batch
                        191: 0.000
Loss after mini-batch
                        201: 0.001
Loss after mini-batch
                        211: 0.001
Loss after mini-batch
                        221: 0.001
Loss after mini-batch
                        231: 0.001
Loss after mini-batch
                        241: 0.001
Loss after mini-batch
                        251: 0.002
```

Loss	after	${\tt mini-batch}$	261:	0.001
Loss	after	${\tt mini-batch}$	271:	0.001
Loss	after	${\tt mini-batch}$	281:	0.001
Loss	after	${\tt mini-batch}$	291:	0.001
Loss	after	${\tt mini-batch}$	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.000
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.002
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.002
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.002
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.002
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.002
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001

```
Loss after mini-batch
                        741: 0.000
Loss after mini-batch
                        751: 0.001
Loss after mini-batch
                        761: 0.001
Loss after mini-batch
                        771: 0.001
Loss after mini-batch
                        781: 0.000
Loss after mini-batch
                        791: 0.001
Loss after mini-batch
                        801: 0.001
Loss after mini-batch
                        811: 0.001
Loss after mini-batch
                        821: 0.001
Loss after mini-batch
                        831: 0.001
Loss after mini-batch
                        841: 0.002
Loss after mini-batch
                        851: 0.000
Loss after mini-batch
                        861: 0.001
Loss after mini-batch
                        871: 0.001
Loss after mini-batch
                        881: 0.001
Loss after mini-batch
                        891: 0.001
Loss after mini-batch
                        901: 0.001
Loss after mini-batch
                        911: 0.001
Loss after mini-batch
                        921: 0.001
Loss after mini-batch
                        931: 0.001
Loss after mini-batch
                        941: 0.002
Loss after mini-batch
                        951: 0.001
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.002
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.000
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
                       1121: 0.001
Loss after mini-batch
Loss after mini-batch
                       1131: 0.002
Loss after mini-batch
                       1141: 0.002
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.002
Loss after mini-batch
                       1181: 0.002
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.000
Loss after mini-batch 1211: 0.001
```

```
1221: 0.001
Loss after mini-batch
Loss after mini-batch
                       1231: 0.002
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.000
                       1341: 0.001
Loss after mini-batch
Loss after mini-batch
                       1351: 0.000
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.000
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
                       1481: 0.001
Loss after mini-batch
Loss after mini-batch
                       1491: 0.000
Loss after mini-batch
                       1501: 0.002
Loss after mini-batch
                       1511: 0.002
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.002
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
                       1601: 0.001
Loss after mini-batch
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.002
Loss after mini-batch
                       1631: 0.002
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch 1691: 0.001
```

```
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.000
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.002
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
                       1821: 0.001
Loss after mini-batch
Loss after mini-batch
                       1831: 0.000
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.000
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.000
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.002
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.002
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
                       2081: 0.001
Loss after mini-batch
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.002
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.000
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.003
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch 2171: 0.001
```

```
Loss after mini-batch 2181: 0.002
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.002
Loss after mini-batch
                       2211: 0.002
Loss after mini-batch
                       2221: 0.001
                       2231: 0.001
Loss after mini-batch
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch 2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.000
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.000
                       2301: 0.001
Loss after mini-batch
Loss after mini-batch
                       2311: 0.002
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.002
Loss after mini-batch
                       2341: 0.002
                       2351: 0.000
Loss after mini-batch
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.000
Loss after mini-batch
                       2391: 0.002
Loss after mini-batch
                       2401: 0.002
Loss after mini-batch
                       2411: 0.002
Loss after mini-batch
                       2421: 0.002
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.003
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
                       2581: 0.000
Loss after mini-batch
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.002
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch 2651: 0.002
```

```
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.000
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.000
Loss after mini-batch
                       2731: 0.000
Loss after mini-batch 2741: 0.001
Loss after mini-batch
                       2751: 0.000
                       2761: 0.001
Loss after mini-batch
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 8
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.000
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.002
Loss after mini-batch
                        141: 0.001
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.001
Loss after mini-batch
                        171: 0.002
Loss after mini-batch
                        181: 0.001
Loss after mini-batch
                        191: 0.001
Loss after mini-batch
                        201: 0.001
Loss after mini-batch
                        211: 0.001
Loss after mini-batch
                        221: 0.001
Loss after mini-batch
                        231: 0.001
Loss after mini-batch
                        241: 0.001
Loss after mini-batch
                        251: 0.001
Loss after mini-batch
                        261: 0.001
Loss after mini-batch
                        271: 0.002
Loss after mini-batch
                        281: 0.002
Loss after mini-batch
                        291: 0.001
Loss after mini-batch
                        301: 0.001
```

Loss	after	${\tt mini-batch}$	311:	0.001
Loss	after	${\tt mini-batch}$	321:	0.000
Loss	after	${\tt mini-batch}$	331:	0.000
Loss	after	${\tt mini-batch}$	341:	0.001
Loss	after	${\tt mini-batch}$	351:	0.001
Loss	after	${\tt mini-batch}$	361:	0.001
Loss	after	${\tt mini-batch}$	371:	0.001
Loss	after	${\tt mini-batch}$	381:	0.001
Loss	after	${\tt mini-batch}$	391:	0.001
Loss	after	${\tt mini-batch}$	401:	0.002
Loss	after	${\tt mini-batch}$	411:	0.001
Loss	after	${\tt mini-batch}$	421:	0.001
Loss	after	${\tt mini-batch}$	431:	0.001
Loss	after	${\tt mini-batch}$	441:	0.000
Loss	after	${\tt mini-batch}$	451:	0.001
Loss	after	${\tt mini-batch}$	461:	0.001
Loss	after	${\tt mini-batch}$	471:	0.001
Loss	after	${\tt mini-batch}$	481:	0.002
Loss	after	${\tt mini-batch}$	491:	0.001
Loss	after	${\tt mini-batch}$	501:	0.001
Loss	after	${\tt mini-batch}$	511:	0.001
Loss	after	${\tt mini-batch}$	521:	0.001
Loss	after	${\tt mini-batch}$	531:	0.001
Loss	after	${\tt mini-batch}$	541:	0.001
Loss	after	${\tt mini-batch}$	551:	0.001
Loss	after	${\tt mini-batch}$	561:	0.001
Loss	after	${\tt mini-batch}$	571:	0.001
Loss	after	${\tt mini-batch}$	581:	0.000
Loss	after	${\tt mini-batch}$	591:	0.001
Loss	after	${\tt mini-batch}$	601:	0.001
Loss	after	${\tt mini-batch}$	611:	0.001
Loss	after	${\tt mini-batch}$	621:	0.001
Loss	after	${\tt mini-batch}$	631:	0.001
Loss	after	${\tt mini-batch}$	641:	0.001
Loss	after	${\tt mini-batch}$	651:	0.001
Loss	after	${\tt mini-batch}$	661:	0.001
Loss	after	${\tt mini-batch}$	671:	0.001
Loss	after	${\tt mini-batch}$	681:	0.002
Loss	after	${\tt mini-batch}$	691:	0.002
Loss	after	${\tt mini-batch}$	701:	0.001
Loss	after	${\tt mini-batch}$	711:	0.001
Loss	after	${\tt mini-batch}$	721:	0.001
Loss	after	${\tt mini-batch}$	731:	0.001
Loss	after	${\tt mini-batch}$	741:	0.000
Loss	after	${\tt mini-batch}$	751:	0.000
Loss	after	${\tt mini-batch}$	761:	0.001
Loss	after	${\tt mini-batch}$	771:	0.001
Loss	after	${\tt mini-batch}$	781:	0.001

```
Loss after mini-batch
                        791: 0.001
Loss after mini-batch
                        801: 0.001
Loss after mini-batch
                        811: 0.001
Loss after mini-batch
                        821: 0.001
Loss after mini-batch
                        831: 0.001
Loss after mini-batch
                        841: 0.001
Loss after mini-batch
                        851: 0.001
                        861: 0.001
Loss after mini-batch
Loss after mini-batch
                        871: 0.001
Loss after mini-batch
                        881: 0.001
Loss after mini-batch
                        891: 0.001
Loss after mini-batch
                        901: 0.002
Loss after mini-batch
                        911: 0.001
Loss after mini-batch
                        921: 0.001
Loss after mini-batch
                        931: 0.001
Loss after mini-batch
                        941: 0.001
Loss after mini-batch
                        951: 0.001
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
                       1051: 0.001
Loss after mini-batch
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.000
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.002
Loss after mini-batch
                       1101: 0.002
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.002
                       1171: 0.001
Loss after mini-batch
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.002
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.000
Loss after mini-batch 1261: 0.000
```

```
1271: 0.001
Loss after mini-batch
Loss after mini-batch
                       1281: 0.000
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.000
Loss after mini-batch
                       1381: 0.000
                       1391: 0.001
Loss after mini-batch
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.002
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.000
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.000
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.002
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.002
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
                       1651: 0.000
Loss after mini-batch
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.000
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.000
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch 1741: 0.000
```

```
1751: 0.001
Loss after mini-batch
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.002
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
                       1871: 0.001
Loss after mini-batch
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.000
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.002
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
                       2011: 0.001
Loss after mini-batch
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.000
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.002
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.002
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.000
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch 2211: 0.001
Loss after mini-batch 2221: 0.001
```

```
Loss after mini-batch 2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
                       2281: 0.001
Loss after mini-batch
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
                       2351: 0.001
Loss after mini-batch
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.000
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.000
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.000
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
                       2611: 0.001
Loss after mini-batch
Loss after mini-batch
                       2621: 0.000
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.000
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch 2701: 0.000
```

```
Loss after mini-batch 2711: 0.001
Loss after mini-batch 2721: 0.002
Loss after mini-batch 2731: 0.001
Loss after mini-batch 2741: 0.001
Loss after mini-batch 2751: 0.001
Loss after mini-batch 2761: 0.001
Loss after mini-batch 2771: 0.001
Loss after mini-batch 2781: 0.001
Loss after mini-batch 2791: 0.002
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 9
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.000
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
                         81: 0.001
Loss after mini-batch
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.002
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.001
Loss after mini-batch
                        171: 0.001
Loss after mini-batch
                        181: 0.001
Loss after mini-batch
                        191: 0.002
Loss after mini-batch
                        201: 0.002
Loss after mini-batch
                        211: 0.001
Loss after mini-batch
                        221: 0.001
Loss after mini-batch
                        231: 0.001
Loss after mini-batch
                        241: 0.001
Loss after mini-batch
                        251: 0.003
Loss after mini-batch
                        261: 0.001
Loss after mini-batch
                        271: 0.001
Loss after mini-batch
                        281: 0.002
Loss after mini-batch
                        291: 0.001
Loss after mini-batch
                        301: 0.001
Loss after mini-batch
                        311: 0.002
Loss after mini-batch
                        321: 0.001
Loss after mini-batch
                        331: 0.001
Loss after mini-batch
                        341: 0.001
Loss after mini-batch
                        351: 0.001
```

Loss	after	${\tt mini-batch}$	361:	0.001
Loss	after	${\tt mini-batch}$	371:	0.002
Loss	after	${\tt mini-batch}$	381:	0.001
Loss	after	${\tt mini-batch}$	391:	0.001
Loss	after	${\tt mini-batch}$	401:	0.000
Loss	after	mini-batch	411:	0.000
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.000
Loss	after	mini-batch	461:	0.002
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.000
Loss	after	mini-batch	591:	0.000
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.000
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.000
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001

```
Loss after mini-batch
                        841: 0.001
Loss after mini-batch
                        851: 0.002
Loss after mini-batch
                        861: 0.001
Loss after mini-batch
                        871: 0.001
Loss after mini-batch
                        881: 0.001
Loss after mini-batch
                        891: 0.001
Loss after mini-batch
                        901: 0.001
Loss after mini-batch
                        911: 0.001
Loss after mini-batch
                        921: 0.001
Loss after mini-batch
                        931: 0.001
Loss after mini-batch
                        941: 0.001
Loss after mini-batch
                        951: 0.001
                        961: 0.001
Loss after mini-batch
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.002
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.000
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.002
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.000
Loss after mini-batch
                       1151: 0.000
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
                       1221: 0.001
Loss after mini-batch
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch 1311: 0.001
```

```
1321: 0.001
Loss after mini-batch
Loss after mini-batch
                       1331: 0.000
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.002
Loss after mini-batch
                       1361: 0.002
Loss after mini-batch
                       1371: 0.002
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
                       1421: 0.001
Loss after mini-batch
Loss after mini-batch
                       1431: 0.002
                       1441: 0.000
Loss after mini-batch
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.002
Loss after mini-batch
                       1481: 0.002
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.000
Loss after mini-batch
                       1521: 0.000
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.003
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.000
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
                       1701: 0.001
Loss after mini-batch
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
                       1731: 0.000
Loss after mini-batch
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch 1791: 0.000
```

```
Loss after mini-batch
                       1801: 0.000
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.000
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
                       1921: 0.001
Loss after mini-batch
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.003
                       2061: 0.002
Loss after mini-batch
Loss after mini-batch
                       2071: 0.002
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.000
Loss after mini-batch
                       2101: 0.000
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.000
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.000
Loss after mini-batch
                       2181: 0.000
Loss after mini-batch 2191: 0.001
Loss after mini-batch
                       2201: 0.002
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch 2261: 0.001
Loss after mini-batch 2271: 0.001
```

```
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.000
Loss after mini-batch
                       2321: 0.001
                       2331: 0.000
Loss after mini-batch
Loss after mini-batch
                       2341: 0.000
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
                       2401: 0.001
Loss after mini-batch
Loss after mini-batch
                       2411: 0.002
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
                       2451: 0.001
Loss after mini-batch
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.000
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.000
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.000
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
                       2681: 0.001
Loss after mini-batch
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch 2751: 0.001
```

Loss	after	mini-batch	2761:	0.001
Loss	after	mini-batch	2771:	0.002
Loss	after	mini-batch	2781:	0.002
Loss	after	mini-batch	2791:	0.002
Loss	after	mini-batch	2801:	0.001
Loss	after	mini-batch	2811:	0.001
Start	ting e	ooch 10		
Loss	after	mini-batch	1:	0.001
Loss	after	mini-batch	11:	0.002
Loss	after	mini-batch	21:	0.000
Loss	after	mini-batch	31:	0.000
Loss	after	mini-batch	41:	0.001
Loss	after	mini-batch	51:	0.001
Loss	after	mini-batch	61:	0.001
Loss	after	mini-batch	71:	0.001
Loss	after	mini-batch	81:	0.001
Loss	after	mini-batch	91:	0.001
Loss	after	mini-batch	101:	0.001
Loss	after	mini-batch	111:	0.003
Loss	after	mini-batch	121:	0.001
Loss	after	mini-batch	131:	0.001
Loss	after	mini-batch	141:	0.001
Loss	after	mini-batch	151:	0.001
Loss	after	mini-batch	161:	0.001
Loss	after	mini-batch	171:	0.001
Loss	after	mini-batch	181:	0.001
Loss	after	mini-batch	191:	0.002
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.000
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.000
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.000
Loss	after	mini-batch	341:	0.000
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.000

Loss	${\tt after}$	mini-batch	411:	0.000
Loss	${\tt after}$	mini-batch	421:	0.001
Loss	${\tt after}$	mini-batch	431:	0.001
Loss	${\tt after}$	mini-batch	441:	0.001
Loss	${\tt after}$	mini-batch	451:	0.001
Loss	${\tt after}$	mini-batch	461:	0.001
Loss	${\tt after}$	mini-batch	471:	0.002
Loss	${\tt after}$	mini-batch	481:	0.001
Loss	${\tt after}$	mini-batch	491:	0.001
Loss	${\tt after}$	mini-batch	501:	0.001
Loss	${\tt after}$	mini-batch	511:	0.000
Loss	${\tt after}$	mini-batch	521:	0.002
Loss	${\tt after}$	mini-batch	531:	0.000
Loss	${\tt after}$	mini-batch	541:	0.003
Loss	${\tt after}$	mini-batch	551:	0.002
Loss	${\tt after}$	mini-batch	561:	0.001
Loss	${\tt after}$	mini-batch	571:	0.001
Loss	${\tt after}$	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.000
Loss	after	mini-batch	611:	0.000
Loss	after	mini-batch	621:	0.001
Loss	${\tt after}$	mini-batch	631:	0.001
Loss	${\tt after}$	mini-batch	641:	0.001
Loss	${\tt after}$	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.000
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.000
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.000
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.000
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.000
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	${\tt after}$	mini-batch	881:	0.001

```
891: 0.001
Loss after mini-batch
Loss after mini-batch
                        901: 0.001
Loss after mini-batch
                        911: 0.001
Loss after mini-batch
                        921: 0.001
Loss after mini-batch
                        931: 0.000
Loss after mini-batch
                        941: 0.001
Loss after mini-batch
                        951: 0.001
                        961: 0.001
Loss after mini-batch
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.000
                       1011: 0.001
Loss after mini-batch
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.000
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
                       1091: 0.002
Loss after mini-batch
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.000
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
                       1271: 0.001
Loss after mini-batch
Loss after mini-batch
                       1281: 0.001
                       1291: 0.002
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch 1361: 0.001
```

```
1371: 0.000
Loss after mini-batch
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.000
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.000
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
                       1471: 0.000
Loss after mini-batch
Loss after mini-batch
                       1481: 0.001
                       1491: 0.001
Loss after mini-batch
Loss after mini-batch
                       1501: 0.002
Loss after mini-batch
                       1511: 0.002
Loss after mini-batch
                       1521: 0.000
Loss after mini-batch
                       1531: 0.001
                       1541: 0.000
Loss after mini-batch
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.002
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.002
Loss after mini-batch
                       1721: 0.002
Loss after mini-batch
                       1731: 0.000
Loss after mini-batch
                       1741: 0.000
                       1751: 0.001
Loss after mini-batch
Loss after mini-batch
                       1761: 0.001
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
Loss after mini-batch
                       1791: 0.003
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.002
Loss after mini-batch
                      1841: 0.001
```

```
1851: 0.001
Loss after mini-batch
Loss after mini-batch
                       1861: 0.000
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.000
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
                       1971: 0.001
Loss after mini-batch
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.004
Loss after mini-batch
                       2001: 0.002
Loss after mini-batch
                       2011: 0.001
                       2021: 0.001
Loss after mini-batch
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.000
Loss after mini-batch
                       2091: 0.000
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.000
Loss after mini-batch
                       2121: 0.000
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
                       2261: 0.001
Loss after mini-batch
                       2271: 0.002
Loss after mini-batch
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch 2321: 0.001
```

```
Loss after mini-batch 2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.000
                       2381: 0.001
Loss after mini-batch
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
                       2431: 0.001
Loss after mini-batch
Loss after mini-batch
                       2441: 0.001
                       2451: 0.002
Loss after mini-batch
Loss after mini-batch
                       2461: 0.002
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
                       2501: 0.001
Loss after mini-batch
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.000
Loss after mini-batch
                       2551: 0.002
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.000
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.000
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.000
Loss after mini-batch
                       2661: 0.000
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.000
Loss after mini-batch
                       2711: 0.000
Loss after mini-batch
                       2721: 0.001
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch 2801: 0.001
```

Loss after mini-batch 2811: 0.001 Training process has finished.

Calculate error for test

Result: 8.479282063237006e-06 Result: 2.7615405287048097e-15 Result: 1.619183970067513e-07 Calculate error for train Result: 8.695034595673081e-06 Result: 2.8894699096341713e-15 Result: 1.6507651750966625e-07 Training with 15 epochs. Starting epoch 1 Loss after mini-batch 1: 0.247 Loss after mini-batch 11: 2.121 Loss after mini-batch 21: 1.883 Loss after mini-batch 31: 1.448 Loss after mini-batch 41: 1.021 Loss after mini-batch 51: 0.736 Loss after mini-batch 61: 0.421 Loss after mini-batch 71: 0.180 Loss after mini-batch 81: 0.063 Loss after mini-batch 91: 0.017 Loss after mini-batch 101: 0.013 Loss after mini-batch 111: 0.008 Loss after mini-batch 121: 0.015 Loss after mini-batch 131: 0.009 Loss after mini-batch 141: 0.006 Loss after mini-batch 151: 0.009 Loss after mini-batch 161: 0.007 171: 0.008 Loss after mini-batch Loss after mini-batch 181: 0.005 Loss after mini-batch 191: 0.006 Loss after mini-batch 201: 0.006 Loss after mini-batch 211: 0.005 Loss after mini-batch 221: 0.007 Loss after mini-batch 231: 0.007 Loss after mini-batch 241: 0.006 Loss after mini-batch 251: 0.004 Loss after mini-batch 261: 0.006 Loss after mini-batch 271: 0.007 Loss after mini-batch 281: 0.006 Loss after mini-batch 291: 0.005 Loss after mini-batch 301: 0.004 Loss after mini-batch 311: 0.007 Loss after mini-batch 321: 0.007 Loss after mini-batch 331: 0.008 Loss after mini-batch 341: 0.006

Loss	${\tt after}$	mini-batch	351:	0.006
Loss	${\tt after}$	mini-batch	361:	0.004
Loss	${\tt after}$	mini-batch	371:	0.004
Loss	${\tt after}$	mini-batch	381:	0.005
Loss	${\tt after}$	mini-batch	391:	0.004
Loss	${\tt after}$	mini-batch	401:	0.003
Loss	${\tt after}$	mini-batch	411:	0.006
Loss	${\tt after}$	mini-batch	421:	0.007
Loss	${\tt after}$	mini-batch	431:	0.006
Loss	${\tt after}$	mini-batch	441:	0.007
Loss	${\tt after}$	mini-batch	451:	0.004
Loss	${\tt after}$	mini-batch	461:	0.005
Loss	${\tt after}$	mini-batch	471:	0.004
Loss	${\tt after}$	mini-batch	481:	0.005
Loss	${\tt after}$	mini-batch	491:	0.003
Loss	${\tt after}$	mini-batch	501:	0.005
Loss	${\tt after}$	mini-batch	511:	0.009
Loss	${\tt after}$	mini-batch	521:	0.004
Loss	after	mini-batch	531:	0.005
Loss	after	mini-batch	541:	0.004
Loss	after	mini-batch	551:	0.011
Loss	after	mini-batch	561:	0.009
Loss	${\tt after}$	mini-batch	571:	0.005
Loss	${\tt after}$	mini-batch	581:	0.005
Loss	${\tt after}$	mini-batch	591:	0.006
Loss	after	mini-batch	601:	0.005
Loss	after	mini-batch	611:	0.003
Loss	after	mini-batch	621:	0.003
Loss	after	mini-batch	631:	0.002
Loss	after	mini-batch	641:	0.003
Loss	after	mini-batch	651:	0.004
Loss	after	mini-batch	661:	0.004
Loss	after	mini-batch	671:	0.004
Loss	after	mini-batch	681:	0.003
Loss	after	mini-batch	691:	0.004
Loss	after	mini-batch	701:	0.005
Loss	after	mini-batch	711:	0.004
Loss	after	mini-batch	721:	0.006
Loss	after	mini-batch	731:	0.007
Loss	after	mini-batch	741:	0.004
Loss	after	mini-batch	751:	0.005
Loss	after	mini-batch	761:	0.003
Loss	after	mini-batch	771:	0.002
Loss	after	mini-batch	781:	0.003
Loss	after	mini-batch	791:	0.003
Loss	after	mini-batch	801:	0.004
Loss	after	mini-batch	811:	0.003
Loss	${\tt after}$	mini-batch	821:	0.005

Loss	after	mini-batch	831:	0.004
Loss	after	${\tt mini-batch}$	841:	0.003
Loss	after	${\tt mini-batch}$	851:	0.004
Loss	after	mini-batch	861:	0.002
Loss	after	mini-batch	871:	0.005
Loss	after	mini-batch	881:	0.005
Loss	after	mini-batch	891:	0.005
Loss	after	mini-batch	901:	0.004
Loss	after	mini-batch	911:	0.003
Loss	after	mini-batch	921:	0.004
Loss	after	mini-batch	931:	0.005
Loss	after	mini-batch	941:	0.003
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.003
Loss	after	mini-batch	971:	0.003
Loss	after	mini-batch	981:	0.002
Loss	after	mini-batch	991:	0.002
Loss	after	mini-batch	1001:	0.002
Loss	after	mini-batch	1011:	0.005
Loss	after	mini-batch	1021:	0.002
Loss	after	mini-batch	1031:	0.003
Loss	after	mini-batch	1041:	0.005
Loss	after	mini-batch	1051:	0.006
Loss	after	mini-batch	1061:	0.003
Loss	after	mini-batch	1071:	0.002
Loss	after	mini-batch	1081:	0.004
Loss	after	mini-batch	1091:	0.002
Loss	after	mini-batch	1101:	0.002
Loss	after	mini-batch	1111:	0.003
Loss	after	mini-batch	1121:	0.003
Loss	after	mini-batch	1131:	0.003
Loss	after	mini-batch	1141:	0.002
Loss	after	mini-batch	1151:	0.002
Loss	after	mini-batch	1161:	0.003
Loss	after	mini-batch	1171:	0.003
	after	mini-batch		0.003
	after	mini-batch	1191:	0.003
	after	mini-batch	1201:	0.005
Loss	after	mini-batch	1211:	0.003
Loss	after	mini-batch	1221:	0.003
Loss	after	mini-batch	1231:	0.004
Loss	after	mini-batch	1241:	0.004
	after	mini-batch	1251:	0.006
	after	mini-batch	1261:	
	after	mini-batch	1271:	0.004
	after	mini-batch	1281:	
Loss	after	mini-batch	1291:	
Loss	_	mini-batch	1301:	
	001			

```
1311: 0.002
Loss after mini-batch
Loss after mini-batch
                       1321: 0.003
Loss after mini-batch
                       1331: 0.004
Loss after mini-batch
                       1341: 0.003
Loss after mini-batch
                       1351: 0.003
Loss after mini-batch
                       1361: 0.002
Loss after mini-batch
                       1371: 0.002
Loss after mini-batch
                       1381: 0.002
Loss after mini-batch
                       1391: 0.004
Loss after mini-batch
                       1401: 0.005
Loss after mini-batch
                       1411: 0.005
Loss after mini-batch
                       1421: 0.002
                       1431: 0.006
Loss after mini-batch
Loss after mini-batch
                       1441: 0.004
Loss after mini-batch
                       1451: 0.003
Loss after mini-batch
                       1461: 0.004
Loss after mini-batch
                       1471: 0.002
                       1481: 0.003
Loss after mini-batch
Loss after mini-batch
                       1491: 0.003
Loss after mini-batch
                       1501: 0.004
Loss after mini-batch
                       1511: 0.003
Loss after mini-batch
                       1521: 0.002
Loss after mini-batch
                       1531: 0.003
Loss after mini-batch
                       1541: 0.004
Loss after mini-batch
                       1551: 0.002
Loss after mini-batch
                       1561: 0.002
Loss after mini-batch
                       1571: 0.002
Loss after mini-batch
                       1581: 0.003
Loss after mini-batch
                       1591: 0.003
Loss after mini-batch
                       1601: 0.004
Loss after mini-batch
                       1611: 0.002
Loss after mini-batch
                       1621: 0.004
Loss after mini-batch
                       1631: 0.004
Loss after mini-batch
                       1641: 0.002
Loss after mini-batch
                       1651: 0.004
Loss after mini-batch
                       1661: 0.002
Loss after mini-batch
                       1671: 0.002
Loss after mini-batch
                       1681: 0.003
                       1691: 0.005
Loss after mini-batch
Loss after mini-batch
                       1701: 0.003
                       1711: 0.004
Loss after mini-batch
                       1721: 0.003
Loss after mini-batch
Loss after mini-batch
                       1731: 0.003
Loss after mini-batch
                       1741: 0.003
Loss after mini-batch
                       1751: 0.002
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.003
Loss after mini-batch 1781: 0.001
```

```
1791: 0.003
Loss after mini-batch
Loss after mini-batch
                       1801: 0.003
Loss after mini-batch
                       1811: 0.002
Loss after mini-batch
                       1821: 0.003
Loss after mini-batch
                       1831: 0.002
Loss after mini-batch
                       1841: 0.003
Loss after mini-batch
                       1851: 0.003
Loss after mini-batch
                       1861: 0.004
Loss after mini-batch
                       1871: 0.002
Loss after mini-batch
                       1881: 0.003
Loss after mini-batch
                       1891: 0.002
Loss after mini-batch
                       1901: 0.003
                       1911: 0.009
Loss after mini-batch
Loss after mini-batch
                       1921: 0.003
Loss after mini-batch
                       1931: 0.005
Loss after mini-batch
                       1941: 0.004
Loss after mini-batch
                       1951: 0.004
                       1961: 0.003
Loss after mini-batch
Loss after mini-batch
                       1971: 0.003
Loss after mini-batch
                      1981: 0.003
Loss after mini-batch
                       1991: 0.002
Loss after mini-batch
                       2001: 0.004
Loss after mini-batch
                      2011: 0.004
Loss after mini-batch
                       2021: 0.002
Loss after mini-batch
                       2031: 0.003
Loss after mini-batch
                       2041: 0.002
                       2051: 0.003
Loss after mini-batch
Loss after mini-batch
                       2061: 0.003
Loss after mini-batch
                       2071: 0.002
Loss after mini-batch
                       2081: 0.002
Loss after mini-batch
                       2091: 0.002
Loss after mini-batch
                       2101: 0.003
Loss after mini-batch
                       2111: 0.003
Loss after mini-batch
                      2121: 0.002
Loss after mini-batch
                      2131: 0.001
Loss after mini-batch
                      2141: 0.004
Loss after mini-batch
                      2151: 0.002
Loss after mini-batch
                      2161: 0.002
Loss after mini-batch
                      2171: 0.003
Loss after mini-batch 2181: 0.001
Loss after mini-batch
                      2191: 0.003
                      2201: 0.002
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
Loss after mini-batch
                      2221: 0.002
Loss after mini-batch
                      2231: 0.002
Loss after mini-batch
                      2241: 0.002
Loss after mini-batch 2251: 0.002
Loss after mini-batch 2261: 0.003
```

```
Loss after mini-batch 2271: 0.002
Loss after mini-batch
                      2281: 0.003
Loss after mini-batch
                      2291: 0.003
Loss after mini-batch
                      2301: 0.002
Loss after mini-batch
                      2311: 0.002
                       2321: 0.002
Loss after mini-batch
Loss after mini-batch
                      2331: 0.002
Loss after mini-batch 2341: 0.002
Loss after mini-batch 2351: 0.002
Loss after mini-batch
                      2361: 0.002
                       2371: 0.002
Loss after mini-batch
Loss after mini-batch
                       2381: 0.002
                       2391: 0.003
Loss after mini-batch
Loss after mini-batch
                       2401: 0.002
Loss after mini-batch
                      2411: 0.002
Loss after mini-batch
                      2421: 0.003
Loss after mini-batch
                      2431: 0.002
                       2441: 0.002
Loss after mini-batch
Loss after mini-batch
                      2451: 0.002
Loss after mini-batch
                      2461: 0.002
Loss after mini-batch
                      2471: 0.001
Loss after mini-batch
                      2481: 0.002
Loss after mini-batch 2491: 0.003
Loss after mini-batch
                      2501: 0.002
Loss after mini-batch
                       2511: 0.003
Loss after mini-batch
                      2521: 0.005
Loss after mini-batch
                       2531: 0.002
Loss after mini-batch
                       2541: 0.003
Loss after mini-batch
                       2551: 0.004
Loss after mini-batch
                       2561: 0.002
Loss after mini-batch
                       2571: 0.004
Loss after mini-batch
                       2581: 0.002
Loss after mini-batch
                       2591: 0.002
Loss after mini-batch
                      2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                      2631: 0.002
Loss after mini-batch
                       2641: 0.002
                      2651: 0.002
Loss after mini-batch
Loss after mini-batch
                      2661: 0.002
                      2671: 0.003
Loss after mini-batch
                      2681: 0.001
Loss after mini-batch
Loss after mini-batch
                       2691: 0.003
Loss after mini-batch
                       2701: 0.002
Loss after mini-batch
                       2711: 0.002
Loss after mini-batch
                      2721: 0.003
Loss after mini-batch 2731: 0.002
Loss after mini-batch 2741: 0.002
```

Loss	after	mini-batch	2751:	0.002
Loss	after	mini-batch	2761:	0.003
Loss	after	mini-batch	2771:	0.002
Loss	after	mini-batch	2781:	0.003
Loss	after	mini-batch	2791:	0.002
Loss	after	mini-batch	2801:	0.002
Loss	after	mini-batch	2811:	0.003
Start	ting e	ooch 2		
Loss	after	mini-batch	1:	0.000
Loss	after	mini-batch	11:	0.001
Loss	after	mini-batch	21:	0.002
Loss	after	mini-batch	31:	0.002
Loss	after	mini-batch	41:	0.002
Loss	after	mini-batch	51:	0.003
Loss	after	mini-batch	61:	0.002
Loss	after	mini-batch	71:	0.004
Loss	after	mini-batch	81:	0.003
Loss	after	mini-batch	91:	0.002
Loss	after	mini-batch	101:	0.002
Loss	after	mini-batch	111:	0.002
Loss	after	mini-batch	121:	0.002
Loss	after	mini-batch	131:	0.002
Loss	after	mini-batch	141:	0.003
Loss	after	mini-batch	151:	0.003
Loss	after	mini-batch	161:	0.003
Loss	after	mini-batch	171:	0.002
Loss	after	mini-batch	181:	0.003
Loss	after	mini-batch	191:	0.003
Loss	after	mini-batch	201:	0.002
Loss	after	mini-batch	211:	0.003
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.002
Loss	after	mini-batch	241:	0.002
Loss	after	mini-batch	251:	0.003
Loss	after	mini-batch	261:	0.002
Loss	after	mini-batch	271:	0.002
Loss	after	mini-batch	281:	0.002
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.002
Loss	after	mini-batch	311:	0.002
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.002
Loss	after	mini-batch	341:	0.002
Loss	after	mini-batch	351:	0.002
Loss	after	mini-batch	361:	0.003
Loss	after	mini-batch	371:	0.003
Loss	after	mini-batch	381:	0.003
Loss	after	mini-batch	391:	0.003

Loss	after	mini-batch	401:	0.002
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.002
Loss	after	mini-batch	431:	0.002
Loss	after	mini-batch	441:	0.003
Loss	after	mini-batch	451:	0.002
Loss	after	mini-batch	461:	0.002
Loss	after	mini-batch	471:	0.002
Loss	after	mini-batch	481:	0.002
Loss	after	mini-batch	491:	0.002
Loss	after	mini-batch	501:	0.002
Loss	after	mini-batch	511:	0.003
Loss	after	mini-batch	521:	0.004
Loss	after	mini-batch	531:	0.002
Loss	after	mini-batch	541:	0.005
Loss	after	mini-batch	551:	0.002
Loss	after	mini-batch	561:	0.002
Loss	after	mini-batch	571:	0.006
Loss	after	mini-batch	581:	0.002
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.003
Loss	after	mini-batch	611:	0.003
Loss	after	mini-batch	621:	0.004
Loss	after	mini-batch	631:	0.002
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.003
Loss	after	mini-batch	661:	0.003
Loss	after	mini-batch	671:	0.002
Loss	after	mini-batch	681:	0.004
Loss	after	mini-batch	691:	0.002
Loss	after	mini-batch	701:	0.002
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.002
Loss	after	mini-batch	731:	0.002
Loss	after	mini-batch	741:	
	after	mini-batch		0.001
	after	mini-batch	761:	
	after	mini-batch	771:	0.002
Loss	after	mini-batch	781:	0.002
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.002
Loss	after	mini-batch	811:	0.003
	after	mini-batch	821:	
	after	mini-batch		0.002
	after	mini-batch	841:	
	after	mini-batch	851:	
Loss	after	mini-batch	861:	
Loss	_		871:	
TODD	ar cer	mini Datell	011.	0.004

```
Loss after mini-batch
                        881: 0.004
Loss after mini-batch
                        891: 0.002
Loss after mini-batch
                        901: 0.002
Loss after mini-batch
                        911: 0.002
Loss after mini-batch
                        921: 0.002
Loss after mini-batch
                        931: 0.002
Loss after mini-batch
                        941: 0.004
Loss after mini-batch
                        951: 0.003
Loss after mini-batch
                        961: 0.002
Loss after mini-batch
                        971: 0.002
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.003
                       1001: 0.002
Loss after mini-batch
Loss after mini-batch
                       1011: 0.002
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.003
Loss after mini-batch
                       1051: 0.003
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.003
                       1081: 0.002
Loss after mini-batch
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.002
Loss after mini-batch
                       1121: 0.002
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.002
Loss after mini-batch
                       1161: 0.002
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.002
Loss after mini-batch
                       1201: 0.002
Loss after mini-batch
                       1211: 0.002
Loss after mini-batch
                       1221: 0.004
Loss after mini-batch
                       1231: 0.002
Loss after mini-batch
                       1241: 0.003
Loss after mini-batch
                       1251: 0.001
                       1261: 0.002
Loss after mini-batch
Loss after mini-batch
                       1271: 0.003
                       1281: 0.004
Loss after mini-batch
                       1291: 0.002
Loss after mini-batch
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.003
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.002
Loss after mini-batch 1351: 0.002
```

```
1361: 0.002
Loss after mini-batch
Loss after mini-batch
                       1371: 0.003
Loss after mini-batch
                       1381: 0.004
Loss after mini-batch
                       1391: 0.004
Loss after mini-batch
                       1401: 0.003
Loss after mini-batch
                       1411: 0.002
Loss after mini-batch
                       1421: 0.002
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.003
Loss after mini-batch
                       1451: 0.003
Loss after mini-batch
                       1461: 0.002
Loss after mini-batch
                       1471: 0.001
                       1481: 0.001
Loss after mini-batch
Loss after mini-batch
                       1491: 0.002
Loss after mini-batch
                       1501: 0.002
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.002
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.002
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.002
Loss after mini-batch
                       1581: 0.002
Loss after mini-batch
                       1591: 0.002
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.002
Loss after mini-batch
                       1621: 0.002
Loss after mini-batch
                       1631: 0.003
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.003
Loss after mini-batch
                       1661: 0.004
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.003
Loss after mini-batch
                       1691: 0.002
Loss after mini-batch
                       1701: 0.002
Loss after mini-batch
                       1711: 0.004
Loss after mini-batch
                       1721: 0.004
Loss after mini-batch
                       1731: 0.001
                       1741: 0.002
Loss after mini-batch
Loss after mini-batch
                       1751: 0.002
                       1761: 0.001
Loss after mini-batch
                       1771: 0.002
Loss after mini-batch
Loss after mini-batch
                       1781: 0.003
Loss after mini-batch
                       1791: 0.002
Loss after mini-batch
                       1801: 0.002
                       1811: 0.001
Loss after mini-batch
Loss after mini-batch
                       1821: 0.002
Loss after mini-batch 1831: 0.003
```

```
1841: 0.003
Loss after mini-batch
Loss after mini-batch
                       1851: 0.002
Loss after mini-batch
                       1861: 0.002
Loss after mini-batch
                       1871: 0.003
Loss after mini-batch
                       1881: 0.002
Loss after mini-batch
                       1891: 0.003
Loss after mini-batch
                       1901: 0.002
Loss after mini-batch
                       1911: 0.004
Loss after mini-batch 1921: 0.002
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.002
Loss after mini-batch
                       1951: 0.002
                       1961: 0.001
Loss after mini-batch
Loss after mini-batch
                       1971: 0.003
Loss after mini-batch
                       1981: 0.002
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
                       2011: 0.002
Loss after mini-batch
Loss after mini-batch
                       2021: 0.002
Loss after mini-batch
                       2031: 0.002
Loss after mini-batch
                       2041: 0.003
Loss after mini-batch
                       2051: 0.004
Loss after mini-batch
                       2061: 0.002
Loss after mini-batch
                       2071: 0.002
Loss after mini-batch
                       2081: 0.002
Loss after mini-batch
                       2091: 0.003
Loss after mini-batch
                       2101: 0.002
Loss after mini-batch
                       2111: 0.002
Loss after mini-batch
                       2121: 0.003
Loss after mini-batch
                       2131: 0.002
Loss after mini-batch
                       2141: 0.003
Loss after mini-batch
                       2151: 0.002
Loss after mini-batch
                       2161: 0.002
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.003
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch 2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.002
Loss after mini-batch 2231: 0.002
Loss after mini-batch 2241: 0.001
                       2251: 0.002
Loss after mini-batch
Loss after mini-batch
                       2261: 0.002
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch 2301: 0.002
Loss after mini-batch 2311: 0.002
```

```
Loss after mini-batch 2321: 0.001
Loss after mini-batch
                       2331: 0.003
Loss after mini-batch
                       2341: 0.003
Loss after mini-batch
                       2351: 0.002
Loss after mini-batch
                       2361: 0.002
                       2371: 0.002
Loss after mini-batch
Loss after mini-batch
                       2381: 0.002
Loss after mini-batch
                       2391: 0.002
Loss after mini-batch
                       2401: 0.002
Loss after mini-batch
                       2411: 0.001
                       2421: 0.002
Loss after mini-batch
Loss after mini-batch
                       2431: 0.001
                       2441: 0.002
Loss after mini-batch
Loss after mini-batch
                       2451: 0.002
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.002
                       2491: 0.003
Loss after mini-batch
Loss after mini-batch
                       2501: 0.002
Loss after mini-batch
                       2511: 0.003
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.002
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.002
Loss after mini-batch
                       2561: 0.002
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.002
Loss after mini-batch
                       2591: 0.002
Loss after mini-batch
                       2601: 0.002
Loss after mini-batch
                       2611: 0.002
Loss after mini-batch
                       2621: 0.002
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.002
Loss after mini-batch
                       2651: 0.002
Loss after mini-batch
                       2661: 0.003
Loss after mini-batch
                       2671: 0.002
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.002
Loss after mini-batch
                       2701: 0.002
Loss after mini-batch
                       2711: 0.001
                       2721: 0.002
Loss after mini-batch
                       2731: 0.002
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.004
Loss after mini-batch
                       2771: 0.002
Loss after mini-batch 2781: 0.002
Loss after mini-batch 2791: 0.003
```

Loss	after	mini-batch	2801:	0.002
Loss	after	mini-batch	2811:	0.002
Start	ting e	ooch 3		
Loss	after	mini-batch	1:	0.000
Loss	after	mini-batch	11:	0.002
Loss	after	mini-batch	21:	0.001
Loss	after	mini-batch	31:	0.001
Loss	after	mini-batch	41:	0.001
Loss	after	mini-batch	51:	0.001
Loss	after	mini-batch	61:	0.001
Loss	after	mini-batch	71:	0.002
Loss	after	mini-batch	81:	0.002
Loss	after	mini-batch	91:	0.002
Loss	after	mini-batch	101:	0.002
Loss	after	mini-batch	111:	0.001
Loss	after	mini-batch	121:	0.002
Loss	after	mini-batch	131:	0.001
Loss	after	mini-batch	141:	0.002
Loss	after	mini-batch	151:	0.002
Loss	after	mini-batch	161:	0.001
Loss	after	mini-batch	171:	0.001
Loss	after	mini-batch	181:	0.000
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.002
Loss	after	mini-batch	231:	0.002
Loss	after	mini-batch	241:	0.004
Loss	after	mini-batch	251:	0.003
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.002
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.002
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.002
Loss	after	mini-batch	341:	0.002
Loss	after	mini-batch	351:	0.003
Loss	after	mini-batch	361:	0.005
Loss	after	mini-batch	371:	0.003
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.002
Loss	after	mini-batch	401:	0.002
Loss	after	mini-batch	411:	0.002
Loss	after	mini-batch	421:	0.002
Loss	after	mini-batch	431:	0.002
Loss	after	mini-batch	441:	0.002

Loss	${\tt after}$	mini-batch	451:	0.003
Loss	${\tt after}$	mini-batch	461:	0.002
Loss	${\tt after}$	mini-batch	471:	0.004
Loss	${\tt after}$	mini-batch	481:	0.002
Loss	${\tt after}$	mini-batch	491:	0.003
Loss	${\tt after}$	mini-batch	501:	0.002
Loss	${\tt after}$	mini-batch	511:	0.002
Loss	${\tt after}$	mini-batch	521:	0.001
Loss	${\tt after}$	mini-batch	531:	0.001
Loss	${\tt after}$	mini-batch	541:	0.001
Loss	${\tt after}$	mini-batch	551:	0.002
Loss	${\tt after}$	mini-batch	561:	0.002
Loss	${\tt after}$	mini-batch	571:	0.003
Loss	${\tt after}$	mini-batch	581:	0.003
Loss	${\tt after}$	mini-batch	591:	0.001
Loss	${\tt after}$	mini-batch	601:	0.002
Loss	${\tt after}$	mini-batch	611:	0.004
Loss	${\tt after}$	mini-batch	621:	0.002
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.002
Loss	after	mini-batch	651:	0.002
Loss	after	mini-batch	661:	0.002
Loss	after	mini-batch	671:	0.002
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.003
Loss	after	mini-batch	721:	0.002
Loss	${\tt after}$	mini-batch	731:	0.002
Loss	${\tt after}$	mini-batch	741:	0.002
Loss	${\tt after}$	mini-batch	751:	0.002
Loss	${\tt after}$	mini-batch	761:	0.002
Loss	${\tt after}$	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.003
Loss	after	mini-batch	791:	0.001
Loss	${\tt after}$	mini-batch	801:	0.002
Loss	${\tt after}$	mini-batch	811:	0.002
Loss	after	mini-batch	821:	0.001
Loss	${\tt after}$	mini-batch	831:	0.001
Loss	${\tt after}$	mini-batch	841:	0.001
Loss	${\tt after}$	mini-batch	851:	0.001
Loss	${\tt after}$	mini-batch	861:	0.002
Loss	${\tt after}$	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.002
Loss	${\tt after}$	mini-batch	891:	0.002
Loss	${\tt after}$	mini-batch	901:	0.002
Loss	${\tt after}$	mini-batch	911:	0.002
Loss	${\tt after}$	mini-batch	921:	0.003

```
Loss after mini-batch
                        931: 0.002
Loss after mini-batch
                        941: 0.002
Loss after mini-batch
                        951: 0.001
Loss after mini-batch
                        961: 0.002
Loss after mini-batch
                        971: 0.004
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.002
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.002
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.002
Loss after mini-batch
                       1041: 0.002
                       1051: 0.001
Loss after mini-batch
Loss after mini-batch
                       1061: 0.002
Loss after mini-batch
                       1071: 0.003
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.002
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.002
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.002
Loss after mini-batch
                       1141: 0.002
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.003
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.002
Loss after mini-batch
                       1191: 0.003
Loss after mini-batch
                       1201: 0.002
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.002
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.003
Loss after mini-batch
                       1251: 0.002
Loss after mini-batch
                       1261: 0.002
Loss after mini-batch
                       1271: 0.002
Loss after mini-batch
                       1281: 0.002
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
                       1311: 0.001
Loss after mini-batch
Loss after mini-batch
                       1321: 0.001
                       1331: 0.002
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
Loss after mini-batch
                       1351: 0.000
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.002
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch 1401: 0.002
```

```
1411: 0.002
Loss after mini-batch
Loss after mini-batch
                       1421: 0.002
Loss after mini-batch
                       1431: 0.002
Loss after mini-batch
                       1441: 0.002
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.002
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.003
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.003
Loss after mini-batch
                       1571: 0.001
                       1581: 0.001
Loss after mini-batch
Loss after mini-batch
                       1591: 0.002
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.002
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.002
Loss after mini-batch
                       1651: 0.002
Loss after mini-batch
                       1661: 0.002
                       1671: 0.001
Loss after mini-batch
Loss after mini-batch
                       1681: 0.002
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.002
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.002
Loss after mini-batch
                       1751: 0.002
Loss after mini-batch
                       1761: 0.002
Loss after mini-batch
                       1771: 0.002
Loss after mini-batch
                       1781: 0.001
                       1791: 0.001
Loss after mini-batch
Loss after mini-batch
                       1801: 0.001
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
Loss after mini-batch
                       1831: 0.002
Loss after mini-batch
                       1841: 0.002
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                      1881: 0.002
```

```
1891: 0.001
Loss after mini-batch
Loss after mini-batch
                       1901: 0.002
Loss after mini-batch
                       1911: 0.002
Loss after mini-batch
                       1921: 0.003
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
                       1991: 0.001
Loss after mini-batch
Loss after mini-batch
                       2001: 0.001
                       2011: 0.002
Loss after mini-batch
Loss after mini-batch
                       2021: 0.002
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
                       2061: 0.001
Loss after mini-batch
Loss after mini-batch
                       2071: 0.002
Loss after mini-batch
                       2081: 0.003
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.002
Loss after mini-batch 2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.002
Loss after mini-batch
                       2141: 0.003
Loss after mini-batch
                       2151: 0.002
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.002
Loss after mini-batch
                       2181: 0.002
Loss after mini-batch
                       2191: 0.002
Loss after mini-batch
                       2201: 0.002
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.002
Loss after mini-batch
                       2261: 0.002
Loss after mini-batch
                       2271: 0.002
Loss after mini-batch
                       2281: 0.001
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
Loss after mini-batch
                       2311: 0.002
Loss after mini-batch
                       2321: 0.002
Loss after mini-batch
                       2331: 0.002
Loss after mini-batch
                       2341: 0.002
Loss after mini-batch 2351: 0.002
Loss after mini-batch 2361: 0.001
```

```
Loss after mini-batch 2371: 0.002
Loss after mini-batch 2381: 0.002
Loss after mini-batch
                      2391: 0.001
Loss after mini-batch 2401: 0.001
Loss after mini-batch 2411: 0.001
Loss after mini-batch 2421: 0.003
Loss after mini-batch 2431: 0.001
Loss after mini-batch 2441: 0.002
Loss after mini-batch 2451: 0.004
Loss after mini-batch 2461: 0.002
                      2471: 0.002
Loss after mini-batch
Loss after mini-batch
                     2481: 0.001
Loss after mini-batch
                      2491: 0.002
Loss after mini-batch
                      2501: 0.002
Loss after mini-batch
                      2511: 0.001
Loss after mini-batch 2521: 0.001
Loss after mini-batch
                      2531: 0.002
Loss after mini-batch
                      2541: 0.001
Loss after mini-batch 2551: 0.001
Loss after mini-batch 2561: 0.001
Loss after mini-batch
                      2571: 0.001
Loss after mini-batch
                      2581: 0.001
Loss after mini-batch 2591: 0.001
Loss after mini-batch 2601: 0.001
Loss after mini-batch
                      2611: 0.001
Loss after mini-batch
                      2621: 0.001
Loss after mini-batch
                      2631: 0.002
Loss after mini-batch
                      2641: 0.003
Loss after mini-batch
                       2651: 0.003
Loss after mini-batch
                      2661: 0.001
Loss after mini-batch
                      2671: 0.001
Loss after mini-batch
                      2681: 0.002
Loss after mini-batch
                      2691: 0.002
Loss after mini-batch 2701: 0.001
Loss after mini-batch 2711: 0.001
Loss after mini-batch 2721: 0.001
Loss after mini-batch 2731: 0.001
Loss after mini-batch 2741: 0.001
Loss after mini-batch 2751: 0.001
Loss after mini-batch 2761: 0.001
Loss after mini-batch 2771: 0.001
Loss after mini-batch
                      2781: 0.001
Loss after mini-batch
                      2791: 0.001
Loss after mini-batch
                      2801: 0.002
Loss after mini-batch
                      2811: 0.001
Starting epoch 4
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
```

Loss	after	mini-batch	21:	0.002
Loss	after	${\tt mini-batch}$	31:	0.001
Loss	after	${\tt mini-batch}$	41:	0.002
Loss	after	${\tt mini-batch}$	51:	0.001
Loss	after	${\tt mini-batch}$	61:	0.003
Loss	after	${\tt mini-batch}$	71:	0.001
Loss	after	${\tt mini-batch}$	81:	0.001
Loss	after	${\tt mini-batch}$	91:	0.002
Loss	after	${\tt mini-batch}$	101:	0.002
Loss	after	${\tt mini-batch}$	111:	0.003
Loss	after	${\tt mini-batch}$	121:	0.002
Loss	after	${\tt mini-batch}$	131:	0.001
Loss	after	${\tt mini-batch}$	141:	0.001
Loss	after	${\tt mini-batch}$	151:	0.001
Loss	after	${\tt mini-batch}$	161:	0.002
Loss	after	mini-batch	171:	0.002
Loss	after	mini-batch	181:	0.001
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.003
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.003
Loss	after	mini-batch	251:	0.002
Loss	after	mini-batch	261:	0.002
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.002
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.002
Loss	after	mini-batch	351:	0.002
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.002
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.002
Loss	after	mini-batch	421:	0.002
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.002

Loss	after	${\tt mini-batch}$	501:	0.002
Loss	after	${\tt mini-batch}$	511:	0.001
Loss	after	${\tt mini-batch}$	521:	0.001
Loss	after	${\tt mini-batch}$	531:	0.001
Loss	after	${\tt mini-batch}$	541:	0.001
Loss	after	${\tt mini-batch}$	551:	0.003
Loss	after	${\tt mini-batch}$	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.002
Loss	after	mini-batch	631:	0.002
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.002
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.002
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.002
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.002
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.002
Loss	after	mini-batch	931:	0.002
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.002
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.002
порр	OT OCT	mini batch	J11.	0.002

```
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.002
Loss after mini-batch
                       1021: 0.002
Loss after mini-batch
                       1031: 0.003
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.001
                       1081: 0.000
Loss after mini-batch
Loss after mini-batch
                       1091: 0.001
                       1101: 0.001
Loss after mini-batch
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.002
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.002
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.002
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.002
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
                       1331: 0.002
Loss after mini-batch
Loss after mini-batch
                       1341: 0.002
Loss after mini-batch
                       1351: 0.001
                       1361: 0.001
Loss after mini-batch
Loss after mini-batch
                       1371: 0.002
                       1381: 0.002
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.002
Loss after mini-batch 1451: 0.001
```

```
1461: 0.001
Loss after mini-batch
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.002
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
                       1581: 0.003
Loss after mini-batch
Loss after mini-batch
                       1591: 0.002
Loss after mini-batch
                       1601: 0.003
Loss after mini-batch
                       1611: 0.002
Loss after mini-batch
                       1621: 0.001
                       1631: 0.001
Loss after mini-batch
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.002
Loss after mini-batch
                       1711: 0.002
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.002
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
                       1841: 0.002
Loss after mini-batch
Loss after mini-batch
                       1851: 0.002
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
Loss after mini-batch
                       1881: 0.000
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.002
Loss after mini-batch
                       1911: 0.002
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch 1931: 0.001
```

```
Loss after mini-batch 1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.002
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
                       2061: 0.000
Loss after mini-batch
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
                       2111: 0.001
Loss after mini-batch
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.002
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.002
Loss after mini-batch 2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.003
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.002
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
                       2321: 0.002
Loss after mini-batch
Loss after mini-batch
                       2331: 0.002
                       2341: 0.002
Loss after mini-batch
                       2351: 0.002
Loss after mini-batch
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch 2401: 0.001
Loss after mini-batch 2411: 0.001
```

```
Loss after mini-batch 2421: 0.001
Loss after mini-batch 2431: 0.001
Loss after mini-batch
                      2441: 0.001
Loss after mini-batch
                      2451: 0.001
Loss after mini-batch 2461: 0.001
                      2471: 0.001
Loss after mini-batch
Loss after mini-batch
                      2481: 0.001
Loss after mini-batch 2491: 0.001
Loss after mini-batch 2501: 0.002
Loss after mini-batch
                      2511: 0.001
Loss after mini-batch
                      2521: 0.001
Loss after mini-batch
                      2531: 0.001
Loss after mini-batch
                      2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                      2571: 0.001
Loss after mini-batch
                      2581: 0.001
Loss after mini-batch
                      2591: 0.002
Loss after mini-batch
                      2601: 0.001
Loss after mini-batch
                      2611: 0.001
Loss after mini-batch
                      2621: 0.000
Loss after mini-batch
                      2631: 0.001
Loss after mini-batch
                      2641: 0.001
Loss after mini-batch
                      2651: 0.002
Loss after mini-batch
                      2661: 0.001
Loss after mini-batch
                      2671: 0.001
Loss after mini-batch
                      2681: 0.001
Loss after mini-batch
                      2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                      2711: 0.001
Loss after mini-batch
                      2721: 0.000
Loss after mini-batch
                      2731: 0.001
Loss after mini-batch
                      2741: 0.001
Loss after mini-batch
                      2751: 0.001
Loss after mini-batch
                      2761: 0.001
Loss after mini-batch
                      2771: 0.001
Loss after mini-batch
                      2781: 0.002
Loss after mini-batch
                      2791: 0.002
Loss after mini-batch
                      2801: 0.001
Loss after mini-batch 2811: 0.002
Starting epoch 5
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.002
```

Loss	${\tt after}$	${\tt mini-batch}$	71:	0.001
Loss	after	${\tt mini-batch}$	81:	0.001
Loss	after	${\tt mini-batch}$	91:	0.001
Loss	after	${\tt mini-batch}$	101:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	111:	0.001
Loss	after	${\tt mini-batch}$	121:	0.001
Loss	after	${\tt mini-batch}$	131:	0.001
Loss	after	mini-batch	141:	0.001
Loss	after	mini-batch	151:	0.001
Loss	after	mini-batch	161:	0.001
Loss	after	mini-batch	171:	0.002
Loss	after	mini-batch	181:	0.002
Loss	after	mini-batch	191:	0.002
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.002
Loss	after	mini-batch	221:	0.002
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.002
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.002
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.002
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.000
Loss	after	mini-batch	511:	0.000
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
порр	OT OCT	mini Datell	OTI.	0.001

Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.000
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.002
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.004
Loss	after	mini-batch	781:	0.003
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.002
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.002
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.002
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.002
Loss	after	mini-batch	951:	0.002
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.002
Loss	after	mini-batch	1021:	0.002

```
1031: 0.002
Loss after mini-batch
Loss after mini-batch
                       1041: 0.002
Loss after mini-batch
                       1051: 0.002
Loss after mini-batch
                       1061: 0.002
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.002
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.000
Loss after mini-batch
                       1141: 0.001
                       1151: 0.003
Loss after mini-batch
Loss after mini-batch
                       1161: 0.002
Loss after mini-batch
                       1171: 0.002
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.002
                       1201: 0.001
Loss after mini-batch
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.000
Loss after mini-batch
                       1281: 0.000
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.002
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
                       1381: 0.001
Loss after mini-batch
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.000
                       1411: 0.001
Loss after mini-batch
Loss after mini-batch
                       1421: 0.001
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.002
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch 1501: 0.001
```

```
1511: 0.001
Loss after mini-batch
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.002
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
                       1631: 0.001
Loss after mini-batch
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.002
Loss after mini-batch
                       1661: 0.002
Loss after mini-batch
                       1671: 0.001
                       1681: 0.001
Loss after mini-batch
Loss after mini-batch
                       1691: 0.002
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.002
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.002
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.003
Loss after mini-batch
                       1851: 0.002
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
                       1891: 0.002
Loss after mini-batch
Loss after mini-batch
                       1901: 0.001
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
Loss after mini-batch
                       1931: 0.002
Loss after mini-batch
                       1941: 0.000
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.002
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch 1981: 0.001
```

```
Loss after mini-batch 1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.004
Loss after mini-batch
                       2031: 0.001
                       2041: 0.001
Loss after mini-batch
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
                       2091: 0.000
Loss after mini-batch
Loss after mini-batch
                       2101: 0.001
                       2111: 0.002
Loss after mini-batch
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.002
Loss after mini-batch
                       2151: 0.001
                       2161: 0.001
Loss after mini-batch
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch 2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.002
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.000
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.003
Loss after mini-batch
                       2381: 0.002
                       2391: 0.002
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch 2451: 0.002
Loss after mini-batch 2461: 0.002
```

```
Loss after mini-batch 2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.002
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
                       2551: 0.000
Loss after mini-batch
Loss after mini-batch
                       2561: 0.001
                       2571: 0.001
Loss after mini-batch
Loss after mini-batch
                       2581: 0.000
Loss after mini-batch
                       2591: 0.002
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.000
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
                       2751: 0.001
Loss after mini-batch
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.000
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.002
Loss after mini-batch
                       2811: 0.001
Starting epoch 6
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                          11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.000
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.001
```

Loss	after	mini-batch	121:	0.001
Loss	after	mini-batch	131:	0.001
Loss	after	mini-batch	141:	0.001
Loss	after	mini-batch	151:	0.002
Loss	after	mini-batch	161:	0.001
Loss	after	mini-batch	171:	0.001
Loss	after	mini-batch	181:	0.001
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.002
Loss	after	mini-batch	301:	0.002
Loss	after	mini-batch	311:	0.002
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.000
Loss	after	mini-batch	341:	0.000
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.003
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.000
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.002
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.004
Loss	after	mini-batch	491:	0.003
Loss	after	mini-batch	501:	0.002
Loss	after	mini-batch	511:	0.002
Loss	after	mini-batch	521:	0.002
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	${\tt mini-batch}$	561:	0.001
Loss	after	${\tt mini-batch}$	571:	0.000
Loss	after	${\tt mini-batch}$	581:	0.001
Loss	after	${\tt mini-batch}$	591:	0.001

Loss	${\tt after}$	${\tt mini-batch}$	601:	0.001
Loss	after	${\tt mini-batch}$	611:	0.001
Loss	after	${\tt mini-batch}$	621:	0.001
Loss	after	${\tt mini-batch}$	631:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.002
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.000
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.002
Loss	after	mini-batch	781:	0.002
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.002
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.000
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.002
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.002
Loss	after	mini-batch	981:	0.003
Loss	after	mini-batch	991:	0.003
Loss	after	mini-batch	1001:	0.002
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.002
			_ • • • •	

```
1081: 0.001
Loss after mini-batch
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.000
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.002
Loss after mini-batch
                       1151: 0.002
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.000
Loss after mini-batch
                       1191: 0.001
                       1201: 0.001
Loss after mini-batch
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.002
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.002
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
                       1461: 0.001
Loss after mini-batch
Loss after mini-batch
                       1471: 0.001
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.000
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch 1551: 0.001
```

```
1561: 0.001
Loss after mini-batch
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.002
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.000
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.002
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.002
                       1681: 0.003
Loss after mini-batch
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.002
Loss after mini-batch
                       1721: 0.000
                       1731: 0.001
Loss after mini-batch
Loss after mini-batch
                       1741: 0.002
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.000
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.000
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.002
Loss after mini-batch
                       1881: 0.000
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
                       1941: 0.001
Loss after mini-batch
Loss after mini-batch
                       1951: 0.001
                       1961: 0.002
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch 2031: 0.001
```

```
Loss after mini-batch 2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
                       2091: 0.001
Loss after mini-batch
Loss after mini-batch
                       2101: 0.003
Loss after mini-batch 2111: 0.001
Loss after mini-batch 2121: 0.001
Loss after mini-batch
                       2131: 0.002
                       2141: 0.001
Loss after mini-batch
Loss after mini-batch
                       2151: 0.002
                       2161: 0.002
Loss after mini-batch
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
                       2211: 0.001
Loss after mini-batch
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
                       2241: 0.001
Loss after mini-batch
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch 2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.002
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.000
Loss after mini-batch
                       2421: 0.002
Loss after mini-batch 2431: 0.001
Loss after mini-batch
                       2441: 0.001
                       2451: 0.000
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch 2501: 0.001
Loss after mini-batch 2511: 0.002
```

```
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.000
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
                       2601: 0.001
Loss after mini-batch
Loss after mini-batch
                       2611: 0.001
                       2621: 0.002
Loss after mini-batch
Loss after mini-batch
                       2631: 0.002
Loss after mini-batch
                       2641: 0.002
Loss after mini-batch
                       2651: 0.000
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
                       2721: 0.001
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
Loss after mini-batch 2741: 0.001
Loss after mini-batch
                       2751: 0.002
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.002
Loss after mini-batch
                       2811: 0.001
Starting epoch 7
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.000
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.002
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.000
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.001
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.002
```

Loss	${\tt after}$	mini-batch	171:	0.002
Loss	${\tt after}$	mini-batch	181:	0.001
Loss	${\tt after}$	mini-batch	191:	0.001
Loss	${\tt after}$	mini-batch	201:	0.001
Loss	${\tt after}$	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.002
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.002
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.002
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.002
Loss	after	mini-batch	521:	0.002
Loss	after	mini-batch	531:	0.002
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	

Loss	after	${\tt mini-batch}$	651:	0.000
Loss	after	${\tt mini-batch}$	661:	0.002
Loss	after	${\tt mini-batch}$	671:	0.001
Loss	after	${\tt mini-batch}$	681:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.000
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.000
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.000
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.000
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.002
Loss	after	mini-batch	871:	0.002
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.000
Loss	after	mini-batch	1081:	0.000
Loss	after	mini-batch	1091:	0.001
Loss	after	mini-batch	1101:	0.001
Loss	after	mini-batch	1111:	0.001
Loss	after	mini-batch	1121:	0.000
			•	

```
1131: 0.001
Loss after mini-batch
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
                       1251: 0.000
Loss after mini-batch
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
                       1301: 0.001
Loss after mini-batch
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.002
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.002
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
                       1511: 0.001
Loss after mini-batch
Loss after mini-batch
                       1521: 0.002
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
Loss after mini-batch
                       1551: 0.000
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.002
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                      1601: 0.001
```

```
1611: 0.001
Loss after mini-batch
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.002
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
                       1731: 0.001
Loss after mini-batch
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.002
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.002
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.002
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.000
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.002
Loss after mini-batch
                       1921: 0.002
Loss after mini-batch
                       1931: 0.002
Loss after mini-batch
                       1941: 0.002
Loss after mini-batch
                       1951: 0.002
Loss after mini-batch
                       1961: 0.002
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
                       1991: 0.001
Loss after mini-batch
Loss after mini-batch
                       2001: 0.001
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch 2081: 0.001
```

```
Loss after mini-batch 2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.000
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch 2131: 0.001
                       2141: 0.001
Loss after mini-batch
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch 2161: 0.001
Loss after mini-batch 2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
                       2211: 0.001
Loss after mini-batch
Loss after mini-batch
                       2221: 0.002
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
                       2261: 0.000
Loss after mini-batch
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
                       2291: 0.001
Loss after mini-batch
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.002
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.002
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.002
Loss after mini-batch
                       2371: 0.000
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
                       2491: 0.001
Loss after mini-batch
Loss after mini-batch
                       2501: 0.001
                       2511: 0.001
Loss after mini-batch
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.000
Loss after mini-batch 2561: 0.000
```

```
Loss after mini-batch 2571: 0.001
Loss after mini-batch 2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch 2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch 2631: 0.001
Loss after mini-batch 2641: 0.001
Loss after mini-batch 2651: 0.002
Loss after mini-batch
                       2661: 0.002
                       2671: 0.002
Loss after mini-batch
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch 2721: 0.000
Loss after mini-batch 2731: 0.002
Loss after mini-batch 2741: 0.001
Loss after mini-batch 2751: 0.002
Loss after mini-batch 2761: 0.001
Loss after mini-batch 2771: 0.001
Loss after mini-batch 2781: 0.001
Loss after mini-batch 2791: 0.002
Loss after mini-batch 2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 8
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.003
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.000
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.002
Loss after mini-batch
                        141: 0.001
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.001
Loss after mini-batch
                        171: 0.001
Loss after mini-batch
                        181: 0.001
Loss after mini-batch
                        191: 0.001
Loss after mini-batch
                        201: 0.001
Loss after mini-batch
                        211: 0.001
```

Loss	${\tt after}$	mini-batch	221:	0.001
Loss	${\tt after}$	mini-batch	231:	0.001
Loss	${\tt after}$	mini-batch	241:	0.000
Loss	${\tt after}$	mini-batch	251:	0.001
Loss	${\tt after}$	mini-batch	261:	0.001
Loss	${\tt after}$	mini-batch	271:	0.001
Loss	${\tt after}$	mini-batch	281:	0.001
Loss	${\tt after}$	mini-batch	291:	0.001
Loss	${\tt after}$	mini-batch	301:	0.001
Loss	${\tt after}$	mini-batch	311:	0.001
Loss	${\tt after}$	mini-batch	321:	0.001
Loss	${\tt after}$	mini-batch	331:	0.001
Loss	${\tt after}$	mini-batch	341:	0.000
Loss	${\tt after}$	mini-batch	351:	0.001
Loss	${\tt after}$	mini-batch	361:	0.000
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	${\tt after}$	mini-batch	391:	0.001
Loss	${\tt after}$	mini-batch	401:	0.001
Loss	${\tt after}$	mini-batch	411:	0.001
Loss	${\tt after}$	mini-batch	421:	0.001
Loss	${\tt after}$	mini-batch	431:	0.002
Loss	${\tt after}$	mini-batch	441:	0.001
Loss	${\tt after}$	mini-batch	451:	0.002
Loss	${\tt after}$	mini-batch	461:	0.001
Loss	${\tt after}$	mini-batch	471:	0.001
Loss	${\tt after}$	mini-batch	481:	0.000
Loss	${\tt after}$	mini-batch	491:	0.001
Loss	${\tt after}$	mini-batch	501:	0.001
Loss	${\tt after}$	mini-batch	511:	0.000
Loss	${\tt after}$	mini-batch	521:	0.001
Loss	${\tt after}$	mini-batch	531:	0.003
Loss	${\tt after}$	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	${\tt after}$	mini-batch	561:	0.001
Loss	${\tt after}$	mini-batch	571:	0.001
Loss	${\tt after}$	mini-batch	581:	0.001
Loss	${\tt after}$	mini-batch	591:	0.001
Loss	${\tt after}$	mini-batch	601:	0.001
Loss	${\tt after}$	mini-batch	611:	0.001
Loss	${\tt after}$	mini-batch	621:	0.001
Loss	${\tt after}$	mini-batch	631:	0.001
Loss	${\tt after}$	mini-batch	641:	0.000
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	${\tt after}$	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.002
Loss	after	mini-batch	691:	0.003

Loss	${\tt after}$	${\tt mini-batch}$	701:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	711:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	721:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	731:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.002
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.002
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.002
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.000
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.002
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.000
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.001
Loss	after	mini-batch	1081:	0.001
Loss	after	mini-batch	1091:	0.001
Loss	after	mini-batch	1101:	0.001
Loss	after	mini-batch	1111:	0.000
Loss	after	mini-batch	1121:	0.001
Loss	after	mini-batch	1131:	0.002
Loss	after	mini-batch	1141:	0.000
Loss	after	mini-batch	1151:	0.001
Loss	after	mini-batch	1161:	0.001
Loss	after	mini-batch	1171:	0.001

```
1181: 0.002
Loss after mini-batch
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.003
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
                       1301: 0.001
Loss after mini-batch
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.000
Loss after mini-batch
                       1331: 0.000
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.002
Loss after mini-batch
                       1361: 0.002
Loss after mini-batch
                       1371: 0.002
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.002
Loss after mini-batch
                       1431: 0.002
                       1441: 0.003
Loss after mini-batch
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.002
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.000
Loss after mini-batch
                       1541: 0.000
Loss after mini-batch
                       1551: 0.001
                       1561: 0.001
Loss after mini-batch
Loss after mini-batch
                       1571: 0.000
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
Loss after mini-batch
                       1601: 0.002
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.000
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                      1651: 0.001
```

```
1661: 0.001
Loss after mini-batch
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.002
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.002
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.002
Loss after mini-batch
                       1771: 0.001
                       1781: 0.001
Loss after mini-batch
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.000
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.002
                       1831: 0.000
Loss after mini-batch
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.002
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.002
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.002
Loss after mini-batch
                       2031: 0.001
                       2041: 0.000
Loss after mini-batch
Loss after mini-batch
                       2051: 0.001
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.000
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch 2121: 0.000
Loss after mini-batch 2131: 0.001
```

```
Loss after mini-batch 2141: 0.001
Loss after mini-batch 2151: 0.001
Loss after mini-batch
                      2161: 0.001
Loss after mini-batch
                      2171: 0.001
Loss after mini-batch 2181: 0.001
                      2191: 0.001
Loss after mini-batch
Loss after mini-batch
                      2201: 0.001
Loss after mini-batch 2211: 0.001
Loss after mini-batch 2221: 0.001
Loss after mini-batch
                      2231: 0.001
Loss after mini-batch
                      2241: 0.001
Loss after mini-batch
                      2251: 0.001
                       2261: 0.001
Loss after mini-batch
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                      2291: 0.000
Loss after mini-batch
                      2301: 0.001
                       2311: 0.001
Loss after mini-batch
Loss after mini-batch
                      2321: 0.001
Loss after mini-batch
                      2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                      2351: 0.001
Loss after mini-batch
                      2361: 0.001
Loss after mini-batch
                      2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                      2391: 0.002
Loss after mini-batch
                       2401: 0.003
Loss after mini-batch
                       2411: 0.002
Loss after mini-batch
                       2421: 0.002
Loss after mini-batch
                      2431: 0.001
Loss after mini-batch
                      2441: 0.001
Loss after mini-batch
                       2451: 0.000
Loss after mini-batch
                       2461: 0.000
Loss after mini-batch
                      2471: 0.000
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                      2501: 0.001
Loss after mini-batch
                       2511: 0.003
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                      2531: 0.001
                      2541: 0.001
Loss after mini-batch
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                      2601: 0.001
Loss after mini-batch 2611: 0.001
```

```
Loss after mini-batch 2621: 0.001
Loss after mini-batch
                       2631: 0.000
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.002
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch 2701: 0.001
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.000
Loss after mini-batch
                       2791: 0.000
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 9
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.002
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
                         41: 0.000
Loss after mini-batch
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.000
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.000
Loss after mini-batch
                        101: 0.000
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.001
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.001
Loss after mini-batch
                        171: 0.001
Loss after mini-batch
                        181: 0.001
Loss after mini-batch
                        191: 0.001
Loss after mini-batch
                        201: 0.001
Loss after mini-batch
                        211: 0.001
Loss after mini-batch
                        221: 0.001
Loss after mini-batch
                        231: 0.001
Loss after mini-batch
                        241: 0.001
Loss after mini-batch
                        251: 0.001
Loss after mini-batch
                        261: 0.001
```

Loss	${\tt after}$	${\tt mini-batch}$	271:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	281:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	291:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	301:	0.003
Loss	${\tt after}$	${\tt mini-batch}$	311:	0.001
Loss	after	${\tt mini-batch}$	321:	0.001
Loss	after	${\tt mini-batch}$	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.002
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.002
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.002
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.002
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001

Loss	${\tt after}$	mini-batch	751:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	761:	0.002
Loss	${\tt after}$	mini-batch	771:	0.001
Loss	${\tt after}$	mini-batch	781:	0.000
Loss	${\tt after}$	mini-batch	791:	0.000
Loss	${\tt after}$	mini-batch	801:	0.001
Loss	${\tt after}$	mini-batch	811:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	821:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	831:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	861:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	871:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	881:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	921:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	931:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	941:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	951:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	961:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	971:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	981:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	991:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	1001:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	1011:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	1021:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	1031:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	1041:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	1051:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	1061:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	1071:	0.001
Loss	after	mini-batch	1081:	0.001
Loss	${\tt after}$	mini-batch	1091:	0.000
Loss	${\tt after}$	mini-batch	1101:	0.001
Loss	${\tt after}$	mini-batch	1111:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	1121:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	1131:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	1141:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	1151:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	1161:	0.001
Loss	${\tt after}$	mini-batch	1171:	0.001
Loss	after	${\tt mini-batch}$	1181:	0.000
Loss	${\tt after}$	mini-batch	1191:	0.001
Loss	${\tt after}$	mini-batch	1201:	0.001
Loss	after	${\tt mini-batch}$	1211:	0.001
Loss	after	${\tt mini-batch}$	1221:	0.002

```
1231: 0.001
Loss after mini-batch
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.002
Loss after mini-batch
                       1291: 0.000
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
                       1351: 0.001
Loss after mini-batch
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.002
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
                       1401: 0.001
Loss after mini-batch
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.000
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
                       1611: 0.001
Loss after mini-batch
Loss after mini-batch
                       1621: 0.001
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch 1701: 0.001
```

```
1711: 0.003
Loss after mini-batch
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.002
Loss after mini-batch
                       1761: 0.000
Loss after mini-batch
                       1771: 0.000
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
                       1831: 0.001
Loss after mini-batch
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.002
Loss after mini-batch
                       1871: 0.001
                       1881: 0.002
Loss after mini-batch
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.002
                       2091: 0.001
Loss after mini-batch
Loss after mini-batch
                       2101: 0.000
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.000
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.002
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch 2181: 0.000
```

```
Loss after mini-batch 2191: 0.002
Loss after mini-batch 2201: 0.001
Loss after mini-batch
                       2211: 0.000
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch 2231: 0.001
                       2241: 0.001
Loss after mini-batch
Loss after mini-batch
                       2251: 0.002
Loss after mini-batch 2261: 0.000
Loss after mini-batch 2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
                       2311: 0.001
Loss after mini-batch
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.000
Loss after mini-batch
                       2351: 0.000
                       2361: 0.001
Loss after mini-batch
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch 2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.000
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.000
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.000
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.002
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
                       2591: 0.001
Loss after mini-batch
Loss after mini-batch
                       2601: 0.001
                       2611: 0.001
Loss after mini-batch
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.002
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch 2661: 0.001
```

```
Loss after mini-batch 2671: 0.000
Loss after mini-batch 2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch 2711: 0.001
Loss after mini-batch 2721: 0.001
Loss after mini-batch 2731: 0.001
Loss after mini-batch 2741: 0.001
Loss after mini-batch 2751: 0.000
Loss after mini-batch
                       2761: 0.001
                       2771: 0.001
Loss after mini-batch
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 10
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.000
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.000
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.000
Loss after mini-batch
                         81: 0.000
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.000
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.001
Loss after mini-batch
                        151: 0.002
Loss after mini-batch
                        161: 0.001
Loss after mini-batch
                        171: 0.001
Loss after mini-batch
                        181: 0.001
Loss after mini-batch
                        191: 0.001
Loss after mini-batch
                        201: 0.001
Loss after mini-batch
                        211: 0.001
Loss after mini-batch
                        221: 0.002
Loss after mini-batch
                        231: 0.002
Loss after mini-batch
                        241: 0.002
Loss after mini-batch
                        251: 0.004
Loss after mini-batch
                        261: 0.002
Loss after mini-batch
                        271: 0.001
Loss after mini-batch
                        281: 0.003
Loss after mini-batch
                        291: 0.002
Loss after mini-batch
                        301: 0.001
Loss after mini-batch
                        311: 0.001
```

Loss	after	${\tt mini-batch}$	321:	0.001
Loss	after	mini-batch	331:	0.000
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.000
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.000
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.000
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.002
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.003
Loss	after	mini-batch	531:	0.002
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.000
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.000

```
801: 0.002
Loss after mini-batch
Loss after mini-batch
                        811: 0.001
Loss after mini-batch
                        821: 0.001
Loss after mini-batch
                        831: 0.000
Loss after mini-batch
                        841: 0.001
Loss after mini-batch
                        851: 0.001
Loss after mini-batch
                        861: 0.001
                        871: 0.001
Loss after mini-batch
Loss after mini-batch
                        881: 0.000
Loss after mini-batch
                        891: 0.001
Loss after mini-batch
                        901: 0.001
Loss after mini-batch
                        911: 0.001
                        921: 0.001
Loss after mini-batch
Loss after mini-batch
                        931: 0.001
Loss after mini-batch
                        941: 0.001
Loss after mini-batch
                        951: 0.001
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.003
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
                       1181: 0.000
Loss after mini-batch
Loss after mini-batch
                       1191: 0.001
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch 1271: 0.001
```

```
1281: 0.001
Loss after mini-batch
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.002
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
                       1401: 0.001
Loss after mini-batch
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.000
                       1451: 0.000
Loss after mini-batch
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.000
Loss after mini-batch
                       1541: 0.002
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
                       1631: 0.001
Loss after mini-batch
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
                       1661: 0.001
Loss after mini-batch
Loss after mini-batch
                       1671: 0.001
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.002
Loss after mini-batch
                       1731: 0.002
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch 1751: 0.001
```

```
1761: 0.001
Loss after mini-batch
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.000
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.000
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
                       1881: 0.000
Loss after mini-batch
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
                       1931: 0.001
Loss after mini-batch
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.002
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.000
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.000
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.003
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.000
Loss after mini-batch
                       2171: 0.001
                       2181: 0.001
Loss after mini-batch
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch 2221: 0.001
Loss after mini-batch 2231: 0.001
```

```
Loss after mini-batch 2241: 0.002
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.002
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
                       2361: 0.001
Loss after mini-batch
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
                       2411: 0.001
Loss after mini-batch
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.000
Loss after mini-batch
                       2521: 0.000
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.003
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
                       2621: 0.001
Loss after mini-batch
Loss after mini-batch
                       2631: 0.002
                       2641: 0.001
Loss after mini-batch
Loss after mini-batch
                       2651: 0.002
                       2661: 0.001
Loss after mini-batch
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch 2711: 0.001
```

Loss	after	mini-batch	2721:	0.001
Loss	after	mini-batch	2731:	0.001
Loss	after	mini-batch	2741:	0.001
Loss	after	mini-batch	2751:	0.001
Loss	after	mini-batch	2761:	0.001
Loss	after	mini-batch	2771:	0.001
Loss	after	mini-batch	2781:	0.001
Loss	after	mini-batch	2791:	0.001
Loss	after	mini-batch	2801:	0.001
Loss	after	mini-batch	2811:	0.002
Start	ting e	poch 11		
Loss	after	mini-batch	1:	0.000
Loss	after	mini-batch	11:	0.001
Loss	after	mini-batch	21:	0.001
Loss	after	mini-batch	31:	0.001
Loss	after	mini-batch	41:	0.001
Loss	after	mini-batch	51:	0.001
Loss	after	mini-batch	61:	0.001
Loss	after	mini-batch	71:	0.001
Loss	after	mini-batch	81:	0.001
Loss	after	mini-batch	91:	0.001
Loss	after	mini-batch	101:	0.002
Loss	after	mini-batch	111:	0.001
Loss	after	mini-batch	121:	0.001
Loss	after	mini-batch	131:	0.001
Loss	after	mini-batch	141:	0.003
Loss	after	mini-batch	151:	0.002
Loss	after	mini-batch	161:	0.001
Loss	after	mini-batch	171:	0.000
Loss	after	mini-batch	181:	0.002
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.000
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.000
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.002
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001

Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.000
Loss	after	mini-batch	411:	0.002
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.002
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.000
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.002
Loss	after	mini-batch	781:	0.002
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001

```
851: 0.001
Loss after mini-batch
Loss after mini-batch
                        861: 0.001
Loss after mini-batch
                        871: 0.000
Loss after mini-batch
                        881: 0.001
Loss after mini-batch
                        891: 0.000
Loss after mini-batch
                        901: 0.001
Loss after mini-batch
                        911: 0.001
Loss after mini-batch
                        921: 0.000
Loss after mini-batch
                        931: 0.001
Loss after mini-batch
                        941: 0.001
Loss after mini-batch
                        951: 0.001
Loss after mini-batch
                        961: 0.001
                        971: 0.001
Loss after mini-batch
Loss after mini-batch
                        981: 0.002
Loss after mini-batch
                        991: 0.002
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.002
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.000
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
                       1201: 0.001
Loss after mini-batch
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.000
                       1231: 0.001
Loss after mini-batch
Loss after mini-batch
                       1241: 0.001
                       1251: 0.000
Loss after mini-batch
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.002
Loss after mini-batch 1321: 0.001
```

```
1331: 0.000
Loss after mini-batch
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.002
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.000
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.002
Loss after mini-batch
                       1441: 0.001
                       1451: 0.001
Loss after mini-batch
Loss after mini-batch
                       1461: 0.002
Loss after mini-batch
                       1471: 0.002
Loss after mini-batch
                       1481: 0.002
Loss after mini-batch
                       1491: 0.002
                       1501: 0.001
Loss after mini-batch
Loss after mini-batch
                       1511: 0.000
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.000
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
                       1711: 0.001
Loss after mini-batch
Loss after mini-batch
                       1721: 0.001
                       1731: 0.003
Loss after mini-batch
                       1741: 0.002
Loss after mini-batch
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch 1801: 0.001
```

```
1811: 0.000
Loss after mini-batch
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.000
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.000
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
                       1931: 0.001
Loss after mini-batch
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.000
Loss after mini-batch
                       1961: 0.003
Loss after mini-batch
                       1971: 0.001
                       1981: 0.001
Loss after mini-batch
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.000
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.002
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
                       2211: 0.001
Loss after mini-batch
Loss after mini-batch
                       2221: 0.001
                       2231: 0.000
Loss after mini-batch
Loss after mini-batch
                       2241: 0.002
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch 2271: 0.001
Loss after mini-batch 2281: 0.001
```

```
Loss after mini-batch 2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.002
Loss after mini-batch
                       2331: 0.001
                       2341: 0.000
Loss after mini-batch
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.002
                       2391: 0.001
Loss after mini-batch
Loss after mini-batch
                       2401: 0.001
                       2411: 0.001
Loss after mini-batch
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
                       2461: 0.001
Loss after mini-batch
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.000
Loss after mini-batch
                       2511: 0.000
Loss after mini-batch
                       2521: 0.000
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.002
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
                       2691: 0.001
Loss after mini-batch
                       2701: 0.002
Loss after mini-batch
                       2711: 0.000
Loss after mini-batch
Loss after mini-batch
                       2721: 0.000
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch 2761: 0.001
```

Loss	after	mini-batch	2771:	0.001
Loss	after	mini-batch	2781:	0.001
Loss	after	mini-batch	2791:	0.001
Loss	after	mini-batch	2801:	0.001
Loss	after	mini-batch	2811:	0.001
Start	ting e	poch 12		
Loss	after	mini-batch	1:	0.001
Loss	after	mini-batch	11:	0.001
Loss	after	mini-batch	21:	0.001
Loss	after	mini-batch	31:	0.001
Loss	after	mini-batch	41:	0.001
Loss	after	mini-batch	51:	0.001
Loss	after	mini-batch	61:	0.001
Loss	after	mini-batch	71:	0.001
Loss	after	mini-batch	81:	0.001
Loss	after	mini-batch	91:	0.001
Loss	after	mini-batch	101:	0.001
Loss	after	mini-batch	111:	0.001
Loss	after	mini-batch	121:	0.001
Loss	after	mini-batch	131:	0.001
Loss	after	mini-batch	141:	0.001
Loss	after	mini-batch	151:	0.001
Loss	after	mini-batch	161:	0.001
Loss	after	mini-batch	171:	0.001
Loss	after	mini-batch	181:	0.002
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.000
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.002
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001

Loss	after	${\tt mini-batch}$	421:	0.002
Loss	after	${\tt mini-batch}$	431:	0.001
Loss	after	${\tt mini-batch}$	441:	0.002
Loss	after	${\tt mini-batch}$	451:	0.001
Loss	after	${\tt mini-batch}$	461:	0.001
Loss	after	${\tt mini-batch}$	471:	0.001
Loss	after	${\tt mini-batch}$	481:	0.001
Loss	after	mini-batch	491:	0.002
Loss	after	mini-batch	501:	0.001
Loss	after	${\tt mini-batch}$	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.000
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.002
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.000
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.000
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	${\tt mini-batch}$	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.002
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.000
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.000
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.000
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001

```
Loss after mini-batch
                        901: 0.001
Loss after mini-batch
                        911: 0.001
Loss after mini-batch
                        921: 0.001
Loss after mini-batch
                        931: 0.001
Loss after mini-batch
                        941: 0.001
Loss after mini-batch
                        951: 0.001
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.000
Loss after mini-batch
                       1001: 0.000
Loss after mini-batch
                       1011: 0.001
                       1021: 0.001
Loss after mini-batch
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.000
Loss after mini-batch
                       1081: 0.002
Loss after mini-batch
                       1091: 0.003
Loss after mini-batch
                       1101: 0.003
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.003
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.000
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
                       1281: 0.001
Loss after mini-batch
Loss after mini-batch
                       1291: 0.001
                       1301: 0.001
Loss after mini-batch
Loss after mini-batch
                       1311: 0.002
Loss after mini-batch
                       1321: 0.002
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.002
Loss after mini-batch 1371: 0.001
```

```
1381: 0.001
Loss after mini-batch
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.002
                       1501: 0.001
Loss after mini-batch
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.000
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.000
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.000
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.003
Loss after mini-batch
                       1701: 0.002
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.002
                       1761: 0.001
Loss after mini-batch
Loss after mini-batch
                       1771: 0.000
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch 1851: 0.001
```

```
1861: 0.001
Loss after mini-batch
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.000
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.000
Loss after mini-batch
                       1961: 0.000
Loss after mini-batch
                       1971: 0.002
                       1981: 0.001
Loss after mini-batch
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.000
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.000
Loss after mini-batch
                       2101: 0.002
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.000
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.002
Loss after mini-batch
                       2251: 0.000
                       2261: 0.002
Loss after mini-batch
                       2271: 0.002
Loss after mini-batch
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.000
Loss after mini-batch 2331: 0.000
```

```
Loss after mini-batch 2341: 0.001
Loss after mini-batch
                       2351: 0.000
Loss after mini-batch
                       2361: 0.002
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
                       2391: 0.002
Loss after mini-batch
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.000
Loss after mini-batch
                       2451: 0.000
                       2461: 0.001
Loss after mini-batch
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
                       2511: 0.001
Loss after mini-batch
Loss after mini-batch
                       2521: 0.000
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.000
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.000
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.002
Loss after mini-batch
                       2641: 0.002
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.002
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.003
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.001
                       2741: 0.001
Loss after mini-batch
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.000
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch 2811: 0.001
```

Start		poch 13		
Loss	after	mini-batch	1:	0.000
Loss	after	mini-batch	11:	0.001
Loss	after	mini-batch	21:	0.002
Loss	after	${\tt mini-batch}$	31:	0.001
Loss	after	${\tt mini-batch}$	41:	0.001
Loss	after	${\tt mini-batch}$	51:	0.002
Loss	after	${\tt mini-batch}$	61:	0.001
Loss	after	${\tt mini-batch}$	71:	0.001
Loss	after	${\tt mini-batch}$	81:	0.000
Loss	after	${\tt mini-batch}$	91:	0.000
Loss	after	${\tt mini-batch}$	101:	0.001
Loss	after	${\tt mini-batch}$	111:	0.001
Loss	after	${\tt mini-batch}$	121:	0.001
Loss	after	${\tt mini-batch}$	131:	0.001
Loss	after	${\tt mini-batch}$	141:	0.001
Loss	after	${\tt mini-batch}$	151:	0.001
Loss	after	mini-batch	161:	0.001
Loss	after	mini-batch	171:	0.001
Loss	after	mini-batch	181:	0.001
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.002
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.002
Loss	after	mini-batch	251:	0.000
Loss	after	mini-batch	261:	0.000
Loss	after	mini-batch	271:	0.000
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.002
Loss	after	mini-batch	301:	0.002
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	
Loss	after	mini-batch	361:	0.000
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after		421:	0.001
Loss		mini-batch	431:	0.001
Loss	after	mini-batch		0.001
		mini-batch		
Loss		mini-batch		

Loss	after	${\tt mini-batch}$	471:	0.001
Loss	after	${\tt mini-batch}$	481:	0.001
Loss	after	${\tt mini-batch}$	491:	0.000
Loss	after	${\tt mini-batch}$	501:	0.000
Loss	after	${\tt mini-batch}$	511:	0.001
Loss	after	${\tt mini-batch}$	521:	0.001
Loss	after	${\tt mini-batch}$	531:	0.001
Loss	after	${\tt mini-batch}$	541:	0.000
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	${\tt mini-batch}$	571:	0.001
Loss	after	${\tt mini-batch}$	581:	0.001
Loss	after	${\tt mini-batch}$	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.000
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.000
Loss	after	mini-batch	741:	0.001
Loss	after	${\tt mini-batch}$	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.000
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.003
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.000
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.000

```
Loss after mini-batch
                        951: 0.001
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.002
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.000
Loss after mini-batch
                       1011: 0.000
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
                       1071: 0.001
Loss after mini-batch
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.000
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.000
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.000
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.000
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.000
Loss after mini-batch
                       1311: 0.000
Loss after mini-batch
                       1321: 0.000
                       1331: 0.001
Loss after mini-batch
Loss after mini-batch
                       1341: 0.001
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.002
Loss after mini-batch 1421: 0.001
```

```
1431: 0.000
Loss after mini-batch
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.003
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.002
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.000
Loss after mini-batch
                       1541: 0.001
                       1551: 0.002
Loss after mini-batch
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.000
Loss after mini-batch
                       1591: 0.002
                       1601: 0.001
Loss after mini-batch
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.000
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.000
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.000
Loss after mini-batch
                       1791: 0.000
Loss after mini-batch
                       1801: 0.001
                       1811: 0.001
Loss after mini-batch
Loss after mini-batch
                       1821: 0.000
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                      1901: 0.001
```

```
1911: 0.002
Loss after mini-batch
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.000
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
                       2031: 0.001
Loss after mini-batch
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.000
Loss after mini-batch
                       2071: 0.000
                       2081: 0.001
Loss after mini-batch
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.000
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.002
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.000
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.002
Loss after mini-batch
Loss after mini-batch
                       2341: 0.002
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.000
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch 2381: 0.000
```

```
Loss after mini-batch 2391: 0.000
Loss after mini-batch 2401: 0.001
Loss after mini-batch 2411: 0.000
Loss after mini-batch 2421: 0.001
Loss after mini-batch 2431: 0.001
Loss after mini-batch 2441: 0.001
Loss after mini-batch 2451: 0.001
Loss after mini-batch 2461: 0.001
Loss after mini-batch 2471: 0.001
Loss after mini-batch 2481: 0.001
                      2491: 0.001
Loss after mini-batch
Loss after mini-batch
                      2501: 0.001
Loss after mini-batch
                      2511: 0.001
Loss after mini-batch
                      2521: 0.001
Loss after mini-batch
                      2531: 0.001
Loss after mini-batch
                      2541: 0.001
Loss after mini-batch
                      2551: 0.002
Loss after mini-batch
                      2561: 0.003
Loss after mini-batch 2571: 0.001
Loss after mini-batch 2581: 0.001
Loss after mini-batch
                      2591: 0.001
Loss after mini-batch 2601: 0.001
Loss after mini-batch 2611: 0.001
Loss after mini-batch
                      2621: 0.001
Loss after mini-batch
                      2631: 0.000
Loss after mini-batch
                      2641: 0.001
Loss after mini-batch
                      2651: 0.001
Loss after mini-batch
                      2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                      2681: 0.001
Loss after mini-batch
                      2691: 0.001
Loss after mini-batch
                      2701: 0.001
Loss after mini-batch
                      2711: 0.001
Loss after mini-batch 2721: 0.002
Loss after mini-batch 2731: 0.001
Loss after mini-batch 2741: 0.002
Loss after mini-batch 2751: 0.000
Loss after mini-batch
                      2761: 0.001
Loss after mini-batch
                      2771: 0.001
Loss after mini-batch
                      2781: 0.001
Loss after mini-batch
                      2791: 0.001
Loss after mini-batch
                      2801: 0.001
Loss after mini-batch
                      2811: 0.001
Starting epoch 14
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                        31: 0.001
```

Loss	${\tt after}$	${\tt mini-batch}$	41:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	51:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	61:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	71:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	81:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	91:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	101:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	111:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	121:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	131:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	141:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	151:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	161:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	171:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	181:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	191:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	201:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	211:	0.001
Loss	after	${\tt mini-batch}$	221:	0.001
Loss	after	${\tt mini-batch}$	231:	0.001
Loss	after	${\tt mini-batch}$	241:	0.002
Loss	after	${\tt mini-batch}$	251:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	261:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	271:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	281:	0.001
Loss	after	${\tt mini-batch}$	291:	0.001
Loss	after	${\tt mini-batch}$	301:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	311:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	321:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	331:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	341:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	351:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	361:	0.001
Loss	after	${\tt mini-batch}$	371:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	381:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	391:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	401:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	411:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	421:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	431:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	441:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	451:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	461:	0.001
Loss	after	${\tt mini-batch}$	471:	0.001
Loss	after	${\tt mini-batch}$	481:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	491:	0.001
Loss	after	${\tt mini-batch}$	501:	0.001
Loss	after	${\tt mini-batch}$	511:	0.000

Loss	after	${\tt mini-batch}$	521:	0.001
Loss	after	${\tt mini-batch}$	531:	0.001
Loss	after	${\tt mini-batch}$	541:	0.001
Loss	after	${\tt mini-batch}$	551:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	561:	0.001
Loss	after	${\tt mini-batch}$	571:	0.002
Loss	after	${\tt mini-batch}$	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.000
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.002
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.002
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.000
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.000
Loss	after	mini-batch	811:	0.003
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.000
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.000
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.001
		230011		

```
1001: 0.001
Loss after mini-batch
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.000
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.000
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.000
                       1121: 0.000
Loss after mini-batch
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.002
Loss after mini-batch
                       1221: 0.002
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.000
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.000
Loss after mini-batch
                       1301: 0.000
Loss after mini-batch
                       1311: 0.000
Loss after mini-batch
                       1321: 0.000
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
                       1381: 0.001
Loss after mini-batch
Loss after mini-batch
                       1391: 0.001
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
Loss after mini-batch
                       1421: 0.000
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.000
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.002
Loss after mini-batch 1471: 0.001
```

```
1481: 0.000
Loss after mini-batch
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.002
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.002
Loss after mini-batch
                       1541: 0.002
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.002
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.002
Loss after mini-batch
                       1591: 0.001
                       1601: 0.001
Loss after mini-batch
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
                       1651: 0.001
Loss after mini-batch
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.002
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.000
Loss after mini-batch
                       1851: 0.001
                       1861: 0.001
Loss after mini-batch
Loss after mini-batch
                       1871: 0.001
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
Loss after mini-batch
                       1901: 0.002
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
                       1931: 0.001
Loss after mini-batch
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch 1951: 0.001
```

```
1961: 0.001
Loss after mini-batch
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
                       2011: 0.002
Loss after mini-batch
Loss after mini-batch
                       2021: 0.002
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.002
Loss after mini-batch
                       2071: 0.001
                       2081: 0.001
Loss after mini-batch
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
                       2131: 0.001
Loss after mini-batch
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.000
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.000
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.000
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.002
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.000
Loss after mini-batch
                       2351: 0.001
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.000
Loss after mini-batch
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.000
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch 2421: 0.001
Loss after mini-batch 2431: 0.001
```

```
Loss after mini-batch 2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.000
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.000
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
                       2541: 0.001
Loss after mini-batch
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.000
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.002
Loss after mini-batch
                       2711: 0.001
                       2721: 0.001
Loss after mini-batch
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.000
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 15
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
                         41: 0.001
Loss after mini-batch
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.000
```

Loss	${\tt after}$	${\tt mini-batch}$	91:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	101:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	111:	0.001
Loss	after	${\tt mini-batch}$	121:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	131:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	141:	0.001
Loss	after	${\tt mini-batch}$	151:	0.001
Loss	after	${\tt mini-batch}$	161:	0.001
Loss	after	${\tt mini-batch}$	171:	0.001
Loss	after	${\tt mini-batch}$	181:	0.001
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.000
Loss	after	mini-batch	211:	0.000
Loss	after	mini-batch	221:	0.002
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.000
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.002
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.000
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.000
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.000
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
	001			, <u></u>

Loss	after	mini-batch	571:	0.001
Loss	${\tt after}$	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.002
Loss	${\tt after}$	mini-batch	601:	0.001
Loss	${\tt after}$	mini-batch	611:	0.000
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.000
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.000
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.002
Loss	after	mini-batch	771:	0.002
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.002
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.000
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	${\tt after}$	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	${\tt after}$	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.000
Loss	${\tt after}$	mini-batch	1011:	0.000
Loss	${\tt after}$	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.000
Loss	after	${\tt mini-batch}$	1041:	0.002

```
1051: 0.001
Loss after mini-batch
Loss after mini-batch
                       1061: 0.000
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.000
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.000
                       1171: 0.001
Loss after mini-batch
Loss after mini-batch
                       1181: 0.002
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
                       1221: 0.001
Loss after mini-batch
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.002
Loss after mini-batch
                       1271: 0.000
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.002
Loss after mini-batch
                       1341: 0.002
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.002
Loss after mini-batch
                       1401: 0.002
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
                       1431: 0.001
Loss after mini-batch
Loss after mini-batch
                       1441: 0.001
                       1451: 0.000
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
Loss after mini-batch
                       1471: 0.000
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.002
Loss after mini-batch 1521: 0.001
```

```
1531: 0.001
Loss after mini-batch
Loss after mini-batch
                       1541: 0.002
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.000
Loss after mini-batch
                       1581: 0.000
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
                       1651: 0.000
Loss after mini-batch
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
                       1701: 0.002
Loss after mini-batch
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.002
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
                       1791: 0.000
Loss after mini-batch
Loss after mini-batch
                       1801: 0.002
Loss after mini-batch
                       1811: 0.002
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.000
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.002
Loss after mini-batch
                       1901: 0.001
                       1911: 0.001
Loss after mini-batch
Loss after mini-batch
                       1921: 0.001
                       1931: 0.001
Loss after mini-batch
                       1941: 0.000
Loss after mini-batch
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.000
Loss after mini-batch
                       1971: 0.001
                       1981: 0.001
Loss after mini-batch
Loss after mini-batch
                       1991: 0.002
Loss after mini-batch
                       2001: 0.001
```

```
Loss after mini-batch 2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
                       2061: 0.001
Loss after mini-batch
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
                       2111: 0.001
Loss after mini-batch
Loss after mini-batch
                       2121: 0.001
                       2131: 0.001
Loss after mini-batch
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.000
Loss after mini-batch
                       2161: 0.002
Loss after mini-batch
                       2171: 0.001
                       2181: 0.001
Loss after mini-batch
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
                       2211: 0.001
Loss after mini-batch
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.000
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.002
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch 2471: 0.000
Loss after mini-batch 2481: 0.000
```

Loss after mini-batch 2491: 0.001 Loss after mini-batch 2501: 0.001 Loss after mini-batch 2511: 0.000 Loss after mini-batch 2521: 0.001 Loss after mini-batch 2531: 0.001 Loss after mini-batch 2541: 0.001 Loss after mini-batch 2551: 0.001 Loss after mini-batch 2561: 0.001 Loss after mini-batch 2571: 0.001 Loss after mini-batch 2581: 0.001 Loss after mini-batch 2591: 0.001 Loss after mini-batch 2601: 0.001 Loss after mini-batch 2611: 0.001 Loss after mini-batch 2621: 0.001 Loss after mini-batch 2631: 0.001 Loss after mini-batch 2641: 0.000 Loss after mini-batch 2651: 0.000 Loss after mini-batch 2661: 0.000 Loss after mini-batch 2671: 0.001 Loss after mini-batch 2681: 0.001 Loss after mini-batch 2691: 0.000 Loss after mini-batch 2701: 0.001 Loss after mini-batch 2711: 0.001 Loss after mini-batch 2721: 0.001 Loss after mini-batch 2731: 0.002 Loss after mini-batch 2741: 0.001 Loss after mini-batch 2751: 0.002 Loss after mini-batch 2761: 0.001 Loss after mini-batch 2771: 0.001 Loss after mini-batch 2781: 0.001 Loss after mini-batch 2791: 0.001 Loss after mini-batch 2801: 0.001 Loss after mini-batch 2811: 0.001 Training process has finished.

Calculate error for test

Result: 1.0995086988557976e-05 Result: 9.972341754381332e-16 Result: 1.719939080727756e-07 Calculate error for train Result: 1.0599116096144169e-05

Result: 9.641282600677242e-16 Result: 1.704618137662063e-07 Training with 20 epochs.

Starting epoch 1

Loss after mini-batch 1: 0.222
Loss after mini-batch 11: 2.189
Loss after mini-batch 21: 1.865

Loss	after	mini-batch	31:	1.496
Loss	after	${\tt mini-batch}$	41:	1.076
Loss	after	${\tt mini-batch}$	51:	0.741
Loss	after	${\tt mini-batch}$	61:	0.426
Loss	after	${\tt mini-batch}$	71:	0.205
Loss	after	${\tt mini-batch}$	81:	0.075
Loss	after	${\tt mini-batch}$	91:	0.015
Loss	after	${\tt mini-batch}$	101:	0.009
Loss	after	${\tt mini-batch}$	111:	0.012
Loss	after	${\tt mini-batch}$	121:	0.010
Loss	after	${\tt mini-batch}$	131:	0.006
Loss	after	${\tt mini-batch}$	141:	0.007
Loss	after	${\tt mini-batch}$	151:	0.007
Loss	after	${\tt mini-batch}$	161:	0.007
Loss	after	${\tt mini-batch}$	171:	0.005
Loss	after	${\tt mini-batch}$	181:	0.008
Loss	after	${\tt mini-batch}$	191:	0.005
Loss	after	${\tt mini-batch}$	201:	0.004
Loss	after	${\tt mini-batch}$	211:	0.005
Loss	after	${\tt mini-batch}$	221:	0.005
Loss	after	mini-batch	231:	0.005
Loss	after	mini-batch	241:	0.005
Loss	after	mini-batch	251:	0.008
Loss	after	mini-batch	261:	0.006
Loss	after	mini-batch	271:	0.004
Loss	after	mini-batch	281:	0.003
Loss	after	mini-batch	291:	0.005
Loss	after	mini-batch	301:	0.005
Loss	after	mini-batch	311:	0.003
Loss	after	mini-batch	321:	0.005
Loss	after	mini-batch	331:	0.005
Loss	after	mini-batch	341:	0.005
Loss	after	mini-batch	351:	0.005
Loss	after	mini-batch	361:	0.006
Loss	after	mini-batch	371:	0.004
Loss	after	mini-batch	381:	0.005
Loss	after	mini-batch	391:	0.005
Loss	after	mini-batch	401:	0.006
Loss	after	mini-batch	411:	0.005
Loss	after	mini-batch	421:	0.005
Loss	after	mini-batch	431:	0.005
Loss	after	mini-batch	441:	0.006
Loss	after	mini-batch	451:	0.004
Loss	after	mini-batch	461:	0.003
Loss	after	mini-batch	471:	0.005
Loss	after	mini-batch	481:	0.005
Loss	after	mini-batch	491:	0.004
Loss	after	mini-batch	501:	0.004

Loss	after	${\tt mini-batch}$	511:	0.002
Loss	after	${\tt mini-batch}$	521:	0.004
Loss	after	${\tt mini-batch}$	531:	0.002
Loss	after	${\tt mini-batch}$	541:	0.004
Loss	after	${\tt mini-batch}$	551:	0.003
Loss	after	${\tt mini-batch}$	561:	0.004
Loss	after	${\tt mini-batch}$	571:	0.004
Loss	after	${\tt mini-batch}$	581:	0.003
Loss	after	${\tt mini-batch}$	591:	0.007
Loss	after	${\tt mini-batch}$	601:	0.004
Loss	after	${\tt mini-batch}$	611:	0.005
Loss	after	${\tt mini-batch}$	621:	0.004
Loss	after	${\tt mini-batch}$	631:	0.006
Loss	after	${\tt mini-batch}$	641:	0.003
Loss	after	${\tt mini-batch}$	651:	0.004
Loss	after	${\tt mini-batch}$	661:	0.003
Loss	after	${\tt mini-batch}$	671:	0.004
Loss	after	${\tt mini-batch}$	681:	0.003
Loss	after	${\tt mini-batch}$	691:	0.004
Loss	after	${\tt mini-batch}$	701:	0.003
Loss	after	${\tt mini-batch}$	711:	0.007
Loss	after	${\tt mini-batch}$	721:	0.005
Loss	after	${\tt mini-batch}$	731:	0.004
Loss	after	${\tt mini-batch}$	741:	0.003
Loss	after	${\tt mini-batch}$	751:	0.005
Loss	after	${\tt mini-batch}$	761:	0.004
Loss	after	${\tt mini-batch}$	771:	0.005
Loss	after	${\tt mini-batch}$	781:	0.005
Loss	after	${\tt mini-batch}$	791:	0.004
Loss	after	${\tt mini-batch}$	801:	0.003
Loss	after	${\tt mini-batch}$	811:	0.003
Loss	after	${\tt mini-batch}$	821:	0.003
Loss	after	${\tt mini-batch}$	831:	0.003
Loss	after	${\tt mini-batch}$	841:	0.004
Loss	after	${\tt mini-batch}$	851:	0.006
Loss	after	${\tt mini-batch}$	861:	0.004
Loss	after	${\tt mini-batch}$	871:	0.002
Loss	after	${\tt mini-batch}$	881:	0.005
Loss	after	${\tt mini-batch}$	891:	0.002
Loss	after	${\tt mini-batch}$	901:	0.003
Loss	after	${\tt mini-batch}$	911:	0.003
Loss	after	${\tt mini-batch}$	921:	0.004
Loss	after	${\tt mini-batch}$	931:	0.006
Loss	after	${\tt mini-batch}$	941:	0.004
Loss	after	${\tt mini-batch}$	951:	0.003
Loss	after	${\tt mini-batch}$	961:	0.003
Loss	after	${\tt mini-batch}$	971:	0.003
Loss	after	${\tt mini-batch}$	981:	0.002

```
991: 0.003
Loss after mini-batch
Loss after mini-batch
                       1001: 0.003
Loss after mini-batch
                       1011: 0.003
Loss after mini-batch
                       1021: 0.003
Loss after mini-batch
                       1031: 0.005
Loss after mini-batch
                       1041: 0.003
Loss after mini-batch
                       1051: 0.003
Loss after mini-batch
                       1061: 0.003
Loss after mini-batch
                       1071: 0.003
Loss after mini-batch
                       1081: 0.004
                       1091: 0.004
Loss after mini-batch
Loss after mini-batch
                       1101: 0.004
                       1111: 0.003
Loss after mini-batch
Loss after mini-batch
                       1121: 0.002
Loss after mini-batch
                       1131: 0.004
Loss after mini-batch
                       1141: 0.004
Loss after mini-batch
                       1151: 0.002
                       1161: 0.004
Loss after mini-batch
Loss after mini-batch
                       1171: 0.004
Loss after mini-batch
                       1181: 0.003
Loss after mini-batch
                       1191: 0.004
Loss after mini-batch
                       1201: 0.004
Loss after mini-batch
                       1211: 0.005
Loss after mini-batch
                       1221: 0.004
Loss after mini-batch
                       1231: 0.003
Loss after mini-batch
                       1241: 0.006
                       1251: 0.004
Loss after mini-batch
Loss after mini-batch
                       1261: 0.003
Loss after mini-batch
                       1271: 0.002
Loss after mini-batch
                       1281: 0.004
Loss after mini-batch
                       1291: 0.002
Loss after mini-batch
                       1301: 0.002
Loss after mini-batch
                       1311: 0.004
Loss after mini-batch
                       1321: 0.003
Loss after mini-batch
                       1331: 0.002
                       1341: 0.002
Loss after mini-batch
Loss after mini-batch
                       1351: 0.003
Loss after mini-batch
                       1361: 0.002
                       1371: 0.005
Loss after mini-batch
Loss after mini-batch
                       1381: 0.003
                       1391: 0.004
Loss after mini-batch
                       1401: 0.004
Loss after mini-batch
                       1411: 0.004
Loss after mini-batch
Loss after mini-batch
                       1421: 0.004
Loss after mini-batch
                       1431: 0.003
Loss after mini-batch
                       1441: 0.003
Loss after mini-batch
                       1451: 0.003
Loss after mini-batch 1461: 0.004
```

```
1471: 0.003
Loss after mini-batch
Loss after mini-batch
                       1481: 0.003
Loss after mini-batch
                       1491: 0.003
Loss after mini-batch
                       1501: 0.003
Loss after mini-batch
                       1511: 0.005
Loss after mini-batch
                       1521: 0.005
Loss after mini-batch
                       1531: 0.003
Loss after mini-batch
                       1541: 0.003
Loss after mini-batch
                       1551: 0.004
Loss after mini-batch
                       1561: 0.002
Loss after mini-batch
                       1571: 0.002
Loss after mini-batch
                       1581: 0.003
                       1591: 0.003
Loss after mini-batch
Loss after mini-batch
                       1601: 0.003
Loss after mini-batch
                       1611: 0.003
Loss after mini-batch
                       1621: 0.002
Loss after mini-batch
                       1631: 0.002
Loss after mini-batch
                       1641: 0.003
Loss after mini-batch
                       1651: 0.003
Loss after mini-batch
                       1661: 0.003
Loss after mini-batch
                       1671: 0.003
Loss after mini-batch
                       1681: 0.002
Loss after mini-batch
                       1691: 0.002
Loss after mini-batch
                       1701: 0.003
Loss after mini-batch
                       1711: 0.002
Loss after mini-batch
                       1721: 0.002
                       1731: 0.004
Loss after mini-batch
Loss after mini-batch
                       1741: 0.004
Loss after mini-batch
                       1751: 0.004
Loss after mini-batch
                       1761: 0.003
Loss after mini-batch
                       1771: 0.002
Loss after mini-batch
                       1781: 0.002
Loss after mini-batch
                       1791: 0.003
Loss after mini-batch
                       1801: 0.004
Loss after mini-batch
                       1811: 0.003
Loss after mini-batch
                       1821: 0.003
Loss after mini-batch
                       1831: 0.003
Loss after mini-batch
                       1841: 0.002
                       1851: 0.002
Loss after mini-batch
Loss after mini-batch
                       1861: 0.003
                       1871: 0.004
Loss after mini-batch
                       1881: 0.002
Loss after mini-batch
Loss after mini-batch
                       1891: 0.004
Loss after mini-batch
                       1901: 0.003
Loss after mini-batch
                       1911: 0.004
Loss after mini-batch
                       1921: 0.003
Loss after mini-batch
                       1931: 0.004
Loss after mini-batch 1941: 0.002
```

```
1951: 0.004
Loss after mini-batch
Loss after mini-batch
                       1961: 0.002
Loss after mini-batch
                       1971: 0.003
Loss after mini-batch
                       1981: 0.002
Loss after mini-batch
                       1991: 0.003
                       2001: 0.002
Loss after mini-batch
Loss after mini-batch
                       2011: 0.002
Loss after mini-batch
                       2021: 0.002
Loss after mini-batch
                       2031: 0.003
Loss after mini-batch
                       2041: 0.003
Loss after mini-batch
                       2051: 0.002
Loss after mini-batch
                       2061: 0.003
                       2071: 0.002
Loss after mini-batch
Loss after mini-batch
                       2081: 0.002
Loss after mini-batch
                       2091: 0.003
Loss after mini-batch
                       2101: 0.002
Loss after mini-batch
                       2111: 0.004
                       2121: 0.002
Loss after mini-batch
Loss after mini-batch
                       2131: 0.002
Loss after mini-batch
                       2141: 0.003
Loss after mini-batch
                       2151: 0.002
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch 2171: 0.001
Loss after mini-batch
                       2181: 0.004
Loss after mini-batch
                       2191: 0.002
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.002
Loss after mini-batch
                       2231: 0.002
Loss after mini-batch
                       2241: 0.002
Loss after mini-batch
                       2251: 0.002
Loss after mini-batch
                       2261: 0.003
Loss after mini-batch
                       2271: 0.002
Loss after mini-batch
                       2281: 0.003
Loss after mini-batch
                       2291: 0.004
Loss after mini-batch
                       2301: 0.002
Loss after mini-batch
                       2311: 0.002
Loss after mini-batch
                       2321: 0.002
                       2331: 0.002
Loss after mini-batch
Loss after mini-batch
                       2341: 0.004
                       2351: 0.004
Loss after mini-batch
                       2361: 0.002
Loss after mini-batch
                       2371: 0.003
Loss after mini-batch
Loss after mini-batch
                       2381: 0.002
Loss after mini-batch
                       2391: 0.002
Loss after mini-batch
                       2401: 0.004
Loss after mini-batch 2411: 0.002
Loss after mini-batch 2421: 0.002
```

```
Loss after mini-batch 2431: 0.003
Loss after mini-batch 2441: 0.002
Loss after mini-batch
                      2451: 0.004
Loss after mini-batch
                      2461: 0.003
Loss after mini-batch 2471: 0.002
Loss after mini-batch
                      2481: 0.002
Loss after mini-batch
                      2491: 0.002
Loss after mini-batch 2501: 0.003
Loss after mini-batch 2511: 0.002
Loss after mini-batch
                      2521: 0.002
                      2531: 0.001
Loss after mini-batch
Loss after mini-batch
                      2541: 0.002
Loss after mini-batch
                       2551: 0.003
Loss after mini-batch
                       2561: 0.003
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                      2581: 0.002
Loss after mini-batch
                      2591: 0.002
Loss after mini-batch
                      2601: 0.001
Loss after mini-batch
                      2611: 0.003
Loss after mini-batch
                      2621: 0.003
Loss after mini-batch
                      2631: 0.003
Loss after mini-batch
                      2641: 0.002
Loss after mini-batch 2651: 0.002
Loss after mini-batch
                      2661: 0.004
Loss after mini-batch
                      2671: 0.002
Loss after mini-batch
                      2681: 0.001
Loss after mini-batch
                      2691: 0.002
Loss after mini-batch
                      2701: 0.003
Loss after mini-batch
                       2711: 0.003
Loss after mini-batch
                      2721: 0.003
Loss after mini-batch
                      2731: 0.003
Loss after mini-batch
                      2741: 0.004
Loss after mini-batch
                      2751: 0.002
Loss after mini-batch 2761: 0.002
Loss after mini-batch
                      2771: 0.003
Loss after mini-batch
                      2781: 0.002
Loss after mini-batch 2791: 0.003
Loss after mini-batch
                      2801: 0.002
Loss after mini-batch
                      2811: 0.003
Starting epoch 2
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.003
Loss after mini-batch
                         21: 0.002
                         31: 0.003
Loss after mini-batch
Loss after mini-batch
                         41: 0.003
Loss after mini-batch
                         51: 0.003
Loss after mini-batch
                         61: 0.003
Loss after mini-batch
                         71: 0.002
```

Loss	after	${\tt mini-batch}$	81:	0.001
Loss	after	${\tt mini-batch}$	91:	0.001
Loss	after	${\tt mini-batch}$	101:	0.003
Loss	after	${\tt mini-batch}$	111:	0.003
Loss	after	${\tt mini-batch}$	121:	0.002
Loss	after	${\tt mini-batch}$	131:	0.001
Loss	after	${\tt mini-batch}$	141:	0.003
Loss	after	${\tt mini-batch}$	151:	0.002
Loss	after	${\tt mini-batch}$	161:	0.002
Loss	after	${\tt mini-batch}$	171:	0.002
Loss	after	${\tt mini-batch}$	181:	0.001
Loss	after	${\tt mini-batch}$	191:	0.004
Loss	after	${\tt mini-batch}$	201:	0.002
Loss	after	${\tt mini-batch}$	211:	0.003
Loss	after	${\tt mini-batch}$	221:	0.002
Loss	after	mini-batch	231:	0.003
Loss	after	mini-batch	241:	0.002
Loss	after	mini-batch	251:	0.002
Loss	after	mini-batch	261:	0.003
Loss	after	mini-batch	271:	0.002
Loss	after	mini-batch	281:	0.003
Loss	after	mini-batch	291:	0.002
Loss	after	mini-batch	301:	0.003
Loss	after	mini-batch	311:	0.005
Loss	after	mini-batch	321:	0.002
Loss	after	mini-batch	331:	0.002
Loss	after	mini-batch	341:	0.002
Loss	after	mini-batch	351:	0.002
Loss	after	mini-batch	361:	0.002
Loss	after	mini-batch	371:	0.002
Loss	after	mini-batch	381:	0.002
Loss	after	mini-batch	391:	0.002
Loss	after	mini-batch	401:	0.002
Loss	after	mini-batch	411:	0.003
Loss	after	mini-batch	421:	0.002
Loss	after	mini-batch	431:	0.002
Loss	after	mini-batch	441:	0.002
Loss	after	mini-batch	451:	0.002
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.002
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.002
Loss	after	mini-batch	501:	0.002
Loss	after	mini-batch	511:	
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.002
Loss	after	mini-batch	541:	0.002
Loss	after		551:	

Loss	after	${\tt mini-batch}$	561:	0.002
Loss	after	${\tt mini-batch}$	571:	0.002
Loss	after	mini-batch	581:	0.002
Loss	after	mini-batch	591:	0.002
Loss	${\tt after}$	mini-batch	601:	0.002
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.002
Loss	after	mini-batch	631:	0.002
Loss	after	mini-batch	641:	0.003
Loss	after	mini-batch	651:	0.003
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.002
Loss	after	mini-batch	681:	0.002
Loss	after	mini-batch	691:	0.002
Loss	after	mini-batch	701:	0.006
Loss	after	mini-batch	711:	0.003
Loss	after	mini-batch	721:	0.002
Loss	after	mini-batch	731:	0.004
Loss	after	mini-batch	741:	0.003
Loss	after	mini-batch	751:	0.002
Loss	after	mini-batch	761:	0.002
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.002
Loss	after	mini-batch	791:	0.002
Loss	after	mini-batch	801:	0.002
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.002
Loss	after	mini-batch	841:	0.002
Loss	after	mini-batch	851:	0.002
Loss	after	mini-batch	861:	0.002
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.002
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.003
Loss	after	mini-batch	931:	0.003
Loss	after	mini-batch	941:	0.003
Loss	after	mini-batch	951:	0.002
Loss	after	mini-batch	961:	0.002
Loss	after	mini-batch	971:	0.002
Loss	after	mini-batch	981:	0.002
Loss	after	mini-batch	991:	0.003
Loss	after	mini-batch	1001:	0.002
Loss	after	mini-batch	1011:	0.002
Loss	after	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.001

```
1041: 0.002
Loss after mini-batch
Loss after mini-batch
                       1051: 0.002
Loss after mini-batch
                       1061: 0.002
Loss after mini-batch
                       1071: 0.002
Loss after mini-batch
                       1081: 0.002
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.003
Loss after mini-batch
                       1121: 0.003
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.002
Loss after mini-batch
                       1151: 0.002
                       1161: 0.002
Loss after mini-batch
Loss after mini-batch
                       1171: 0.002
Loss after mini-batch
                       1181: 0.002
Loss after mini-batch
                       1191: 0.002
Loss after mini-batch
                       1201: 0.003
                       1211: 0.002
Loss after mini-batch
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.003
Loss after mini-batch
                       1261: 0.003
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.002
Loss after mini-batch
                       1291: 0.001
                       1301: 0.003
Loss after mini-batch
Loss after mini-batch
                       1311: 0.003
Loss after mini-batch
                       1321: 0.003
Loss after mini-batch
                       1331: 0.002
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.002
Loss after mini-batch
                       1361: 0.005
Loss after mini-batch
                       1371: 0.003
Loss after mini-batch
                       1381: 0.002
Loss after mini-batch
                       1391: 0.002
Loss after mini-batch
                       1401: 0.002
Loss after mini-batch
                       1411: 0.003
                       1421: 0.002
Loss after mini-batch
Loss after mini-batch
                       1431: 0.003
                       1441: 0.001
Loss after mini-batch
                       1451: 0.002
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.003
Loss after mini-batch
                       1491: 0.002
Loss after mini-batch
                       1501: 0.004
Loss after mini-batch
                      1511: 0.002
```

```
1521: 0.002
Loss after mini-batch
Loss after mini-batch
                       1531: 0.002
Loss after mini-batch
                       1541: 0.003
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.002
Loss after mini-batch
                       1581: 0.002
Loss after mini-batch
                       1591: 0.002
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.003
Loss after mini-batch
                       1621: 0.003
Loss after mini-batch
                       1631: 0.002
                       1641: 0.002
Loss after mini-batch
Loss after mini-batch
                       1651: 0.002
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.002
                       1691: 0.001
Loss after mini-batch
Loss after mini-batch
                       1701: 0.002
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.002
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.002
Loss after mini-batch
                       1751: 0.003
Loss after mini-batch
                       1761: 0.002
Loss after mini-batch
                       1771: 0.003
                       1781: 0.001
Loss after mini-batch
Loss after mini-batch
                       1791: 0.002
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.002
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.002
Loss after mini-batch
                       1841: 0.002
Loss after mini-batch
                       1851: 0.002
Loss after mini-batch
                       1861: 0.002
Loss after mini-batch
                       1871: 0.004
Loss after mini-batch
                       1881: 0.002
Loss after mini-batch
                       1891: 0.001
                       1901: 0.001
Loss after mini-batch
Loss after mini-batch
                       1911: 0.002
                       1921: 0.002
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
Loss after mini-batch
                       1951: 0.002
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.003
Loss after mini-batch
                       1981: 0.003
Loss after mini-batch
                      1991: 0.002
```

```
2001: 0.001
Loss after mini-batch
Loss after mini-batch
                       2011: 0.002
Loss after mini-batch
                       2021: 0.003
Loss after mini-batch
                       2031: 0.002
Loss after mini-batch
                       2041: 0.002
                       2051: 0.001
Loss after mini-batch
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.002
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.002
                       2101: 0.003
Loss after mini-batch
Loss after mini-batch
                       2111: 0.001
                       2121: 0.003
Loss after mini-batch
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.002
Loss after mini-batch
                       2151: 0.002
Loss after mini-batch
                       2161: 0.002
                       2171: 0.002
Loss after mini-batch
Loss after mini-batch
                       2181: 0.002
Loss after mini-batch
                       2191: 0.002
Loss after mini-batch
                       2201: 0.002
Loss after mini-batch
                       2211: 0.002
Loss after mini-batch
                       2221: 0.002
Loss after mini-batch
                       2231: 0.002
Loss after mini-batch
                       2241: 0.004
Loss after mini-batch
                       2251: 0.002
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.002
Loss after mini-batch
                       2281: 0.002
Loss after mini-batch
                       2291: 0.002
Loss after mini-batch
                       2301: 0.002
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.002
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.002
Loss after mini-batch
                       2361: 0.002
Loss after mini-batch
                       2371: 0.002
                       2381: 0.002
Loss after mini-batch
Loss after mini-batch
                       2391: 0.002
                       2401: 0.002
Loss after mini-batch
                       2411: 0.002
Loss after mini-batch
                       2421: 0.002
Loss after mini-batch
Loss after mini-batch
                       2431: 0.004
Loss after mini-batch
                       2441: 0.002
Loss after mini-batch
                       2451: 0.002
Loss after mini-batch 2461: 0.001
Loss after mini-batch 2471: 0.001
```

```
Loss after mini-batch 2481: 0.003
Loss after mini-batch 2491: 0.002
Loss after mini-batch
                      2501: 0.001
Loss after mini-batch
                      2511: 0.001
Loss after mini-batch
                      2521: 0.002
                       2531: 0.002
Loss after mini-batch
Loss after mini-batch
                       2541: 0.002
Loss after mini-batch
                      2551: 0.002
Loss after mini-batch
                      2561: 0.001
Loss after mini-batch
                       2571: 0.002
Loss after mini-batch
                       2581: 0.002
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.002
Loss after mini-batch
                       2621: 0.003
Loss after mini-batch
                      2631: 0.003
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.002
Loss after mini-batch
                      2661: 0.002
Loss after mini-batch
                      2671: 0.001
                       2681: 0.002
Loss after mini-batch
Loss after mini-batch
                       2691: 0.002
Loss after mini-batch 2701: 0.002
Loss after mini-batch
                      2711: 0.002
Loss after mini-batch
                      2721: 0.001
Loss after mini-batch
                      2731: 0.002
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.002
Loss after mini-batch
                       2761: 0.002
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.002
Loss after mini-batch
                       2791: 0.002
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.003
Starting epoch 3
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.002
Loss after mini-batch
                         21: 0.001
                         31: 0.001
Loss after mini-batch
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.002
Loss after mini-batch
                         61: 0.002
Loss after mini-batch
                         71: 0.002
Loss after mini-batch
                         81: 0.003
Loss after mini-batch
                         91: 0.002
Loss after mini-batch
                        101: 0.002
Loss after mini-batch
                        111: 0.002
Loss after mini-batch
                        121: 0.001
```

Loss	after	${\tt mini-batch}$	131:	0.004
Loss	after	${\tt mini-batch}$	141:	0.002
Loss	after	${\tt mini-batch}$	151:	0.002
Loss	after	${\tt mini-batch}$	161:	0.001
Loss	after	${\tt mini-batch}$	171:	0.002
Loss	after	${\tt mini-batch}$	181:	0.001
Loss	after	${\tt mini-batch}$	191:	0.001
Loss	after	${\tt mini-batch}$	201:	0.001
Loss	after	${\tt mini-batch}$	211:	0.001
Loss	after	${\tt mini-batch}$	221:	0.002
Loss	after	${\tt mini-batch}$	231:	0.002
Loss	after	${\tt mini-batch}$	241:	0.002
Loss	after	${\tt mini-batch}$	251:	0.001
Loss	after	${\tt mini-batch}$	261:	0.002
Loss	after	${\tt mini-batch}$	271:	0.002
Loss	after	${\tt mini-batch}$	281:	0.001
Loss	after	${\tt mini-batch}$	291:	0.001
Loss	after	${\tt mini-batch}$	301:	0.002
Loss	after	${\tt mini-batch}$	311:	0.002
Loss	after	${\tt mini-batch}$	321:	0.002
Loss	after	${\tt mini-batch}$	331:	0.001
Loss	after	${\tt mini-batch}$	341:	0.002
Loss	after	${\tt mini-batch}$	351:	0.001
Loss	after	${\tt mini-batch}$	361:	0.002
Loss	after	${\tt mini-batch}$	371:	0.002
Loss	after	${\tt mini-batch}$	381:	0.001
Loss	after	${\tt mini-batch}$	391:	0.001
Loss	after	${\tt mini-batch}$	401:	0.002
Loss	after	${\tt mini-batch}$	411:	0.002
Loss	after	${\tt mini-batch}$	421:	0.002
Loss	after	mini-batch	431:	0.002
Loss	after	mini-batch	441:	0.002
Loss	after	mini-batch	451:	0.003
Loss	after	mini-batch	461:	0.003
Loss	after	mini-batch	471:	0.004
Loss	after	mini-batch	481:	0.002
Loss	after	${\tt mini-batch}$	491:	0.004
Loss	after	mini-batch	501:	0.002
Loss	after	${\tt mini-batch}$	511:	0.002
Loss	after	${\tt mini-batch}$	521:	0.001
Loss	after	${\tt mini-batch}$	531:	0.002
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.003
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.002
Loss	after	${\tt mini-batch}$	601:	0.002

Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.002
Loss	after	mini-batch	651:	0.002
Loss	after	mini-batch	661:	0.004
Loss	after	mini-batch	671:	0.002
Loss	after	mini-batch	681:	0.002
Loss	after	${\tt mini-batch}$	691:	0.002
Loss	after	${\tt mini-batch}$	701:	0.002
Loss	after	${\tt mini-batch}$	711:	0.002
Loss	after	${\tt mini-batch}$	721:	0.001
Loss	after	${\tt mini-batch}$	731:	0.001
Loss	after	${\tt mini-batch}$	741:	0.004
Loss	after	${\tt mini-batch}$	751:	0.002
Loss	after	${\tt mini-batch}$	761:	0.003
Loss	after	${\tt mini-batch}$	771:	0.002
Loss	after	${\tt mini-batch}$	781:	0.002
Loss	after	${\tt mini-batch}$	791:	0.003
Loss	after	${\tt mini-batch}$	801:	0.003
Loss	after	${\tt mini-batch}$	811:	0.001
Loss	after	${\tt mini-batch}$	821:	0.002
Loss	after	${\tt mini-batch}$	831:	0.002
Loss	after	${\tt mini-batch}$	841:	0.002
Loss	after	${\tt mini-batch}$	851:	0.004
Loss	after	${\tt mini-batch}$	861:	0.003
Loss	after	${\tt mini-batch}$	871:	0.001
Loss	after	mini-batch	881:	0.002
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.002
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.002
Loss	after	mini-batch	951:	0.002
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.002
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.002
Loss	after	mini-batch	1001:	0.002
Loss	after	mini-batch	1011:	0.002
Loss	after	mini-batch	1021:	0.002
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.002
Loss	after	mini-batch	1051:	0.002
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.001
Loss	after	mini-batch	1081:	0.002

```
1091: 0.001
Loss after mini-batch
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.003
Loss after mini-batch
                       1151: 0.003
Loss after mini-batch
                       1161: 0.002
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.002
Loss after mini-batch
                       1191: 0.002
Loss after mini-batch
                       1201: 0.001
                       1211: 0.001
Loss after mini-batch
Loss after mini-batch
                       1221: 0.002
Loss after mini-batch
                       1231: 0.002
Loss after mini-batch
                       1241: 0.002
Loss after mini-batch
                       1251: 0.001
                       1261: 0.003
Loss after mini-batch
Loss after mini-batch
                       1271: 0.002
Loss after mini-batch
                       1281: 0.002
Loss after mini-batch
                       1291: 0.002
Loss after mini-batch
                       1301: 0.003
Loss after mini-batch
                       1311: 0.003
Loss after mini-batch
                       1321: 0.002
Loss after mini-batch
                       1331: 0.002
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.003
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.002
Loss after mini-batch
                       1401: 0.002
Loss after mini-batch
                       1411: 0.002
Loss after mini-batch
                       1421: 0.002
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
                       1471: 0.001
Loss after mini-batch
Loss after mini-batch
                       1481: 0.002
                       1491: 0.003
Loss after mini-batch
                       1501: 0.002
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.002
Loss after mini-batch
                       1541: 0.002
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                      1561: 0.002
```

```
1571: 0.001
Loss after mini-batch
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.002
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.002
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.002
Loss after mini-batch
                       1671: 0.002
Loss after mini-batch
                       1681: 0.001
                       1691: 0.002
Loss after mini-batch
Loss after mini-batch
                       1701: 0.002
Loss after mini-batch
                       1711: 0.002
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.002
                       1741: 0.002
Loss after mini-batch
Loss after mini-batch
                       1751: 0.003
Loss after mini-batch
                       1761: 0.002
Loss after mini-batch
                       1771: 0.002
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.003
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.002
Loss after mini-batch
                       1901: 0.003
Loss after mini-batch
                       1911: 0.003
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.002
Loss after mini-batch
                       1941: 0.002
                       1951: 0.001
Loss after mini-batch
Loss after mini-batch
                       1961: 0.001
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.002
Loss after mini-batch
                       2021: 0.002
Loss after mini-batch
                       2031: 0.002
Loss after mini-batch 2041: 0.002
```

```
Loss after mini-batch 2051: 0.001
Loss after mini-batch
                       2061: 0.003
Loss after mini-batch
                       2071: 0.002
Loss after mini-batch
                       2081: 0.002
Loss after mini-batch
                       2091: 0.002
                       2101: 0.002
Loss after mini-batch
Loss after mini-batch
                       2111: 0.002
Loss after mini-batch 2121: 0.003
Loss after mini-batch 2131: 0.001
Loss after mini-batch
                       2141: 0.002
                       2151: 0.002
Loss after mini-batch
Loss after mini-batch
                       2161: 0.002
                       2171: 0.002
Loss after mini-batch
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.004
Loss after mini-batch
                       2201: 0.003
Loss after mini-batch
                       2211: 0.001
                       2221: 0.001
Loss after mini-batch
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.002
Loss after mini-batch
                       2251: 0.002
Loss after mini-batch
                       2261: 0.002
Loss after mini-batch
                       2271: 0.002
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.002
Loss after mini-batch
                       2311: 0.002
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.002
Loss after mini-batch
                       2341: 0.003
Loss after mini-batch
                       2351: 0.004
Loss after mini-batch
                       2361: 0.002
                       2371: 0.002
Loss after mini-batch
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.002
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch 2441: 0.002
                       2451: 0.003
Loss after mini-batch
Loss after mini-batch
                       2461: 0.002
                       2471: 0.002
Loss after mini-batch
Loss after mini-batch
                       2481: 0.002
Loss after mini-batch
                       2491: 0.003
Loss after mini-batch
                       2501: 0.002
Loss after mini-batch
                       2511: 0.002
Loss after mini-batch 2521: 0.002
```

```
Loss after mini-batch 2531: 0.003
Loss after mini-batch 2541: 0.002
Loss after mini-batch
                      2551: 0.001
Loss after mini-batch
                      2561: 0.001
Loss after mini-batch 2571: 0.002
Loss after mini-batch
                      2581: 0.002
Loss after mini-batch
                      2591: 0.002
Loss after mini-batch 2601: 0.001
Loss after mini-batch 2611: 0.002
Loss after mini-batch
                      2621: 0.001
                      2631: 0.003
Loss after mini-batch
Loss after mini-batch
                      2641: 0.002
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.002
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                      2681: 0.002
Loss after mini-batch
                      2691: 0.002
Loss after mini-batch
                      2701: 0.001
Loss after mini-batch 2711: 0.001
Loss after mini-batch 2721: 0.001
Loss after mini-batch 2731: 0.001
Loss after mini-batch 2741: 0.001
Loss after mini-batch 2751: 0.001
Loss after mini-batch 2761: 0.003
Loss after mini-batch
                      2771: 0.002
Loss after mini-batch
                      2781: 0.002
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.003
Loss after mini-batch
                       2811: 0.002
Starting epoch 4
Loss after mini-batch
                          1: 0.001
Loss after mini-batch
                         11: 0.003
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.002
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.002
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.002
Loss after mini-batch
                        151: 0.002
Loss after mini-batch
                        161: 0.002
Loss after mini-batch
                        171: 0.003
```

Loss	${\tt after}$	mini-batch	181:	0.003
Loss	${\tt after}$	mini-batch	191:	0.001
Loss	${\tt after}$	mini-batch	201:	0.002
Loss	${\tt after}$	mini-batch	211:	0.003
Loss	${\tt after}$	mini-batch	221:	0.001
Loss	${\tt after}$	mini-batch	231:	0.002
Loss	${\tt after}$	mini-batch	241:	0.001
Loss	${\tt after}$	mini-batch	251:	0.001
Loss	${\tt after}$	mini-batch	261:	0.002
Loss	${\tt after}$	mini-batch	271:	0.002
Loss	${\tt after}$	mini-batch	281:	0.001
Loss	${\tt after}$	mini-batch	291:	0.001
Loss	${\tt after}$	mini-batch	301:	0.001
Loss	${\tt after}$	mini-batch	311:	0.002
Loss	${\tt after}$	mini-batch	321:	0.002
Loss	${\tt after}$	mini-batch	331:	0.003
Loss	${\tt after}$	mini-batch	341:	0.002
Loss	${\tt after}$	mini-batch	351:	0.001
Loss	${\tt after}$	mini-batch	361:	0.002
Loss	${\tt after}$	mini-batch	371:	0.001
Loss	${\tt after}$	mini-batch	381:	0.001
Loss	${\tt after}$	mini-batch	391:	0.001
Loss	${\tt after}$	mini-batch	401:	0.001
Loss	${\tt after}$	mini-batch	411:	0.002
Loss	${\tt after}$	mini-batch	421:	0.001
Loss	${\tt after}$	mini-batch	431:	0.002
Loss	${\tt after}$	mini-batch	441:	0.002
Loss	${\tt after}$	mini-batch	451:	0.001
Loss	${\tt after}$	mini-batch	461:	0.003
Loss	${\tt after}$	mini-batch	471:	0.002
Loss	${\tt after}$	mini-batch	481:	0.002
Loss	${\tt after}$	mini-batch	491:	0.002
Loss	${\tt after}$	mini-batch	501:	0.001
Loss	${\tt after}$	mini-batch	511:	0.001
Loss	${\tt after}$	mini-batch	521:	0.001
Loss	${\tt after}$	mini-batch	531:	0.001
Loss	${\tt after}$	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.002
Loss	after	mini-batch	581:	0.002
Loss	${\tt after}$	mini-batch	591:	0.001
Loss	${\tt after}$	mini-batch	601:	0.002
Loss	${\tt after}$	mini-batch	611:	0.003
Loss	${\tt after}$	mini-batch	621:	0.002
Loss	after	mini-batch	631:	0.002
Loss	${\tt after}$	mini-batch	641:	0.001
Loss	${\tt after}$	mini-batch	651:	0.002

Loss	after	${\tt mini-batch}$	661:	0.001
Loss	after	${\tt mini-batch}$	671:	0.003
Loss	after	${\tt mini-batch}$	681:	0.002
Loss	after	${\tt mini-batch}$	691:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	701:	0.001
Loss	after	${\tt mini-batch}$	711:	0.002
Loss	after	${\tt mini-batch}$	721:	0.001
Loss	after	mini-batch	731:	0.002
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.002
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.002
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.002
Loss	after	mini-batch	891:	0.002
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.002
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.002
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.002
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.002
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.002
Loss	after	mini-batch	1081:	0.001
Loss	after	mini-batch	1091:	0.000
Loss	after	mini-batch	1101:	0.001
Loss	after	mini-batch	1111:	0.001
Loss	after	mini-batch	1121:	0.002
Loss	after	mini-batch	1131:	0.001
	001			, <u></u>

```
1141: 0.002
Loss after mini-batch
Loss after mini-batch
                       1151: 0.002
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.002
Loss after mini-batch
                       1231: 0.002
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.002
                       1261: 0.002
Loss after mini-batch
Loss after mini-batch
                       1271: 0.002
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.003
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
                       1401: 0.002
Loss after mini-batch
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.002
Loss after mini-batch
                       1441: 0.002
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.002
Loss after mini-batch
                       1481: 0.000
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.002
                       1521: 0.001
Loss after mini-batch
Loss after mini-batch
                       1531: 0.001
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
Loss after mini-batch
                       1561: 0.002
Loss after mini-batch
                       1571: 0.002
Loss after mini-batch
                       1581: 0.002
Loss after mini-batch
                       1591: 0.002
Loss after mini-batch
                       1601: 0.002
Loss after mini-batch
                      1611: 0.001
```

```
1621: 0.001
Loss after mini-batch
Loss after mini-batch
                       1631: 0.002
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.000
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
                       1741: 0.002
Loss after mini-batch
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
                       1791: 0.001
Loss after mini-batch
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.002
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.002
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.002
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
                       2001: 0.001
Loss after mini-batch
Loss after mini-batch
                       2011: 0.003
                       2021: 0.002
Loss after mini-batch
                       2031: 0.002
Loss after mini-batch
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.002
Loss after mini-batch 2091: 0.001
```

```
Loss after mini-batch 2101: 0.003
Loss after mini-batch 2111: 0.002
Loss after mini-batch
                       2121: 0.002
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch 2141: 0.001
                       2151: 0.002
Loss after mini-batch
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch 2171: 0.002
Loss after mini-batch 2181: 0.001
Loss after mini-batch
                       2191: 0.001
                       2201: 0.001
Loss after mini-batch
Loss after mini-batch
                       2211: 0.001
                       2221: 0.001
Loss after mini-batch
Loss after mini-batch
                       2231: 0.003
Loss after mini-batch
                       2241: 0.002
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
                       2271: 0.001
Loss after mini-batch
Loss after mini-batch
                       2281: 0.002
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.002
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.002
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.003
Loss after mini-batch
                       2441: 0.002
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.002
Loss after mini-batch
Loss after mini-batch
                       2531: 0.002
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch 2571: 0.001
```

```
Loss after mini-batch
                       2581: 0.000
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.002
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
                       2681: 0.001
Loss after mini-batch
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.002
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.002
Loss after mini-batch 2731: 0.002
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch 2761: 0.001
Loss after mini-batch 2771: 0.001
                       2781: 0.000
Loss after mini-batch
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 5
                          1: 0.000
Loss after mini-batch
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.002
Loss after mini-batch
                         31: 0.003
Loss after mini-batch
                         41: 0.003
Loss after mini-batch
                         51: 0.002
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.001
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.002
Loss after mini-batch
                        171: 0.001
Loss after mini-batch
                        181: 0.001
Loss after mini-batch
                        191: 0.001
Loss after mini-batch
                        201: 0.001
Loss after mini-batch
                        211: 0.002
Loss after mini-batch
                        221: 0.002
```

Loss	${\tt after}$	mini-batch	231:	0.002
Loss	${\tt after}$	mini-batch	241:	0.002
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.002
Loss	${\tt after}$	mini-batch	291:	0.001
Loss	${\tt after}$	mini-batch	301:	0.002
Loss	after	mini-batch	311:	0.002
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	${\tt after}$	mini-batch	341:	0.001
Loss	${\tt after}$	mini-batch	351:	0.001
Loss	${\tt after}$	mini-batch	361:	0.001
Loss	${\tt after}$	mini-batch	371:	0.003
Loss	${\tt after}$	mini-batch	381:	0.002
Loss	${\tt after}$	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.002
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.002
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.002
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.002
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.002
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.002
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001

Loss	after	${\tt mini-batch}$	711:	0.001
Loss	after	${\tt mini-batch}$	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	${\tt mini-batch}$	741:	0.002
Loss	after	${\tt mini-batch}$	751:	0.002
Loss	after	${\tt mini-batch}$	761:	0.002
Loss	after	${\tt mini-batch}$	771:	0.001
Loss	after	${\tt mini-batch}$	781:	0.001
Loss	after	${\tt mini-batch}$	791:	0.001
Loss	after	mini-batch	801:	0.002
Loss	after	${\tt mini-batch}$	811:	0.001
Loss	after	${\tt mini-batch}$	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	${\tt mini-batch}$	851:	0.001
Loss	after	${\tt mini-batch}$	861:	0.002
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	${\tt mini-batch}$	891:	0.001
Loss	after	${\tt mini-batch}$	901:	0.002
Loss	after	mini-batch	911:	0.002
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.002
Loss	after	${\tt mini-batch}$	961:	0.001
Loss	after	${\tt mini-batch}$	971:	0.001
Loss	after	${\tt mini-batch}$	981:	0.001
Loss	after	${\tt mini-batch}$	991:	0.001
Loss	after	${\tt mini-batch}$	1001:	0.002
Loss	after	${\tt mini-batch}$	1011:	0.002
Loss	after	${\tt mini-batch}$	1021:	0.001
Loss	after	${\tt mini-batch}$	1031:	0.003
Loss	after	${\tt mini-batch}$	1041:	0.001
Loss	after	${\tt mini-batch}$	1051:	0.001
Loss	after	${\tt mini-batch}$	1061:	0.001
Loss	after	${\tt mini-batch}$	1071:	0.001
Loss	after	${\tt mini-batch}$	1081:	0.001
Loss	after	${\tt mini-batch}$	1091:	0.001
Loss	after	${\tt mini-batch}$	1101:	0.001
Loss	after	${\tt mini-batch}$	1111:	0.000
Loss	after	${\tt mini-batch}$	1121:	0.001
Loss	after	${\tt mini-batch}$	1131:	0.001
Loss	after	${\tt mini-batch}$	1141:	0.002
Loss	after	${\tt mini-batch}$	1151:	0.001
Loss	after	${\tt mini-batch}$	1161:	0.001
Loss	after	${\tt mini-batch}$	1171:	0.001
Loss	after	${\tt mini-batch}$	1181:	0.001

```
1191: 0.001
Loss after mini-batch
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
                       1311: 0.001
Loss after mini-batch
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.002
Loss after mini-batch
                       1351: 0.001
                       1361: 0.000
Loss after mini-batch
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.002
Loss after mini-batch
                       1421: 0.002
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.002
                       1451: 0.002
Loss after mini-batch
Loss after mini-batch
                       1461: 0.002
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
                       1571: 0.001
Loss after mini-batch
Loss after mini-batch
                       1581: 0.001
                       1591: 0.002
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
Loss after mini-batch
                       1611: 0.000
Loss after mini-batch
                       1621: 0.000
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.002
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                      1661: 0.001
```

```
1671: 0.001
Loss after mini-batch
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.003
Loss after mini-batch
                       1701: 0.002
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
                       1791: 0.002
Loss after mini-batch
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
                       1841: 0.001
Loss after mini-batch
Loss after mini-batch
                       1851: 0.002
Loss after mini-batch
                       1861: 0.002
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.002
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
                       2051: 0.001
Loss after mini-batch
Loss after mini-batch
                       2061: 0.001
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
Loss after mini-batch
                       2091: 0.000
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch 2131: 0.001
Loss after mini-batch 2141: 0.001
```

```
Loss after mini-batch 2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.002
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.002
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.002
Loss after mini-batch
                       2241: 0.001
                       2251: 0.001
Loss after mini-batch
Loss after mini-batch
                       2261: 0.001
                       2271: 0.001
Loss after mini-batch
Loss after mini-batch
                       2281: 0.000
Loss after mini-batch
                       2291: 0.000
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
                       2321: 0.001
Loss after mini-batch
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.002
                       2471: 0.001
Loss after mini-batch
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.002
                       2551: 0.001
Loss after mini-batch
Loss after mini-batch
                       2561: 0.002
                       2571: 0.002
Loss after mini-batch
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch 2621: 0.001
```

```
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.002
Loss after mini-batch
                       2661: 0.002
Loss after mini-batch
                       2671: 0.002
Loss after mini-batch
                       2681: 0.003
Loss after mini-batch
                       2691: 0.002
Loss after mini-batch
                       2701: 0.002
                       2711: 0.002
Loss after mini-batch
Loss after mini-batch
                       2721: 0.001
                       2731: 0.002
Loss after mini-batch
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.002
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 6
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.002
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.002
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
                         81: 0.002
Loss after mini-batch
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.002
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
                        141: 0.001
Loss after mini-batch
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.001
Loss after mini-batch
                        171: 0.002
Loss after mini-batch
                        181: 0.001
Loss after mini-batch
                        191: 0.001
Loss after mini-batch
                        201: 0.001
Loss after mini-batch
                        211: 0.001
Loss after mini-batch
                        221: 0.001
Loss after mini-batch
                        231: 0.001
Loss after mini-batch
                        241: 0.002
Loss after mini-batch
                        251: 0.001
Loss after mini-batch
                        261: 0.001
Loss after mini-batch
                        271: 0.001
```

Loss	after	mini-batch	281:	0.001
Loss	after	${\tt mini-batch}$	291:	0.001
Loss	after	${\tt mini-batch}$	301:	0.002
Loss	after	${\tt mini-batch}$	311:	0.001
Loss	after	${\tt mini-batch}$	321:	0.001
Loss	after	${\tt mini-batch}$	331:	0.001
Loss	after	${\tt mini-batch}$	341:	0.001
Loss	after	${\tt mini-batch}$	351:	0.001
Loss	after	${\tt mini-batch}$	361:	0.001
Loss	after	${\tt mini-batch}$	371:	0.001
Loss	after	${\tt mini-batch}$	381:	0.000
Loss	after	${\tt mini-batch}$	391:	0.000
Loss	after	${\tt mini-batch}$	401:	0.001
Loss	after	${\tt mini-batch}$	411:	0.002
Loss	after	${\tt mini-batch}$	421:	0.001
Loss	after	${\tt mini-batch}$	431:	0.001
Loss	after	${\tt mini-batch}$	441:	0.001
Loss	after	${\tt mini-batch}$	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.002
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.002
Loss	after	${\tt mini-batch}$	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.002
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.002
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.002
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.000
Loss	after	mini-batch	751:	0.001

Loss	${\tt after}$	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.000
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.000
Loss	${\tt after}$	mini-batch	801:	0.002
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.000
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.000
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.002
Loss	after	mini-batch	911:	0.002
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.002
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.002
Loss	after	mini-batch	971:	0.003
Loss	after	mini-batch	981:	0.003
Loss	after	mini-batch	991:	0.003
Loss	after	mini-batch	1001:	0.002
Loss	after	mini-batch	1011:	0.002
Loss	after	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.001
Loss	after	mini-batch	1081:	0.001
Loss	after	mini-batch	1091:	0.001
Loss	after	mini-batch	1101:	0.000
Loss	after	mini-batch	1111:	0.001
Loss	after	mini-batch	1121:	0.001
Loss	after	mini-batch	1131:	0.001
Loss	after	mini-batch	1141:	0.002
Loss	after	mini-batch	1151:	0.001
Loss	after	mini-batch	1161:	0.001
Loss	after	mini-batch	1171:	0.001
Loss	after	mini-batch	1181:	0.001
Loss	after	mini-batch	1191:	0.002
Loss	after	mini-batch	1201:	0.001
Loss	after	mini-batch	1211:	0.001
Loss	after	mini-batch	1221:	0.001
Loss	after	mini-batch	1231:	0.002

```
1241: 0.001
Loss after mini-batch
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.002
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.002
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.002
Loss after mini-batch
                       1351: 0.001
                       1361: 0.002
Loss after mini-batch
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
                       1411: 0.000
Loss after mini-batch
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.002
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.002
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
                       1621: 0.001
Loss after mini-batch
Loss after mini-batch
                       1631: 0.001
                       1641: 0.002
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.000
```

```
1721: 0.001
Loss after mini-batch
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.002
                       1841: 0.002
Loss after mini-batch
Loss after mini-batch
                       1851: 0.002
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.002
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.002
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
                       1981: 0.000
Loss after mini-batch
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.002
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.002
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.000
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.000
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.000
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.000
                       2121: 0.001
Loss after mini-batch
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch 2191: 0.001
```

```
Loss after mini-batch 2201: 0.001
Loss after mini-batch
                       2211: 0.002
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
                       2251: 0.001
Loss after mini-batch
Loss after mini-batch
                       2261: 0.002
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
                       2301: 0.000
Loss after mini-batch
Loss after mini-batch
                       2311: 0.001
                       2321: 0.001
Loss after mini-batch
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.002
Loss after mini-batch
                       2351: 0.002
Loss after mini-batch
                       2361: 0.002
                       2371: 0.001
Loss after mini-batch
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.000
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.000
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.002
Loss after mini-batch
                       2541: 0.002
Loss after mini-batch
                       2551: 0.000
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.000
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch 2671: 0.001
```

```
Loss after mini-batch 2681: 0.002
Loss after mini-batch
                       2691: 0.000
Loss after mini-batch
                       2701: 0.002
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch 2721: 0.001
Loss after mini-batch
                       2731: 0.002
Loss after mini-batch 2741: 0.001
Loss after mini-batch 2751: 0.000
Loss after mini-batch 2761: 0.001
Loss after mini-batch
                       2771: 0.001
                       2781: 0.000
Loss after mini-batch
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 7
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.001
                        101: 0.001
Loss after mini-batch
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.002
Loss after mini-batch
                        141: 0.002
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.001
Loss after mini-batch
                        171: 0.002
Loss after mini-batch
                        181: 0.000
Loss after mini-batch
                        191: 0.002
Loss after mini-batch
                        201: 0.001
Loss after mini-batch
                        211: 0.001
Loss after mini-batch
                        221: 0.000
Loss after mini-batch
                        231: 0.001
Loss after mini-batch
                        241: 0.001
Loss after mini-batch
                        251: 0.001
Loss after mini-batch
                        261: 0.001
Loss after mini-batch
                        271: 0.001
Loss after mini-batch
                        281: 0.002
Loss after mini-batch
                        291: 0.001
Loss after mini-batch
                        301: 0.003
Loss after mini-batch
                        311: 0.002
Loss after mini-batch
                        321: 0.001
```

Loss	after	${\tt mini-batch}$	331:	0.001
Loss	after	${\tt mini-batch}$	341:	0.000
Loss	after	${\tt mini-batch}$	351:	0.001
Loss	after	${\tt mini-batch}$	361:	0.001
Loss	after	${\tt mini-batch}$	371:	0.001
Loss	after	${\tt mini-batch}$	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	${\tt mini-batch}$	401:	0.001
Loss	after	${\tt mini-batch}$	411:	0.001
Loss	after	${\tt mini-batch}$	421:	0.000
Loss	after	${\tt mini-batch}$	431:	0.001
Loss	after	${\tt mini-batch}$	441:	0.001
Loss	after	${\tt mini-batch}$	451:	0.001
Loss	after	${\tt mini-batch}$	461:	0.001
Loss	after	${\tt mini-batch}$	471:	0.000
Loss	after	${\tt mini-batch}$	481:	0.002
Loss	after	${\tt mini-batch}$	491:	0.001
Loss	after	${\tt mini-batch}$	501:	0.001
Loss	after	mini-batch	511:	0.000
Loss	after	mini-batch	521:	0.002
Loss	after	mini-batch	531:	0.001
Loss	after	${\tt mini-batch}$	541:	0.001
Loss	after	${\tt mini-batch}$	551:	0.001
Loss	after	${\tt mini-batch}$	561:	0.001
Loss	after	${\tt mini-batch}$	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	${\tt mini-batch}$	601:	0.001
Loss	after	${\tt mini-batch}$	611:	0.001
Loss	after	${\tt mini-batch}$	621:	0.001
Loss	after	${\tt mini-batch}$	631:	0.001
Loss	after	${\tt mini-batch}$	641:	0.002
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.002
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.002
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.002
Loss	after	mini-batch	721:	0.002
Loss	after	mini-batch	731:	0.002
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.000
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001

```
Loss after mini-batch
                        811: 0.002
Loss after mini-batch
                        821: 0.001
Loss after mini-batch
                        831: 0.002
Loss after mini-batch
                        841: 0.001
Loss after mini-batch
                        851: 0.001
Loss after mini-batch
                        861: 0.002
Loss after mini-batch
                        871: 0.001
Loss after mini-batch
                        881: 0.001
Loss after mini-batch
                        891: 0.001
Loss after mini-batch
                        901: 0.001
Loss after mini-batch
                        911: 0.001
Loss after mini-batch
                        921: 0.001
                        931: 0.001
Loss after mini-batch
Loss after mini-batch
                        941: 0.002
Loss after mini-batch
                        951: 0.002
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.002
Loss after mini-batch
                       1031: 0.002
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.002
Loss after mini-batch
                       1061: 0.001
                       1071: 0.001
Loss after mini-batch
Loss after mini-batch
                       1081: 0.000
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
                       1191: 0.001
Loss after mini-batch
Loss after mini-batch
                       1201: 0.002
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
                       1261: 0.000
Loss after mini-batch
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch 1281: 0.001
```

```
1291: 0.001
Loss after mini-batch
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
                       1411: 0.001
Loss after mini-batch
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
                       1461: 0.001
Loss after mini-batch
Loss after mini-batch
                       1471: 0.000
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.000
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.000
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.000
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.002
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.003
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.002
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
                       1671: 0.002
Loss after mini-batch
Loss after mini-batch
                       1681: 0.001
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                      1761: 0.001
```

```
1771: 0.000
Loss after mini-batch
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.000
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
                       1891: 0.001
Loss after mini-batch
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
                       1941: 0.001
Loss after mini-batch
Loss after mini-batch
                       1951: 0.002
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.002
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.002
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.000
Loss after mini-batch
                       2021: 0.000
Loss after mini-batch
                       2031: 0.000
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.000
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.002
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.002
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
                       2191: 0.001
Loss after mini-batch
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch 2231: 0.001
Loss after mini-batch 2241: 0.001
```

```
Loss after mini-batch 2251: 0.002
Loss after mini-batch
                       2261: 0.002
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
                       2301: 0.001
Loss after mini-batch
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
                       2371: 0.001
Loss after mini-batch
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.000
                       2421: 0.001
Loss after mini-batch
Loss after mini-batch
                       2431: 0.000
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.000
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.002
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.003
Loss after mini-batch
                       2541: 0.002
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.000
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.000
Loss after mini-batch
                       2601: 0.000
Loss after mini-batch
                       2611: 0.002
Loss after mini-batch
                       2621: 0.001
                       2631: 0.001
Loss after mini-batch
Loss after mini-batch
                       2641: 0.001
                       2651: 0.001
Loss after mini-batch
                       2661: 0.000
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch 2721: 0.001
```

Loss	${\tt after}$	mini-batch	2731:	0.002
Loss	${\tt after}$	mini-batch	2741:	0.001
Loss	${\tt after}$	mini-batch	2751:	0.001
Loss	${\tt after}$	mini-batch	2761:	0.001
Loss	${\tt after}$	mini-batch	2771:	0.001
Loss	${\tt after}$	mini-batch	2781:	0.001
Loss	${\tt after}$	mini-batch	2791:	0.001
Loss	${\tt after}$	mini-batch	2801:	0.001
Loss	${\tt after}$	mini-batch	2811:	0.001
Start	ting ep	poch 8		
Loss	${\tt after}$	mini-batch	1:	0.000
Loss	${\tt after}$	mini-batch	11:	0.000
Loss	${\tt after}$	mini-batch	21:	0.001
Loss	${\tt after}$	mini-batch	31:	0.001
Loss	${\tt after}$	mini-batch	41:	0.001
Loss	${\tt after}$	mini-batch	51:	0.001
Loss	${\tt after}$	mini-batch	61:	0.001
Loss	${\tt after}$	mini-batch	71:	0.001
Loss	${\tt after}$	mini-batch	81:	0.001
Loss	${\tt after}$	mini-batch	91:	0.001
Loss	${\tt after}$	mini-batch	101:	0.001
Loss	${\tt after}$	mini-batch	111:	0.001
Loss	${\tt after}$	mini-batch	121:	0.001
Loss	${\tt after}$	mini-batch	131:	0.001
Loss	${\tt after}$	mini-batch	141:	0.001
Loss	${\tt after}$	mini-batch	151:	0.001
Loss	${\tt after}$	mini-batch	161:	0.000
Loss	${\tt after}$	mini-batch	171:	0.001
Loss	${\tt after}$	mini-batch	181:	0.001
Loss	${\tt after}$	mini-batch	191:	0.002
Loss	${\tt after}$	mini-batch	201:	0.002
Loss	${\tt after}$	mini-batch	211:	0.002
Loss	${\tt after}$	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.001
Loss	${\tt after}$	mini-batch	241:	0.001
Loss	${\tt after}$	mini-batch	251:	0.001
Loss	${\tt after}$	mini-batch	261:	0.002
Loss	${\tt after}$	mini-batch	271:	0.001
Loss	${\tt after}$	mini-batch	281:	0.001
Loss	${\tt after}$	mini-batch	291:	0.001
Loss	${\tt after}$	mini-batch	301:	0.001
Loss	${\tt after}$	mini-batch	311:	0.001
Loss	${\tt after}$	mini-batch	321:	0.000
Loss	${\tt after}$	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	${\tt mini-batch}$	371:	0.001

Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	${\tt mini-batch}$	401:	0.001
Loss	after	mini-batch	411:	0.002
Loss	after	mini-batch	421:	0.002
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	${\tt mini-batch}$	451:	0.001
Loss	after	${\tt mini-batch}$	461:	0.001
Loss	after	${\tt mini-batch}$	471:	0.001
Loss	after	${\tt mini-batch}$	481:	0.001
Loss	after	${\tt mini-batch}$	491:	0.001
Loss	after	${\tt mini-batch}$	501:	0.001
Loss	after	${\tt mini-batch}$	511:	0.001
Loss	after	${\tt mini-batch}$	521:	0.001
Loss	after	${\tt mini-batch}$	531:	0.001
Loss	after	${\tt mini-batch}$	541:	0.001
Loss	after	${\tt mini-batch}$	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.002
Loss	after	mini-batch	621:	0.002
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.002
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.002
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001

```
Loss after mini-batch
                        861: 0.001
Loss after mini-batch
                        871: 0.001
Loss after mini-batch
                        881: 0.001
Loss after mini-batch
                        891: 0.001
Loss after mini-batch
                        901: 0.000
Loss after mini-batch
                        911: 0.001
Loss after mini-batch
                        921: 0.001
Loss after mini-batch
                        931: 0.001
Loss after mini-batch
                        941: 0.001
Loss after mini-batch
                        951: 0.001
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.001
                        981: 0.001
Loss after mini-batch
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.000
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.002
Loss after mini-batch
                       1141: 0.002
Loss after mini-batch
                       1151: 0.002
Loss after mini-batch
                       1161: 0.002
Loss after mini-batch
                       1171: 0.002
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
                       1241: 0.001
Loss after mini-batch
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.000
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch 1331: 0.003
```

```
1341: 0.000
Loss after mini-batch
Loss after mini-batch
                       1351: 0.000
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.002
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
                       1461: 0.001
Loss after mini-batch
Loss after mini-batch
                       1471: 0.000
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
                       1511: 0.001
Loss after mini-batch
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.002
Loss after mini-batch
                       1551: 0.002
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.002
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.000
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.000
                       1721: 0.001
Loss after mini-batch
Loss after mini-batch
                       1731: 0.001
                       1741: 0.000
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
Loss after mini-batch
                       1761: 0.000
Loss after mini-batch
                       1771: 0.002
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.000
Loss after mini-batch
                      1811: 0.002
```

```
1821: 0.001
Loss after mini-batch
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.003
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.002
Loss after mini-batch
                       1931: 0.001
                       1941: 0.001
Loss after mini-batch
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
                       1991: 0.000
Loss after mini-batch
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.002
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.000
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.000
Loss after mini-batch
                       2161: 0.000
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.000
Loss after mini-batch
                       2211: 0.001
                       2221: 0.001
Loss after mini-batch
Loss after mini-batch
                       2231: 0.001
                       2241: 0.001
Loss after mini-batch
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch 2291: 0.001
```

```
2301: 0.001
Loss after mini-batch
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
                       2351: 0.003
Loss after mini-batch
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
                       2401: 0.001
Loss after mini-batch
Loss after mini-batch
                       2411: 0.001
                       2421: 0.001
Loss after mini-batch
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
                       2471: 0.001
Loss after mini-batch
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.000
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.000
Loss after mini-batch
                       2551: 0.000
Loss after mini-batch
                       2561: 0.002
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.000
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.000
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch 2771: 0.001
```

Loss	after	mini-batch	2781:	0.001
Loss	after	mini-batch	2791:	0.002
Loss	after	mini-batch	2801:	0.001
Loss	after	mini-batch	2811:	0.001
Start	ting e	ooch 9		
Loss	after	mini-batch	1:	0.000
Loss	after	mini-batch	11:	0.001
Loss	after	mini-batch	21:	0.001
Loss	after	mini-batch	31:	0.001
Loss	after	mini-batch	41:	0.001
Loss	after	mini-batch	51:	0.001
Loss	after	mini-batch	61:	0.002
Loss	after	mini-batch	71:	0.001
Loss	after	mini-batch	81:	0.001
Loss	after	mini-batch	91:	0.001
Loss	after	mini-batch	101:	0.001
Loss	after	mini-batch	111:	0.001
Loss	after	mini-batch	121:	0.001
Loss	after	mini-batch	131:	0.001
Loss	after	mini-batch	141:	0.000
Loss	after	mini-batch	151:	0.000
Loss	after	mini-batch	161:	0.001
Loss	after	mini-batch	171:	0.002
Loss	after	mini-batch	181:	0.001
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.000
Loss	after	mini-batch	241:	0.000
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.000
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	${\tt mini-batch}$	421:	0.001

Loss	after	${\tt mini-batch}$	431:	0.001
Loss	after	${\tt mini-batch}$	441:	0.001
Loss	after	${\tt mini-batch}$	451:	0.001
Loss	after	${\tt mini-batch}$	461:	0.001
Loss	after	${\tt mini-batch}$	471:	0.001
Loss	after	${\tt mini-batch}$	481:	0.001
Loss	after	${\tt mini-batch}$	491:	0.001
Loss	after	${\tt mini-batch}$	501:	0.001
Loss	after	${\tt mini-batch}$	511:	0.001
Loss	after	${\tt mini-batch}$	521:	0.000
Loss	after	${\tt mini-batch}$	531:	0.001
Loss	after	${\tt mini-batch}$	541:	0.001
Loss	after	${\tt mini-batch}$	551:	0.001
Loss	after	${\tt mini-batch}$	561:	0.001
Loss	after	${\tt mini-batch}$	571:	0.001
Loss	after	${\tt mini-batch}$	581:	0.001
Loss	after	${\tt mini-batch}$	591:	0.001
Loss	after	${\tt mini-batch}$	601:	0.000
Loss	after	${\tt mini-batch}$	611:	0.001
Loss	after	${\tt mini-batch}$	621:	0.001
Loss	after	${\tt mini-batch}$	631:	0.001
Loss	after	${\tt mini-batch}$	641:	0.002
Loss	after	${\tt mini-batch}$	651:	0.001
Loss	after	${\tt mini-batch}$	661:	0.001
Loss	after	${\tt mini-batch}$	671:	0.001
Loss	after	${\tt mini-batch}$	681:	0.000
Loss	after	${\tt mini-batch}$	691:	0.001
Loss	after	${\tt mini-batch}$	701:	0.001
Loss	after	${\tt mini-batch}$	711:	0.001
Loss	after	${\tt mini-batch}$	721:	0.001
Loss	after	${\tt mini-batch}$	731:	0.001
Loss	after	${\tt mini-batch}$	741:	0.001
Loss	after	${\tt mini-batch}$	751:	0.001
Loss	after	${\tt mini-batch}$	761:	0.001
Loss	after	${\tt mini-batch}$	771:	0.001
Loss	after	${\tt mini-batch}$	781:	0.001
Loss	after	${\tt mini-batch}$	791:	0.000
Loss	after	${\tt mini-batch}$	801:	0.000
Loss	after	${\tt mini-batch}$	811:	0.001
Loss	after	${\tt mini-batch}$	821:	0.002
Loss	after	${\tt mini-batch}$	831:	0.001
Loss	after	${\tt mini-batch}$	841:	0.001
Loss	after	${\tt mini-batch}$	851:	0.001
Loss	after	${\tt mini-batch}$	861:	0.001
Loss	after	${\tt mini-batch}$	871:	0.001
Loss	after	${\tt mini-batch}$	881:	0.001
Loss	after	${\tt mini-batch}$	891:	0.001
Loss	after	${\tt mini-batch}$	901:	0.001

```
Loss after mini-batch
                        911: 0.001
Loss after mini-batch
                        921: 0.001
Loss after mini-batch
                        931: 0.001
Loss after mini-batch
                        941: 0.001
Loss after mini-batch
                        951: 0.002
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.001
                       1031: 0.000
Loss after mini-batch
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.000
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.002
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
                       1291: 0.001
Loss after mini-batch
Loss after mini-batch
                       1301: 0.001
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.000
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                      1381: 0.001
```

```
1391: 0.001
Loss after mini-batch
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.000
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.000
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
                       1511: 0.001
Loss after mini-batch
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.002
Loss after mini-batch
                       1541: 0.002
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.000
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.002
Loss after mini-batch
                       1611: 0.004
Loss after mini-batch
                       1621: 0.002
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.000
Loss after mini-batch
                       1651: 0.000
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.002
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.002
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.002
Loss after mini-batch
                       1761: 0.001
                       1771: 0.002
Loss after mini-batch
Loss after mini-batch
                       1781: 0.002
                       1791: 0.002
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
```

```
1871: 0.001
Loss after mini-batch
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.000
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
                       1991: 0.001
Loss after mini-batch
Loss after mini-batch
                       2001: 0.002
Loss after mini-batch
                       2011: 0.002
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
                       2041: 0.000
Loss after mini-batch
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.002
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
                       2131: 0.000
Loss after mini-batch
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.002
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.000
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.002
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.000
Loss after mini-batch
                       2261: 0.000
Loss after mini-batch
                       2271: 0.001
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch 2341: 0.001
```

```
Loss after mini-batch
                       2351: 0.002
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
                       2401: 0.002
Loss after mini-batch
Loss after mini-batch
                       2411: 0.002
Loss after mini-batch
                       2421: 0.002
                       2431: 0.001
Loss after mini-batch
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.000
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.000
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.000
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.002
                       2601: 0.003
Loss after mini-batch
Loss after mini-batch
                       2611: 0.002
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.002
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
                       2691: 0.001
Loss after mini-batch
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.000
Starting epoch 10
```

Loss	after	mini-batch	1:	0.000
Loss	after	mini-batch	11:	0.001
Loss	after	mini-batch	21:	0.000
Loss	after	mini-batch	31:	0.001
Loss	after	mini-batch	41:	0.001
Loss	after	mini-batch	51:	0.001
Loss	after	mini-batch	61:	0.001
Loss	after	mini-batch	71:	0.000
Loss	after	mini-batch	81:	0.001
Loss	after	mini-batch	91:	0.001
Loss	after	mini-batch	101:	0.001
Loss	after	mini-batch	111:	0.001
Loss	after	mini-batch	121:	0.001
Loss	after	mini-batch	131:	0.001
Loss	after	mini-batch	141:	0.001
Loss	after	mini-batch	151:	0.001
Loss	after	mini-batch	161:	0.001
Loss	after	mini-batch	171:	0.001
Loss	after	mini-batch	181:	0.001
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.003
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.000
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.000
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.002
Loss	after	mini-batch	391:	0.002
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after		441:	
Loss	after	mini-batch	451:	0.002
Loss		mini-batch		
Loss		mini-batch	471:	

Loss	after	${\tt mini-batch}$	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.002
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.002
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.000
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.002
Loss	${\tt after}$	mini-batch	661:	0.001
Loss	${\tt after}$	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.000
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	${\tt after}$	mini-batch	731:	0.001
Loss	${\tt after}$	mini-batch	741:	0.001
Loss	${\tt after}$	mini-batch	751:	0.000
Loss	after	mini-batch	761:	0.000
Loss	after	mini-batch	771:	0.001
Loss	${\tt after}$	mini-batch	781:	0.000
Loss	${\tt after}$	mini-batch	791:	0.001
Loss	${\tt after}$	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	${\tt after}$	mini-batch	821:	0.001
Loss	${\tt after}$	mini-batch	831:	0.001
Loss	${\tt after}$	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	${\tt after}$	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.000
Loss	${\tt after}$	mini-batch	891:	0.001
Loss	${\tt after}$	mini-batch	901:	0.000
Loss	after	${\tt mini-batch}$	911:	0.001
Loss	after	${\tt mini-batch}$	921:	0.001
Loss	${\tt after}$	mini-batch	931:	0.001
Loss	after	${\tt mini-batch}$	941:	0.001
Loss	after	${\tt mini-batch}$	951:	0.001

```
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.000
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.000
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.001
                       1081: 0.001
Loss after mini-batch
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.000
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.002
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.002
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.002
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.002
Loss after mini-batch
                       1291: 0.002
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.002
                       1341: 0.001
Loss after mini-batch
Loss after mini-batch
                       1351: 0.001
                       1361: 0.001
Loss after mini-batch
                       1371: 0.002
Loss after mini-batch
Loss after mini-batch
                       1381: 0.002
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch 1431: 0.001
```

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1441: 0.001
Loss after mini-batch
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
                       1561: 0.001
Loss after mini-batch
Loss after mini-batch
                       1571: 0.002
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.002
                       1611: 0.001
Loss after mini-batch
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.002
Loss after mini-batch
                       1671: 0.002
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.000
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.000
                       1821: 0.000
Loss after mini-batch
Loss after mini-batch
                       1831: 0.000
                       1841: 0.000
Loss after mini-batch
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.000
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                      1911: 0.001
```

```
1921: 0.001
Loss after mini-batch
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.002
Loss after mini-batch
                       2001: 0.002
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
                       2041: 0.001
Loss after mini-batch
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.000
                       2091: 0.001
Loss after mini-batch
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.000
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.003
Loss after mini-batch
                       2241: 0.002
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.000
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.002
Loss after mini-batch
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.000
Loss after mini-batch
                       2371: 0.002
Loss after mini-batch
                       2381: 0.002
Loss after mini-batch 2391: 0.002
```

```
Loss after mini-batch 2401: 0.001
Loss after mini-batch 2411: 0.001
Loss after mini-batch 2421: 0.001
Loss after mini-batch 2431: 0.001
Loss after mini-batch 2441: 0.001
Loss after mini-batch 2451: 0.001
Loss after mini-batch 2461: 0.001
Loss after mini-batch 2471: 0.001
Loss after mini-batch 2481: 0.001
Loss after mini-batch 2491: 0.001
                      2501: 0.001
Loss after mini-batch
Loss after mini-batch
                      2511: 0.001
Loss after mini-batch
                      2521: 0.001
Loss after mini-batch
                      2531: 0.000
Loss after mini-batch
                      2541: 0.000
Loss after mini-batch
                      2551: 0.001
Loss after mini-batch
                      2561: 0.001
Loss after mini-batch
                      2571: 0.000
Loss after mini-batch 2581: 0.001
Loss after mini-batch 2591: 0.001
Loss after mini-batch
                      2601: 0.000
Loss after mini-batch
                      2611: 0.000
Loss after mini-batch 2621: 0.001
Loss after mini-batch
                      2631: 0.002
Loss after mini-batch
                      2641: 0.001
Loss after mini-batch
                      2651: 0.002
Loss after mini-batch
                      2661: 0.002
Loss after mini-batch
                      2671: 0.001
Loss after mini-batch
                      2681: 0.001
Loss after mini-batch
                      2691: 0.001
Loss after mini-batch
                      2701: 0.001
Loss after mini-batch
                      2711: 0.001
Loss after mini-batch 2721: 0.000
Loss after mini-batch 2731: 0.001
Loss after mini-batch 2741: 0.001
Loss after mini-batch 2751: 0.001
Loss after mini-batch 2761: 0.001
Loss after mini-batch 2771: 0.001
Loss after mini-batch 2781: 0.001
Loss after mini-batch 2791: 0.000
Loss after mini-batch
                      2801: 0.001
Loss after mini-batch
                      2811: 0.001
Starting epoch 11
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.002
Loss after mini-batch
                        21: 0.001
Loss after mini-batch
                        31: 0.001
Loss after mini-batch
                        41: 0.001
```

Loss	after	mini-batch	51:	0.001
Loss	after	${\tt mini-batch}$	61:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	71:	0.001
Loss	after	${\tt mini-batch}$	81:	0.001
Loss	after	${\tt mini-batch}$	91:	0.001
Loss	after	${\tt mini-batch}$	101:	0.001
Loss	after	${\tt mini-batch}$	111:	0.001
Loss	after	${\tt mini-batch}$	121:	0.001
Loss	after	${\tt mini-batch}$	131:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	141:	0.001
Loss	after	${\tt mini-batch}$	151:	0.001
Loss	after	${\tt mini-batch}$	161:	0.001
Loss	after	${\tt mini-batch}$	171:	0.001
Loss	after	${\tt mini-batch}$	181:	0.001
Loss	after	${\tt mini-batch}$	191:	0.001
Loss	after	${\tt mini-batch}$	201:	0.001
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.002
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.002
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.000
Loss	after	mini-batch	311:	0.000
Loss	after	${\tt mini-batch}$	321:	0.000
Loss	after	${\tt mini-batch}$	331:	0.000
Loss	after	${\tt mini-batch}$	341:	0.002
Loss	after	${\tt mini-batch}$	351:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	361:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	371:	0.001
Loss	after	${\tt mini-batch}$	381:	0.001
Loss	after	${\tt mini-batch}$	391:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	401:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	411:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	421:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	431:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	441:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	451:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	461:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	471:	0.000
Loss	after	${\tt mini-batch}$	481:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	491:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	501:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	511:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	521:	0.002

Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	${\tt after}$	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.000
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.000
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.002
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.002
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.000
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.000
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.002
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.001
			•	

```
1011: 0.001
Loss after mini-batch
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.000
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
                       1131: 0.002
Loss after mini-batch
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
                       1181: 0.001
Loss after mini-batch
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.002
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.000
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
                       1391: 0.001
Loss after mini-batch
Loss after mini-batch
                       1401: 0.001
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch 1481: 0.001
```

```
1491: 0.001
Loss after mini-batch
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.000
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.000
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
                       1611: 0.001
Loss after mini-batch
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
                       1661: 0.001
Loss after mini-batch
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.002
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.002
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.002
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.000
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.000
Loss after mini-batch
                       1861: 0.001
                       1871: 0.001
Loss after mini-batch
Loss after mini-batch
                       1881: 0.000
                       1891: 0.001
Loss after mini-batch
                       1901: 0.002
Loss after mini-batch
Loss after mini-batch
                       1911: 0.002
Loss after mini-batch
                       1921: 0.002
Loss after mini-batch
                       1931: 0.000
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                      1961: 0.001
```

```
1971: 0.001
Loss after mini-batch
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.002
Loss after mini-batch
                       2011: 0.001
                       2021: 0.002
Loss after mini-batch
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
                       2091: 0.003
Loss after mini-batch
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
                       2141: 0.001
Loss after mini-batch
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.000
Loss after mini-batch
                      2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.000
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.000
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.000
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.000
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
                       2371: 0.001
Loss after mini-batch
                       2381: 0.003
Loss after mini-batch
Loss after mini-batch
                       2391: 0.002
Loss after mini-batch
                       2401: 0.002
Loss after mini-batch
                       2411: 0.002
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch 2431: 0.000
Loss after mini-batch 2441: 0.001
```

```
Loss after mini-batch 2451: 0.001
Loss after mini-batch 2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.002
                       2501: 0.001
Loss after mini-batch
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.000
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.000
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 12
                          1: 0.000
Loss after mini-batch
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.000
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.001
```

Loss	after	${\tt mini-batch}$	101:	0.001
Loss	after	${\tt mini-batch}$	111:	0.001
Loss	after	${\tt mini-batch}$	121:	0.001
Loss	after	${\tt mini-batch}$	131:	0.001
Loss	after	${\tt mini-batch}$	141:	0.001
Loss	after	${\tt mini-batch}$	151:	0.001
Loss	after	${\tt mini-batch}$	161:	0.001
Loss	after	mini-batch	171:	0.000
Loss	after	mini-batch	181:	0.001
Loss	after	${\tt mini-batch}$	191:	0.001
Loss	after	${\tt mini-batch}$	201:	0.001
Loss	after	${\tt mini-batch}$	211:	0.001
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.002
Loss	after	mini-batch	301:	0.000
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.000
Loss	after	mini-batch	361:	0.000
Loss	after	mini-batch	371:	0.001
Loss	after	${\tt mini-batch}$	381:	0.000
Loss	after	${\tt mini-batch}$	391:	0.001
Loss	after	${\tt mini-batch}$	401:	0.001
Loss	after	mini-batch	411:	0.000
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.002
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.002
Loss	after	mini-batch	501:	0.000
Loss	after	mini-batch	511:	0.000
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.000
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.002
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001

Loss	${\tt after}$	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	${\tt after}$	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.002
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.003
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.002
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.002
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.000
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.000

```
1061: 0.001
Loss after mini-batch
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.000
Loss after mini-batch
                       1131: 0.002
Loss after mini-batch
                       1141: 0.000
Loss after mini-batch
                       1151: 0.002
Loss after mini-batch
                       1161: 0.002
Loss after mini-batch
                       1171: 0.001
                       1181: 0.001
Loss after mini-batch
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
                       1231: 0.002
Loss after mini-batch
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.000
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.000
Loss after mini-batch
                       1371: 0.000
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.003
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
                       1441: 0.002
Loss after mini-batch
Loss after mini-batch
                       1451: 0.001
                       1461: 0.001
Loss after mini-batch
                       1471: 0.002
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch 1531: 0.001
```

```
1541: 0.001
Loss after mini-batch
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.000
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
                       1661: 0.001
Loss after mini-batch
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
                       1711: 0.000
Loss after mini-batch
Loss after mini-batch
                       1721: 0.002
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.002
Loss after mini-batch
                       1771: 0.002
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.000
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.000
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.000
Loss after mini-batch
                       1911: 0.001
                       1921: 0.002
Loss after mini-batch
Loss after mini-batch
                       1931: 0.001
                       1941: 0.000
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
                       1991: 0.001
Loss after mini-batch
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
```

```
2021: 0.000
Loss after mini-batch
Loss after mini-batch
                       2031: 0.000
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.002
Loss after mini-batch
                       2061: 0.001
                       2071: 0.002
Loss after mini-batch
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
                       2121: 0.001
Loss after mini-batch
Loss after mini-batch
                       2131: 0.001
                       2141: 0.001
Loss after mini-batch
Loss after mini-batch
                       2151: 0.000
Loss after mini-batch
                       2161: 0.000
Loss after mini-batch
                       2171: 0.000
Loss after mini-batch
                       2181: 0.001
                       2191: 0.001
Loss after mini-batch
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.002
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.000
Loss after mini-batch
                       2301: 0.002
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
                       2421: 0.001
Loss after mini-batch
Loss after mini-batch
                       2431: 0.001
                       2441: 0.001
Loss after mini-batch
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch 2491: 0.002
```

```
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.000
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
                       2601: 0.001
Loss after mini-batch
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.002
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.002
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.000
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.002
Starting epoch 13
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.000
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.002
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.002
Loss after mini-batch
                        141: 0.002
```

Loss	${\tt after}$	mini-batch	151:	0.001
Loss	${\tt after}$	mini-batch	161:	0.001
Loss	${\tt after}$	mini-batch	171:	0.001
Loss	${\tt after}$	mini-batch	181:	0.001
Loss	${\tt after}$	mini-batch	191:	0.001
Loss	${\tt after}$	mini-batch	201:	0.001
Loss	${\tt after}$	mini-batch	211:	0.001
Loss	${\tt after}$	mini-batch	221:	0.001
Loss	${\tt after}$	mini-batch	231:	0.001
Loss	${\tt after}$	mini-batch	241:	0.001
Loss	${\tt after}$	mini-batch	251:	0.001
Loss	${\tt after}$	mini-batch	261:	0.001
Loss	${\tt after}$	mini-batch	271:	0.001
Loss	${\tt after}$	mini-batch	281:	0.001
Loss	${\tt after}$	mini-batch	291:	0.001
Loss	${\tt after}$	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	${\tt after}$	mini-batch	321:	0.000
Loss	${\tt after}$	mini-batch	331:	0.001
Loss	${\tt after}$	mini-batch	341:	0.002
Loss	${\tt after}$	mini-batch	351:	0.002
Loss	${\tt after}$	mini-batch	361:	0.001
Loss	${\tt after}$	mini-batch	371:	0.001
Loss	${\tt after}$	mini-batch	381:	0.001
Loss	${\tt after}$	mini-batch	391:	0.001
Loss	${\tt after}$	mini-batch	401:	0.001
Loss	${\tt after}$	mini-batch	411:	0.001
Loss	${\tt after}$	mini-batch	421:	0.001
Loss	${\tt after}$	mini-batch	431:	0.001
Loss	${\tt after}$	mini-batch	441:	0.001
Loss	${\tt after}$	mini-batch	451:	0.000
Loss	${\tt after}$	mini-batch	461:	0.001
Loss	${\tt after}$	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	${\tt after}$	mini-batch	491:	0.001
Loss	${\tt after}$	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	${\tt after}$	mini-batch	521:	0.001
Loss	${\tt after}$	mini-batch	531:	0.001
Loss	${\tt after}$	mini-batch	541:	0.001
Loss	${\tt after}$	mini-batch	551:	0.001
Loss	${\tt after}$	mini-batch	561:	0.000
Loss	${\tt after}$	mini-batch	571:	0.000
Loss	after	mini-batch	581:	0.000
Loss	${\tt after}$	mini-batch	591:	0.001
Loss	${\tt after}$	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001

Loss	${\tt after}$	${\tt mini-batch}$	631:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	641:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	651:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	661:	0.001
Loss	${\tt after}$	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.000
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.000
Loss	after	mini-batch	801:	0.000
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.002
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.000
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.000
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.002
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.000
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.001
Loss	after	mini-batch	1081:	0.000
Loss	after	mini-batch	1091:	0.000
Loss	after	mini-batch	1101:	0.001

```
1111: 0.001
Loss after mini-batch
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.000
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.000
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.000
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
                       1231: 0.001
Loss after mini-batch
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.000
Loss after mini-batch
                       1341: 0.002
Loss after mini-batch
                       1351: 0.002
Loss after mini-batch
                       1361: 0.001
                       1371: 0.000
Loss after mini-batch
Loss after mini-batch
                       1381: 0.002
Loss after mini-batch
                       1391: 0.002
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
                       1491: 0.002
Loss after mini-batch
Loss after mini-batch
                       1501: 0.002
                       1511: 0.001
Loss after mini-batch
                       1521: 0.000
Loss after mini-batch
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.003
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                      1581: 0.001
```

```
1591: 0.001
Loss after mini-batch
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.000
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.000
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
                       1711: 0.002
Loss after mini-batch
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.002
Loss after mini-batch
                       1751: 0.002
                       1761: 0.001
Loss after mini-batch
Loss after mini-batch
                       1771: 0.000
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.000
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.002
Loss after mini-batch
                       1841: 0.002
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.000
Loss after mini-batch
                       1921: 0.000
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.002
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
                       1971: 0.001
Loss after mini-batch
Loss after mini-batch
                       1981: 0.001
                       1991: 0.001
Loss after mini-batch
Loss after mini-batch
                       2001: 0.001
                       2011: 0.001
Loss after mini-batch
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.000
```

```
Loss after mini-batch 2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
                       2121: 0.001
Loss after mini-batch
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.000
Loss after mini-batch
                       2151: 0.000
Loss after mini-batch
                       2161: 0.000
                       2171: 0.001
Loss after mini-batch
Loss after mini-batch
                       2181: 0.001
                       2191: 0.000
Loss after mini-batch
Loss after mini-batch
                       2201: 0.000
Loss after mini-batch
                       2211: 0.000
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
                       2241: 0.000
Loss after mini-batch
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.002
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.002
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.002
Loss after mini-batch
                       2441: 0.002
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
                       2491: 0.001
Loss after mini-batch
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.000
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch 2541: 0.001
```

```
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.000
Loss after mini-batch
                       2571: 0.000
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
                       2651: 0.001
Loss after mini-batch
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
                       2701: 0.001
Loss after mini-batch
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.000
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
                       2751: 0.001
Loss after mini-batch
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 14
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.001
                         61: 0.001
Loss after mini-batch
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.000
Loss after mini-batch
                         91: 0.000
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.001
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.001
Loss after mini-batch
                        171: 0.001
Loss after mini-batch
                        181: 0.001
Loss after mini-batch
                        191: 0.002
```

Loss	${\tt after}$	mini-batch	201:	0.001
Loss	${\tt after}$	mini-batch	211:	0.001
Loss	${\tt after}$	mini-batch	221:	0.001
Loss	${\tt after}$	mini-batch	231:	0.001
Loss	${\tt after}$	mini-batch	241:	0.001
Loss	${\tt after}$	mini-batch	251:	0.001
Loss	${\tt after}$	mini-batch	261:	0.001
Loss	${\tt after}$	mini-batch	271:	0.001
Loss	${\tt after}$	mini-batch	281:	0.001
Loss	${\tt after}$	mini-batch	291:	0.001
Loss	${\tt after}$	mini-batch	301:	0.001
Loss	${\tt after}$	mini-batch	311:	0.002
Loss	${\tt after}$	mini-batch	321:	0.001
Loss	${\tt after}$	mini-batch	331:	0.001
Loss	${\tt after}$	mini-batch	341:	0.001
Loss	${\tt after}$	mini-batch	351:	0.001
Loss	${\tt after}$	mini-batch	361:	0.001
Loss	${\tt after}$	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.003
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.002
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.002
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.002
Loss	${\tt after}$	mini-batch	671:	0.002

Loss	after	mini-batch	681:	0.002
Loss	after	${\tt mini-batch}$	691:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	701:	0.001
Loss	after	${\tt mini-batch}$	711:	0.001
Loss	after	${\tt mini-batch}$	721:	0.001
Loss	after	mini-batch	731:	0.000
Loss	after	${\tt mini-batch}$	741:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	751:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	761:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	771:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	781:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	791:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	801:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	811:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	821:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	831:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	841:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	851:	0.001
Loss	after	${\tt mini-batch}$	861:	0.002
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.002
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.000
Loss	after	mini-batch	941:	0.001
Loss	after	${\tt mini-batch}$	951:	0.001
Loss	after	${\tt mini-batch}$	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.000
Loss	after	mini-batch	1001:	0.000
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.002
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.000
Loss	after	mini-batch	1081:	0.001
Loss	after	mini-batch	1091:	0.001
Loss	after	mini-batch	1101:	0.001
Loss	after	mini-batch	1111:	0.001
Loss	after	mini-batch	1121:	0.002
Loss	after	mini-batch	1131:	0.001
Loss	after	mini-batch	1141:	0.000
Loss	after	mini-batch	1151:	0.001

```
1161: 0.001
Loss after mini-batch
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.000
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
                       1281: 0.001
Loss after mini-batch
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.002
Loss after mini-batch
                       1381: 0.002
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.000
                       1421: 0.001
Loss after mini-batch
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.002
Loss after mini-batch
                       1451: 0.002
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.002
Loss after mini-batch
                       1501: 0.002
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
                       1541: 0.002
Loss after mini-batch
Loss after mini-batch
                       1551: 0.001
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                      1631: 0.001
```

```
1641: 0.001
Loss after mini-batch
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.000
                       1761: 0.000
Loss after mini-batch
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.002
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.002
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.000
Loss after mini-batch
                       1891: 0.000
                       1901: 0.001
Loss after mini-batch
Loss after mini-batch
                       1911: 0.000
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.000
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.002
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
                       2021: 0.001
Loss after mini-batch
Loss after mini-batch
                       2031: 0.002
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.002
Loss after mini-batch
                       2091: 0.002
Loss after mini-batch
                       2101: 0.003
Loss after mini-batch 2111: 0.001
```

```
Loss after mini-batch 2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.002
Loss after mini-batch 2161: 0.001
                       2171: 0.002
Loss after mini-batch
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
                       2241: 0.002
Loss after mini-batch
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
                       2291: 0.002
Loss after mini-batch
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.000
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.002
Loss after mini-batch
                       2391: 0.002
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.002
Loss after mini-batch
                       2421: 0.002
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
                       2521: 0.001
Loss after mini-batch
Loss after mini-batch
                       2531: 0.001
                       2541: 0.001
Loss after mini-batch
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.000
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch 2591: 0.001
```

```
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.002
                       2681: 0.000
Loss after mini-batch
Loss after mini-batch
                       2691: 0.001
                       2701: 0.001
Loss after mini-batch
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.000
Loss after mini-batch 2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.002
Loss after mini-batch
                       2791: 0.002
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.000
Starting epoch 15
                          1: 0.000
Loss after mini-batch
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.000
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.002
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.000
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.001
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.001
Loss after mini-batch
                        171: 0.001
Loss after mini-batch
                        181: 0.000
Loss after mini-batch
                        191: 0.001
Loss after mini-batch
                        201: 0.001
Loss after mini-batch
                        211: 0.001
Loss after mini-batch
                        221: 0.000
Loss after mini-batch
                        231: 0.001
Loss after mini-batch
                        241: 0.001
```

Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.003
Loss	after	mini-batch	341:	0.002
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.002
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.000
Loss	after	mini-batch	451:	0.000
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.002
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.002
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.000
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.002
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	
	after	mini-batch		0.001
	after	mini-batch		0.001
	after		621:	
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
	after	mini-batch	671:	
	after	mini-batch		0.000
	after	mini-batch	691:	
	after	mini-batch	701:	
Loss	after	mini-batch	711:	
Loss	_		721:	
	001			0.001

Loss	${\tt after}$	${\tt mini-batch}$	731:	0.001
Loss	after	${\tt mini-batch}$	741:	0.001
Loss	after	${\tt mini-batch}$	751:	0.001
Loss	after	${\tt mini-batch}$	761:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	771:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.002
Loss	after	mini-batch	861:	0.000
Loss	after	mini-batch	871:	0.000
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.002
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.001
Loss	after	mini-batch	1081:	0.001
Loss	after	mini-batch	1091:	0.002
Loss	after	mini-batch	1101:	0.001
Loss	after	mini-batch	1111:	0.001
Loss	after	mini-batch	1121:	0.001
Loss	after	mini-batch	1131:	0.001
Loss	after	mini-batch	1141:	0.001
Loss	after	mini-batch	1151:	0.000
Loss	after	mini-batch	1161:	0.001
Loss	after	mini-batch	1171:	0.001
Loss	after	mini-batch	1181:	0.001
Loss	after	mini-batch	1191:	0.002
Loss	after	mini-batch	1201:	0.001

```
1211: 0.001
Loss after mini-batch
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.000
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.000
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
                       1331: 0.001
Loss after mini-batch
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.002
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
                       1591: 0.001
Loss after mini-batch
Loss after mini-batch
                       1601: 0.001
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.000
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.000
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
```

```
1691: 0.002
Loss after mini-batch
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.002
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.000
                       1811: 0.001
Loss after mini-batch
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.002
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
                       1861: 0.000
Loss after mini-batch
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.000
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.002
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.000
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.003
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
                       2071: 0.000
Loss after mini-batch
Loss after mini-batch
                       2081: 0.001
                       2091: 0.001
Loss after mini-batch
Loss after mini-batch
                       2101: 0.001
                       2111: 0.001
Loss after mini-batch
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch 2161: 0.001
```

```
Loss after mini-batch 2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
                       2221: 0.000
Loss after mini-batch
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch 2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
                       2291: 0.001
Loss after mini-batch
Loss after mini-batch
                       2301: 0.000
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
                       2341: 0.000
Loss after mini-batch
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.000
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.002
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.002
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.002
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
                       2571: 0.001
Loss after mini-batch
                       2581: 0.000
Loss after mini-batch
                       2591: 0.000
Loss after mini-batch
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.002
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.000
Loss after mini-batch 2641: 0.000
```

```
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.000
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.000
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.000
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch 2731: 0.001
Loss after mini-batch
                       2741: 0.002
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.002
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.002
Loss after mini-batch
                       2801: 0.002
Loss after mini-batch
                       2811: 0.001
Starting epoch 16
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.000
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.000
                         71: 0.000
Loss after mini-batch
Loss after mini-batch
                         81: 0.002
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.001
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.000
Loss after mini-batch
                        171: 0.000
Loss after mini-batch
                        181: 0.001
Loss after mini-batch
                        191: 0.001
Loss after mini-batch
                        201: 0.001
Loss after mini-batch
                        211: 0.001
Loss after mini-batch
                        221: 0.000
Loss after mini-batch
                        231: 0.001
Loss after mini-batch
                        241: 0.001
Loss after mini-batch
                        251: 0.001
Loss after mini-batch
                        261: 0.001
Loss after mini-batch
                        271: 0.001
Loss after mini-batch
                        281: 0.001
Loss after mini-batch
                        291: 0.001
```

Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.000
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.002
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.000
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.002
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.002
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	
	after	mini-batch		0.001
	after	mini-batch		0.001
	after		671:	
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
	after	mini-batch	721:	
	after	mini-batch		0.001
	after	mini-batch	741:	
	after	mini-batch	751:	
Loss	after	mini-batch	761:	
Loss	_		771:	
	001			0.001

Loss	after	${\tt mini-batch}$	781:	0.001
Loss	after	${\tt mini-batch}$	791:	0.001
Loss	after	${\tt mini-batch}$	801:	0.000
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.002
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.000
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.001
Loss	after	mini-batch	1081:	0.001
Loss	after	mini-batch	1091:	0.001
Loss	after	mini-batch	1101:	0.004
Loss	after	mini-batch	1111:	0.003
Loss	after	mini-batch	1121:	0.003
Loss	after	mini-batch		0.002
	after	mini-batch		0.001
	after	mini-batch	1151:	0.001
Loss	after	mini-batch	1161:	0.001
Loss	after	mini-batch	1171:	0.001
Loss	after	mini-batch	1181:	0.001
Loss	after	mini-batch	1191:	0.001
	after	mini-batch	1201:	0.001
	after	mini-batch		0.001
	after	mini-batch	1221:	0.001
	after	mini-batch	1231:	
Loss	after	mini-batch	1241:	
Loss	_	mini-batch	1251:	
	001	500011		0.001

```
1261: 0.001
Loss after mini-batch
Loss after mini-batch
                       1271: 0.000
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
                       1381: 0.001
Loss after mini-batch
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.002
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
                       1431: 0.001
Loss after mini-batch
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.002
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.002
                       1641: 0.001
Loss after mini-batch
Loss after mini-batch
                       1651: 0.001
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch 1731: 0.001
```

```
1741: 0.001
Loss after mini-batch
Loss after mini-batch
                       1751: 0.000
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
                       1861: 0.001
Loss after mini-batch
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
                       1911: 0.001
Loss after mini-batch
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.000
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.000
                       2001: 0.001
Loss after mini-batch
Loss after mini-batch
                       2011: 0.000
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.000
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.000
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
                       2161: 0.001
Loss after mini-batch
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.000
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch 2211: 0.001
```

```
Loss after mini-batch 2221: 0.001
Loss after mini-batch
                       2231: 0.000
Loss after mini-batch
                       2241: 0.000
Loss after mini-batch
                       2251: 0.002
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.000
Loss after mini-batch
                       2331: 0.000
                       2341: 0.001
Loss after mini-batch
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
                       2391: 0.001
Loss after mini-batch
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.000
Loss after mini-batch
                       2511: 0.000
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.002
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.002
                       2601: 0.002
Loss after mini-batch
Loss after mini-batch
                       2611: 0.001
                       2621: 0.001
Loss after mini-batch
Loss after mini-batch
                       2631: 0.001
                       2641: 0.001
Loss after mini-batch
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch 2691: 0.001
```

```
Loss after mini-batch 2701: 0.001
Loss after mini-batch 2711: 0.000
Loss after mini-batch 2721: 0.001
Loss after mini-batch 2731: 0.001
Loss after mini-batch 2741: 0.000
Loss after mini-batch 2751: 0.001
Loss after mini-batch 2761: 0.000
Loss after mini-batch 2771: 0.001
Loss after mini-batch 2781: 0.001
Loss after mini-batch
                       2791: 0.002
                       2801: 0.001
Loss after mini-batch
Loss after mini-batch
                       2811: 0.001
Starting epoch 17
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.000
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.001
                         71: 0.000
Loss after mini-batch
Loss after mini-batch
                         81: 0.000
Loss after mini-batch
                         91: 0.000
Loss after mini-batch
                        101: 0.000
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.000
Loss after mini-batch
                        131: 0.000
Loss after mini-batch
                        141: 0.001
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.001
Loss after mini-batch
                        171: 0.001
Loss after mini-batch
                        181: 0.002
Loss after mini-batch
                        191: 0.001
Loss after mini-batch
                        201: 0.001
Loss after mini-batch
                        211: 0.001
Loss after mini-batch
                        221: 0.001
Loss after mini-batch
                        231: 0.001
Loss after mini-batch
                        241: 0.001
Loss after mini-batch
                        251: 0.001
Loss after mini-batch
                        261: 0.001
Loss after mini-batch
                        271: 0.001
Loss after mini-batch
                        281: 0.001
Loss after mini-batch
                        291: 0.001
Loss after mini-batch
                        301: 0.001
Loss after mini-batch
                        311: 0.001
Loss after mini-batch
                        321: 0.001
Loss after mini-batch
                        331: 0.001
Loss after mini-batch
                        341: 0.001
```

Loss	after	${\tt mini-batch}$	351:	0.001
Loss	after	${\tt mini-batch}$	361:	0.001
Loss	after	${\tt mini-batch}$	371:	0.001
Loss	after	${\tt mini-batch}$	381:	0.001
Loss	after	${\tt mini-batch}$	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.000
Loss	after	mini-batch	491:	0.000
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.000
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.000
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.000
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.002
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.000
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.000
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.000
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001

```
Loss after mini-batch
                        831: 0.001
Loss after mini-batch
                        841: 0.001
Loss after mini-batch
                        851: 0.001
Loss after mini-batch
                        861: 0.001
Loss after mini-batch
                        871: 0.001
Loss after mini-batch
                        881: 0.001
Loss after mini-batch
                        891: 0.001
Loss after mini-batch
                        901: 0.001
Loss after mini-batch
                        911: 0.001
Loss after mini-batch
                        921: 0.001
Loss after mini-batch
                        931: 0.001
Loss after mini-batch
                        941: 0.001
                        951: 0.001
Loss after mini-batch
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.000
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.002
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.000
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.002
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
                       1181: 0.002
Loss after mini-batch
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.002
                       1211: 0.001
Loss after mini-batch
Loss after mini-batch
                       1221: 0.001
                       1231: 0.000
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch 1301: 0.000
```

```
1311: 0.001
Loss after mini-batch
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.000
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.000
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.000
Loss after mini-batch
                       1421: 0.000
                       1431: 0.001
Loss after mini-batch
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.000
                       1481: 0.000
Loss after mini-batch
Loss after mini-batch
                       1491: 0.000
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.000
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.002
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.000
                       1691: 0.001
Loss after mini-batch
Loss after mini-batch
                       1701: 0.001
                       1711: 0.001
Loss after mini-batch
                       1721: 0.002
Loss after mini-batch
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.002
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                      1781: 0.001
```

```
1791: 0.001
Loss after mini-batch
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.000
Loss after mini-batch
                       1881: 0.000
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
                       1911: 0.001
Loss after mini-batch
Loss after mini-batch
                       1921: 0.000
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
                       1961: 0.001
Loss after mini-batch
Loss after mini-batch
                       1971: 0.002
Loss after mini-batch
                       1981: 0.000
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.000
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
                       2201: 0.000
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.000
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch 2261: 0.001
```

```
2271: 0.001
Loss after mini-batch
Loss after mini-batch
                       2281: 0.000
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
                       2321: 0.001
Loss after mini-batch
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.002
                       2371: 0.001
Loss after mini-batch
Loss after mini-batch
                       2381: 0.001
                       2391: 0.001
Loss after mini-batch
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
                       2441: 0.001
Loss after mini-batch
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.000
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.000
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.002
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.000
Loss after mini-batch
                       2561: 0.000
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
                       2671: 0.001
Loss after mini-batch
                       2681: 0.000
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch 2741: 0.001
```

Loss	after	mini-batch	2751:	0.000
Loss	after	mini-batch	2761:	0.001
Loss	after	mini-batch	2771:	0.001
Loss	after	mini-batch	2781:	0.001
Loss	after	mini-batch	2791:	0.001
Loss	after	mini-batch	2801:	0.000
Loss	after	mini-batch	2811:	0.001
Start	ting e	poch 18		
Loss	after	mini-batch	1:	0.000
Loss	after	mini-batch	11:	0.001
Loss	after	mini-batch	21:	0.001
Loss	after	mini-batch	31:	0.001
Loss	after	mini-batch	41:	0.001
Loss	after	mini-batch	51:	0.001
Loss	after	mini-batch	61:	0.001
Loss	after	mini-batch	71:	0.001
Loss	after	mini-batch	81:	0.000
Loss	after	mini-batch	91:	0.001
Loss	after	mini-batch	101:	0.001
Loss	after	mini-batch	111:	0.001
Loss	after	mini-batch	121:	0.001
Loss	after	mini-batch	131:	0.001
Loss	after	mini-batch	141:	0.001
Loss	after	mini-batch	151:	0.001
Loss	after	mini-batch	161:	0.001
Loss	after	mini-batch	171:	0.001
Loss	after	mini-batch	181:	0.001
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.000
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.000
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.000
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.000
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.002
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
FOSS	arcer	mini-parcil	231;	0.001

Loss	after	${\tt mini-batch}$	401:	0.001
Loss	after	${\tt mini-batch}$	411:	0.002
Loss	after	${\tt mini-batch}$	421:	0.001
Loss	after	${\tt mini-batch}$	431:	0.001
Loss	after	${\tt mini-batch}$	441:	0.002
Loss	after	${\tt mini-batch}$	451:	0.001
Loss	after	${\tt mini-batch}$	461:	0.001
Loss	after	${\tt mini-batch}$	471:	0.001
Loss	after	${\tt mini-batch}$	481:	0.001
Loss	after	${\tt mini-batch}$	491:	0.001
Loss	after	${\tt mini-batch}$	501:	0.001
Loss	after	${\tt mini-batch}$	511:	0.001
Loss	after	${\tt mini-batch}$	521:	0.000
Loss	after	${\tt mini-batch}$	531:	0.000
Loss	after	${\tt mini-batch}$	541:	0.000
Loss	after	${\tt mini-batch}$	551:	0.001
Loss	after	${\tt mini-batch}$	561:	0.001
Loss	after	${\tt mini-batch}$	571:	0.001
Loss	after	${\tt mini-batch}$	581:	0.001
Loss	after	${\tt mini-batch}$	591:	0.000
Loss	after	${\tt mini-batch}$	601:	0.000
Loss	after	${\tt mini-batch}$	611:	0.001
Loss	after	${\tt mini-batch}$	621:	0.001
Loss	after	${\tt mini-batch}$	631:	0.001
Loss	after	${\tt mini-batch}$	641:	0.001
Loss	after	${\tt mini-batch}$	651:	0.001
Loss	after	${\tt mini-batch}$	661:	0.001
Loss	after	${\tt mini-batch}$	671:	0.001
Loss	after	${\tt mini-batch}$	681:	0.001
Loss	after	${\tt mini-batch}$	691:	0.001
Loss	after	${\tt mini-batch}$	701:	0.001
Loss	after	${\tt mini-batch}$	711:	0.001
Loss	after	${\tt mini-batch}$	721:	0.000
Loss	after	${\tt mini-batch}$	731:	0.001
Loss	after	${\tt mini-batch}$	741:	0.001
Loss	after	${\tt mini-batch}$	751:	0.001
Loss	after	${\tt mini-batch}$	761:	0.001
Loss	after	${\tt mini-batch}$	771:	0.001
Loss	after	${\tt mini-batch}$	781:	0.002
Loss	after	${\tt mini-batch}$	791:	0.001
Loss	after	${\tt mini-batch}$	801:	0.001
Loss	after	${\tt mini-batch}$	811:	0.001
Loss	after	${\tt mini-batch}$	821:	0.001
Loss	after	${\tt mini-batch}$	831:	0.001
Loss	after	${\tt mini-batch}$	841:	0.001
Loss	after	${\tt mini-batch}$	851:	0.002
Loss	after	${\tt mini-batch}$	861:	0.001
Loss	after	${\tt mini-batch}$	871:	0.002

```
Loss after mini-batch
                        881: 0.001
Loss after mini-batch
                        891: 0.001
Loss after mini-batch
                        901: 0.001
Loss after mini-batch
                        911: 0.001
Loss after mini-batch
                        921: 0.001
Loss after mini-batch
                        931: 0.001
Loss after mini-batch
                        941: 0.001
                        951: 0.001
Loss after mini-batch
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.001
                       1001: 0.000
Loss after mini-batch
Loss after mini-batch
                       1011: 0.002
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
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Loss after mini-batch
                       1061: 0.001
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                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
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                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
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Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.000
Loss after mini-batch
                       1211: 0.002
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.000
Loss after mini-batch
                       1251: 0.001
                       1261: 0.001
Loss after mini-batch
Loss after mini-batch
                       1271: 0.001
                       1281: 0.002
Loss after mini-batch
                       1291: 0.002
Loss after mini-batch
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.000
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                      1351: 0.001
```

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1361: 0.001
Loss after mini-batch
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
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Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
                       1481: 0.000
Loss after mini-batch
Loss after mini-batch
                       1491: 0.000
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.000
Loss after mini-batch
                       1521: 0.001
                       1531: 0.001
Loss after mini-batch
Loss after mini-batch
                       1541: 0.002
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
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Loss after mini-batch
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Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
                       1741: 0.000
Loss after mini-batch
Loss after mini-batch
                       1751: 0.001
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
                       1811: 0.001
Loss after mini-batch
Loss after mini-batch
                       1821: 0.000
Loss after mini-batch 1831: 0.001
```

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1841: 0.001
Loss after mini-batch
Loss after mini-batch
                       1851: 0.000
Loss after mini-batch
                       1861: 0.000
Loss after mini-batch
                       1871: 0.000
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.000
Loss after mini-batch
                       1931: 0.000
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
                       1961: 0.001
Loss after mini-batch
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
                       2011: 0.000
Loss after mini-batch
Loss after mini-batch
                       2021: 0.000
Loss after mini-batch
                       2031: 0.002
Loss after mini-batch
                       2041: 0.002
Loss after mini-batch
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Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.002
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
                       2261: 0.001
Loss after mini-batch
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.000
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch 2311: 0.001
```

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2321: 0.001
Loss after mini-batch
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
                       2421: 0.001
Loss after mini-batch
Loss after mini-batch
                       2431: 0.001
                       2441: 0.001
Loss after mini-batch
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
                       2491: 0.001
Loss after mini-batch
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.000
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.000
Loss after mini-batch
                       2591: 0.000
Loss after mini-batch
                       2601: 0.000
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.000
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
                       2721: 0.001
Loss after mini-batch
                       2731: 0.000
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
Loss after mini-batch
                       2751: 0.002
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch 2791: 0.001
```

Loss	after	mini-batch	2801:	0.001
Loss	after	mini-batch	2811:	0.001
Start	ing e	ooch 19		
Loss	after	mini-batch	1:	0.000
Loss	after	mini-batch	11:	0.000
Loss	after	mini-batch	21:	0.001
Loss	after	mini-batch	31:	0.001
Loss	after	mini-batch	41:	0.000
Loss	after	mini-batch	51:	0.001
Loss	after	mini-batch	61:	0.001
Loss	after	mini-batch	71:	0.001
Loss	after	mini-batch	81:	0.000
Loss	after	mini-batch	91:	0.001
Loss	after	mini-batch	101:	0.001
Loss	after	mini-batch	111:	0.001
Loss	after	mini-batch	121:	0.001
Loss	after	mini-batch	131:	0.001
Loss	after	mini-batch	141:	0.002
Loss	after	mini-batch	151:	0.000
Loss	after		161:	0.000
_		mini-batch mini-batch		
Loss	after		171:	0.001
Loss	after	mini-batch	181:	0.002
Loss	after	mini-batch	191:	0.002
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.000
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.000
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.002
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	${\tt after}$	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.002
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001

Loss	${\tt after}$	mini-batch	451:	0.001
Loss	${\tt after}$	mini-batch	461:	0.000
Loss	${\tt after}$	mini-batch	471:	0.001
Loss	${\tt after}$	mini-batch	481:	0.001
Loss	${\tt after}$	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.000
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.000
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.000
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.002
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.000
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.002
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.002
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.002
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.002
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001

```
Loss after mini-batch
                        931: 0.001
Loss after mini-batch
                        941: 0.001
Loss after mini-batch
                        951: 0.000
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.002
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
                       1051: 0.000
Loss after mini-batch
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.000
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
                       1101: 0.001
Loss after mini-batch
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.000
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.002
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
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Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
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Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
                       1311: 0.001
Loss after mini-batch
Loss after mini-batch
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Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch 1401: 0.001
```

```
1411: 0.001
Loss after mini-batch
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.000
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.000
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.000
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.002
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
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Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
                       1581: 0.001
Loss after mini-batch
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.002
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
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Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
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Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
                       1791: 0.001
Loss after mini-batch
Loss after mini-batch
                       1801: 0.001
                       1811: 0.000
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.000
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
```

```
1891: 0.001
Loss after mini-batch
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.000
Loss after mini-batch
                       1921: 0.000
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.002
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
                       2011: 0.001
Loss after mini-batch
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
                       2061: 0.001
Loss after mini-batch
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.000
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.000
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
                       2291: 0.001
Loss after mini-batch
Loss after mini-batch
                       2301: 0.001
                       2311: 0.002
Loss after mini-batch
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.000
Loss after mini-batch 2361: 0.001
```

```
Loss after mini-batch 2371: 0.001
Loss after mini-batch 2381: 0.001
Loss after mini-batch
                      2391: 0.001
Loss after mini-batch
                      2401: 0.001
Loss after mini-batch 2411: 0.000
Loss after mini-batch 2421: 0.001
Loss after mini-batch 2431: 0.000
Loss after mini-batch 2441: 0.001
Loss after mini-batch 2451: 0.001
Loss after mini-batch 2461: 0.001
Loss after mini-batch
                      2471: 0.001
Loss after mini-batch
                      2481: 0.000
Loss after mini-batch
                      2491: 0.000
Loss after mini-batch
                      2501: 0.001
Loss after mini-batch
                      2511: 0.001
Loss after mini-batch
                      2521: 0.001
Loss after mini-batch
                      2531: 0.001
Loss after mini-batch
                      2541: 0.002
Loss after mini-batch 2551: 0.001
Loss after mini-batch 2561: 0.001
Loss after mini-batch
                      2571: 0.001
Loss after mini-batch
                      2581: 0.001
Loss after mini-batch 2591: 0.000
Loss after mini-batch
                      2601: 0.001
Loss after mini-batch
                      2611: 0.001
Loss after mini-batch
                      2621: 0.001
Loss after mini-batch
                      2631: 0.002
Loss after mini-batch
                      2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                      2661: 0.002
Loss after mini-batch
                      2671: 0.001
Loss after mini-batch
                      2681: 0.001
Loss after mini-batch
                      2691: 0.001
Loss after mini-batch
                      2701: 0.000
                      2711: 0.001
Loss after mini-batch
Loss after mini-batch 2721: 0.001
Loss after mini-batch 2731: 0.001
Loss after mini-batch
                      2741: 0.000
Loss after mini-batch
                      2751: 0.001
Loss after mini-batch 2761: 0.001
Loss after mini-batch
                      2771: 0.001
Loss after mini-batch
                      2781: 0.001
Loss after mini-batch
                      2791: 0.001
Loss after mini-batch
                      2801: 0.001
Loss after mini-batch
                      2811: 0.001
Starting epoch 20
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                        11: 0.001
```

Loss	after	${\tt mini-batch}$	21:	0.001
Loss	after	${\tt mini-batch}$	31:	0.002
Loss	after	${\tt mini-batch}$	41:	0.001
Loss	after	${\tt mini-batch}$	51:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	61:	0.001
Loss	after	${\tt mini-batch}$	71:	0.001
Loss	after	${\tt mini-batch}$	81:	0.001
Loss	after	${\tt mini-batch}$	91:	0.001
Loss	after	mini-batch	101:	0.001
Loss	after	mini-batch	111:	0.001
Loss	after	mini-batch	121:	0.000
Loss	after	mini-batch	131:	0.000
Loss	after	mini-batch	141:	0.001
Loss	after	mini-batch	151:	0.001
Loss	after	mini-batch	161:	0.001
Loss	after	mini-batch	171:	0.000
Loss	after	mini-batch	181:	0.001
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.004
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.000
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.000
Loss	after	mini-batch	421:	0.000
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.000
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.002
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
	001		-0	, <u></u>

Loss	after	${\tt mini-batch}$	501:	0.001
Loss	after	${\tt mini-batch}$	511:	0.000
Loss	after	${\tt mini-batch}$	521:	0.001
Loss	after	${\tt mini-batch}$	531:	0.001
Loss	after	${\tt mini-batch}$	541:	0.000
Loss	after	${\tt mini-batch}$	551:	0.000
Loss	after	${\tt mini-batch}$	561:	0.001
Loss	after	${\tt mini-batch}$	571:	0.001
Loss	after	mini-batch	581:	0.000
Loss	after	${\tt mini-batch}$	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.002
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.003
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.002
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.000
Loss	after	mini-batch	851:	0.000
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.000
Loss	after	mini-batch	961:	0.000
Loss	after	mini-batch	971:	0.001

```
981: 0.000
Loss after mini-batch
Loss after mini-batch
                        991: 0.002
Loss after mini-batch
                       1001: 0.000
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.000
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
                       1101: 0.001
Loss after mini-batch
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
                       1151: 0.001
Loss after mini-batch
Loss after mini-batch
                       1161: 0.002
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
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Loss after mini-batch
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Loss after mini-batch
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Loss after mini-batch
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Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
                       1381: 0.000
Loss after mini-batch
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch 1451: 0.002
```

```
1461: 0.000
Loss after mini-batch
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.000
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
                       1581: 0.000
Loss after mini-batch
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.002
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
                       1631: 0.001
Loss after mini-batch
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.000
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.000
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.002
                       1841: 0.001
Loss after mini-batch
Loss after mini-batch
                       1851: 0.001
                       1861: 0.000
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.002
                       1911: 0.001
Loss after mini-batch
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                      1931: 0.001
```

```
1941: 0.001
Loss after mini-batch
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.000
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.000
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
                       2061: 0.001
Loss after mini-batch
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.002
Loss after mini-batch
                       2101: 0.002
                       2111: 0.001
Loss after mini-batch
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                      2161: 0.001
Loss after mini-batch
                       2171: 0.000
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.000
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.000
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
                       2341: 0.001
Loss after mini-batch
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch 2401: 0.001
Loss after mini-batch 2411: 0.001
```

Loss after mini-batch 2421: 0.000 Loss after mini-batch 2431: 0.001 Loss after mini-batch 2441: 0.001 Loss after mini-batch 2451: 0.001 Loss after mini-batch 2461: 0.000 Loss after mini-batch 2471: 0.000 Loss after mini-batch 2481: 0.001 Loss after mini-batch 2491: 0.001 Loss after mini-batch 2501: 0.001 Loss after mini-batch 2511: 0.002 2521: 0.001 Loss after mini-batch Loss after mini-batch 2531: 0.001 Loss after mini-batch 2541: 0.001 Loss after mini-batch 2551: 0.000 Loss after mini-batch 2561: 0.001 Loss after mini-batch 2571: 0.001 Loss after mini-batch 2581: 0.001 Loss after mini-batch 2591: 0.002 Loss after mini-batch 2601: 0.001 Loss after mini-batch 2611: 0.001 Loss after mini-batch 2621: 0.001 Loss after mini-batch 2631: 0.001 Loss after mini-batch 2641: 0.002 Loss after mini-batch 2651: 0.001 Loss after mini-batch 2661: 0.001 Loss after mini-batch 2671: 0.001 Loss after mini-batch 2681: 0.001 Loss after mini-batch 2691: 0.001 Loss after mini-batch 2701: 0.001 Loss after mini-batch 2711: 0.001 Loss after mini-batch 2721: 0.001 Loss after mini-batch 2731: 0.001 Loss after mini-batch 2741: 0.001 Loss after mini-batch 2751: 0.001 Loss after mini-batch 2761: 0.001 Loss after mini-batch 2771: 0.001 Loss after mini-batch 2781: 0.002 Loss after mini-batch 2791: 0.001 Loss after mini-batch 2801: 0.000 Loss after mini-batch 2811: 0.001 Training process has finished.

Calculate error for test

Result: 2.8987754719841756e-05 Result: 1.737798069415805e-14 Result: 6.226525531170417e-07 Calculate error for train Result: 2.83641189786924e-05 Result: 1.6860413089303032e-14 Result: 6.108775835135749e-07 Training with 50 epochs. Starting epoch 1 Loss after mini-batch 1: 0.234 Loss after mini-batch 11: 2.060 Loss after mini-batch 21: 1.724 Loss after mini-batch 31: 1.282 Loss after mini-batch 41: 0.929 Loss after mini-batch 51: 0.593 Loss after mini-batch 61: 0.334 Loss after mini-batch 71: 0.141 Loss after mini-batch 81: 0.036 Loss after mini-batch 91: 0.012 Loss after mini-batch 101: 0.010 Loss after mini-batch 111: 0.008 Loss after mini-batch 121: 0.008 Loss after mini-batch 131: 0.008 Loss after mini-batch 141: 0.007 Loss after mini-batch 151: 0.007 Loss after mini-batch 161: 0.008 Loss after mini-batch 171: 0.006 Loss after mini-batch 181: 0.007 Loss after mini-batch 191: 0.007 Loss after mini-batch 201: 0.007 Loss after mini-batch 211: 0.004 Loss after mini-batch 221: 0.006 Loss after mini-batch 231: 0.006 Loss after mini-batch 241: 0.008 Loss after mini-batch 251: 0.006 Loss after mini-batch 261: 0.005 Loss after mini-batch 271: 0.004 Loss after mini-batch 281: 0.007 Loss after mini-batch 291: 0.005 Loss after mini-batch 301: 0.005 Loss after mini-batch 311: 0.007 Loss after mini-batch 321: 0.005 Loss after mini-batch 331: 0.007 Loss after mini-batch 341: 0.005 Loss after mini-batch 351: 0.004 Loss after mini-batch 361: 0.006 Loss after mini-batch 371: 0.006 Loss after mini-batch 381: 0.005 Loss after mini-batch 391: 0.005 Loss after mini-batch 401: 0.003

Loss after mini-batch

Loss after mini-batch

Loss after mini-batch

411: 0.006

421: 0.003

431: 0.006

Loss	after	${\tt mini-batch}$	441:	0.003
Loss	after	${\tt mini-batch}$	451:	0.003
Loss	after	${\tt mini-batch}$	461:	0.004
Loss	after	${\tt mini-batch}$	471:	0.003
Loss	after	${\tt mini-batch}$	481:	0.008
Loss	after	${\tt mini-batch}$	491:	0.006
Loss	after	${\tt mini-batch}$	501:	0.003
Loss	after	${\tt mini-batch}$	511:	0.004
Loss	after	${\tt mini-batch}$	521:	0.009
Loss	after	${\tt mini-batch}$	531:	0.003
Loss	after	${\tt mini-batch}$	541:	0.005
Loss	after	${\tt mini-batch}$	551:	0.003
Loss	after	${\tt mini-batch}$	561:	0.004
Loss	after	${\tt mini-batch}$	571:	0.004
Loss	after	${\tt mini-batch}$	581:	0.002
Loss	after	${\tt mini-batch}$	591:	0.003
Loss	after	${\tt mini-batch}$	601:	0.005
Loss	after	${\tt mini-batch}$	611:	0.004
Loss	after	${\tt mini-batch}$	621:	0.005
Loss	after	${\tt mini-batch}$	631:	0.003
Loss	after	${\tt mini-batch}$	641:	0.005
Loss	after	${\tt mini-batch}$	651:	0.004
Loss	after	${\tt mini-batch}$	661:	0.004
Loss	after	${\tt mini-batch}$	671:	0.003
Loss	after	${\tt mini-batch}$	681:	0.007
Loss	after	${\tt mini-batch}$	691:	0.005
Loss	after	${\tt mini-batch}$	701:	0.005
Loss	after	${\tt mini-batch}$	711:	0.003
Loss	after	${\tt mini-batch}$	721:	0.003
Loss	after	${\tt mini-batch}$	731:	0.005
Loss	after	${\tt mini-batch}$	741:	0.006
Loss	after	${\tt mini-batch}$	751:	0.006
Loss	after	${\tt mini-batch}$	761:	0.005
Loss	after	${\tt mini-batch}$	771:	0.003
Loss	after	${\tt mini-batch}$	781:	0.002
Loss	after	${\tt mini-batch}$	791:	0.003
Loss	after	${\tt mini-batch}$	801:	0.004
Loss	after	${\tt mini-batch}$	811:	0.004
Loss	after	${\tt mini-batch}$	821:	0.003
Loss	after	${\tt mini-batch}$	831:	0.004
Loss	after	${\tt mini-batch}$	841:	0.003
Loss	after	${\tt mini-batch}$	851:	0.004
Loss	after	${\tt mini-batch}$	861:	0.004
Loss	after	${\tt mini-batch}$	871:	0.003
Loss	after	${\tt mini-batch}$	881:	0.003
Loss	after	${\tt mini-batch}$	891:	0.006
Loss	after	${\tt mini-batch}$	901:	0.005
Loss	after	${\tt mini-batch}$	911:	0.006

```
Loss after mini-batch
                        921: 0.004
Loss after mini-batch
                        931: 0.003
Loss after mini-batch
                        941: 0.004
Loss after mini-batch
                        951: 0.004
Loss after mini-batch
                        961: 0.004
Loss after mini-batch
                        971: 0.005
Loss after mini-batch
                        981: 0.002
Loss after mini-batch
                        991: 0.002
Loss after mini-batch
                       1001: 0.004
Loss after mini-batch
                       1011: 0.004
                       1021: 0.004
Loss after mini-batch
Loss after mini-batch
                       1031: 0.005
                       1041: 0.003
Loss after mini-batch
Loss after mini-batch
                       1051: 0.004
Loss after mini-batch
                       1061: 0.003
                       1071: 0.004
Loss after mini-batch
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                       1081: 0.003
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Loss after mini-batch
                       1101: 0.005
Loss after mini-batch
                       1111: 0.003
Loss after mini-batch
                       1121: 0.005
Loss after mini-batch
                       1131: 0.005
Loss after mini-batch
                       1141: 0.003
Loss after mini-batch
                       1151: 0.004
Loss after mini-batch
                       1161: 0.005
Loss after mini-batch
                       1171: 0.003
                       1181: 0.004
Loss after mini-batch
Loss after mini-batch
                       1191: 0.003
Loss after mini-batch
                       1201: 0.004
Loss after mini-batch
                       1211: 0.003
Loss after mini-batch
                       1221: 0.003
Loss after mini-batch
                       1231: 0.003
Loss after mini-batch
                       1241: 0.003
Loss after mini-batch
                       1251: 0.003
Loss after mini-batch
                       1261: 0.002
Loss after mini-batch
                       1271: 0.002
Loss after mini-batch
                       1281: 0.004
Loss after mini-batch
                       1291: 0.002
                       1301: 0.004
Loss after mini-batch
Loss after mini-batch
                       1311: 0.003
                       1321: 0.006
Loss after mini-batch
                       1331: 0.003
Loss after mini-batch
Loss after mini-batch
                       1341: 0.003
Loss after mini-batch
                       1351: 0.002
Loss after mini-batch
                       1361: 0.002
Loss after mini-batch
                       1371: 0.003
Loss after mini-batch
                       1381: 0.004
Loss after mini-batch 1391: 0.004
```

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1401: 0.003
Loss after mini-batch
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.004
Loss after mini-batch
                       1431: 0.004
Loss after mini-batch
                       1441: 0.002
Loss after mini-batch
                       1451: 0.003
Loss after mini-batch
                       1461: 0.003
Loss after mini-batch
                       1471: 0.005
Loss after mini-batch
                       1481: 0.003
Loss after mini-batch
                       1491: 0.002
Loss after mini-batch
                       1501: 0.005
Loss after mini-batch
                       1511: 0.002
                       1521: 0.004
Loss after mini-batch
Loss after mini-batch
                       1531: 0.003
Loss after mini-batch
                       1541: 0.003
Loss after mini-batch
                       1551: 0.003
Loss after mini-batch
                       1561: 0.003
                       1571: 0.003
Loss after mini-batch
Loss after mini-batch
                       1581: 0.002
Loss after mini-batch
                       1591: 0.002
Loss after mini-batch
                       1601: 0.003
Loss after mini-batch
                       1611: 0.003
Loss after mini-batch
                       1621: 0.002
Loss after mini-batch
                       1631: 0.003
Loss after mini-batch
                       1641: 0.002
Loss after mini-batch
                       1651: 0.002
                       1661: 0.003
Loss after mini-batch
Loss after mini-batch
                       1671: 0.003
Loss after mini-batch
                       1681: 0.004
Loss after mini-batch
                       1691: 0.003
Loss after mini-batch
                       1701: 0.003
Loss after mini-batch
                       1711: 0.003
Loss after mini-batch
                       1721: 0.002
Loss after mini-batch
                       1731: 0.003
Loss after mini-batch
                       1741: 0.002
Loss after mini-batch
                       1751: 0.003
Loss after mini-batch
                       1761: 0.005
Loss after mini-batch
                       1771: 0.002
                       1781: 0.003
Loss after mini-batch
Loss after mini-batch
                       1791: 0.003
                       1801: 0.003
Loss after mini-batch
                       1811: 0.004
Loss after mini-batch
Loss after mini-batch
                       1821: 0.003
Loss after mini-batch
                       1831: 0.004
Loss after mini-batch
                       1841: 0.004
Loss after mini-batch
                       1851: 0.002
Loss after mini-batch
                       1861: 0.002
Loss after mini-batch
                      1871: 0.003
```

```
1881: 0.004
Loss after mini-batch
Loss after mini-batch
                       1891: 0.004
Loss after mini-batch
                       1901: 0.003
Loss after mini-batch
                       1911: 0.003
Loss after mini-batch
                       1921: 0.004
Loss after mini-batch
                       1931: 0.002
Loss after mini-batch
                       1941: 0.003
Loss after mini-batch
                       1951: 0.003
Loss after mini-batch
                       1961: 0.003
Loss after mini-batch
                       1971: 0.002
Loss after mini-batch
                       1981: 0.003
Loss after mini-batch
                       1991: 0.003
                       2001: 0.002
Loss after mini-batch
Loss after mini-batch
                       2011: 0.004
Loss after mini-batch
                       2021: 0.004
Loss after mini-batch
                       2031: 0.002
Loss after mini-batch
                       2041: 0.002
                       2051: 0.002
Loss after mini-batch
Loss after mini-batch
                       2061: 0.004
Loss after mini-batch
                       2071: 0.004
Loss after mini-batch
                       2081: 0.002
Loss after mini-batch
                       2091: 0.003
Loss after mini-batch
                       2101: 0.002
Loss after mini-batch
                       2111: 0.002
Loss after mini-batch
                       2121: 0.002
Loss after mini-batch
                       2131: 0.002
Loss after mini-batch
                       2141: 0.003
Loss after mini-batch
                       2151: 0.002
Loss after mini-batch
                       2161: 0.002
Loss after mini-batch
                       2171: 0.003
Loss after mini-batch
                       2181: 0.003
Loss after mini-batch
                       2191: 0.003
Loss after mini-batch
                       2201: 0.003
Loss after mini-batch
                       2211: 0.003
Loss after mini-batch
                       2221: 0.003
Loss after mini-batch
                       2231: 0.002
Loss after mini-batch
                       2241: 0.003
Loss after mini-batch
                       2251: 0.003
Loss after mini-batch
                       2261: 0.002
Loss after mini-batch
                       2271: 0.001
                       2281: 0.003
Loss after mini-batch
Loss after mini-batch
                       2291: 0.003
                       2301: 0.003
Loss after mini-batch
Loss after mini-batch
                       2311: 0.002
Loss after mini-batch
                       2321: 0.003
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.003
Loss after mini-batch 2351: 0.002
```

```
Loss after mini-batch 2361: 0.002
Loss after mini-batch
                      2371: 0.003
Loss after mini-batch
                      2381: 0.003
Loss after mini-batch
                      2391: 0.003
Loss after mini-batch
                      2401: 0.004
Loss after mini-batch
                      2411: 0.003
Loss after mini-batch
                      2421: 0.005
Loss after mini-batch 2431: 0.005
Loss after mini-batch
                      2441: 0.004
Loss after mini-batch
                      2451: 0.002
                       2461: 0.003
Loss after mini-batch
Loss after mini-batch
                      2471: 0.002
Loss after mini-batch
                       2481: 0.003
Loss after mini-batch
                       2491: 0.004
Loss after mini-batch
                       2501: 0.003
Loss after mini-batch
                       2511: 0.003
Loss after mini-batch
                       2521: 0.004
Loss after mini-batch
                       2531: 0.003
Loss after mini-batch
                      2541: 0.002
Loss after mini-batch
                      2551: 0.003
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.002
Loss after mini-batch
                      2581: 0.002
Loss after mini-batch
                       2591: 0.002
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.003
Loss after mini-batch
                       2621: 0.003
Loss after mini-batch
                       2631: 0.003
Loss after mini-batch
                       2641: 0.002
Loss after mini-batch
                       2651: 0.004
Loss after mini-batch
                       2661: 0.003
Loss after mini-batch
                       2671: 0.002
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                      2691: 0.003
Loss after mini-batch
                      2701: 0.003
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                      2721: 0.002
Loss after mini-batch
                       2731: 0.002
Loss after mini-batch
                      2741: 0.001
Loss after mini-batch
                      2751: 0.002
Loss after mini-batch
                      2761: 0.004
Loss after mini-batch
                       2771: 0.004
Loss after mini-batch
                       2781: 0.003
Loss after mini-batch
                       2791: 0.002
Loss after mini-batch
                       2801: 0.002
Loss after mini-batch
                       2811: 0.001
Starting epoch 2
Loss after mini-batch
                          1: 0.000
```

Loss	after	${\tt mini-batch}$	11:	0.004
Loss	after	${\tt mini-batch}$	21:	0.002
Loss	after	${\tt mini-batch}$	31:	0.003
Loss	after	${\tt mini-batch}$	41:	0.001
Loss	after	${\tt mini-batch}$	51:	0.001
Loss	after	${\tt mini-batch}$	61:	0.003
Loss	after	${\tt mini-batch}$	71:	0.003
Loss	after	${\tt mini-batch}$	81:	0.002
Loss	after	${\tt mini-batch}$	91:	0.002
Loss	after	${\tt mini-batch}$	101:	0.003
Loss	after	${\tt mini-batch}$	111:	0.002
Loss	after	${\tt mini-batch}$	121:	0.002
Loss	after	${\tt mini-batch}$	131:	0.002
Loss	after	${\tt mini-batch}$	141:	0.002
Loss	after	${\tt mini-batch}$	151:	0.002
Loss	after	${\tt mini-batch}$	161:	0.002
Loss	after	${\tt mini-batch}$	171:	0.003
Loss	after	${\tt mini-batch}$	181:	0.002
Loss	after	${\tt mini-batch}$	191:	0.002
Loss	after	${\tt mini-batch}$	201:	0.003
Loss	after	${\tt mini-batch}$	211:	0.004
Loss	after	${\tt mini-batch}$	221:	0.002
Loss	after	${\tt mini-batch}$	231:	0.001
Loss	after	${\tt mini-batch}$	241:	0.002
Loss	after	${\tt mini-batch}$	251:	0.005
Loss	after	${\tt mini-batch}$	261:	0.004
Loss	after	${\tt mini-batch}$	271:	0.003
Loss	after	${\tt mini-batch}$	281:	0.002
Loss	after	${\tt mini-batch}$	291:	0.002
Loss	after	${\tt mini-batch}$	301:	0.003
Loss	after	${\tt mini-batch}$	311:	0.002
Loss	after	${\tt mini-batch}$	321:	0.003
Loss	after	${\tt mini-batch}$	331:	0.003
Loss	after	${\tt mini-batch}$	341:	0.001
Loss	after	${\tt mini-batch}$	351:	0.002
Loss	after	${\tt mini-batch}$	361:	0.003
Loss	after	${\tt mini-batch}$	371:	0.002
Loss	after	${\tt mini-batch}$	381:	0.001
Loss	after	${\tt mini-batch}$	391:	0.002
Loss	after	${\tt mini-batch}$	401:	0.003
Loss	after	${\tt mini-batch}$	411:	0.002
Loss	after	${\tt mini-batch}$	421:	0.003
Loss	after	${\tt mini-batch}$	431:	0.002
Loss	after	${\tt mini-batch}$	441:	0.001
Loss	after	${\tt mini-batch}$	451:	0.002
Loss	after	${\tt mini-batch}$	461:	0.003
Loss	after	${\tt mini-batch}$	471:	0.003
Loss	after	${\tt mini-batch}$	481:	0.002

Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.002
Loss	after	mini-batch	511:	0.002
Loss	after	mini-batch	521:	0.003
Loss	after	mini-batch	531:	0.004
Loss	after	mini-batch	541:	0.003
Loss	after	mini-batch	551:	0.002
Loss	after	${\tt mini-batch}$	561:	0.002
Loss	after	mini-batch	571:	0.002
Loss	after	mini-batch	581:	0.002
Loss	after	${\tt mini-batch}$	591:	0.003
Loss	after	mini-batch	601:	0.003
Loss	after	mini-batch	611:	0.001
Loss	after	${\tt mini-batch}$	621:	0.003
Loss	after	${\tt mini-batch}$	631:	0.003
Loss	after	mini-batch	641:	0.002
Loss	after	mini-batch	651:	0.003
Loss	after	${\tt mini-batch}$	661:	0.002
Loss	after	${\tt mini-batch}$	671:	0.002
Loss	after	mini-batch	681:	0.003
Loss	after	mini-batch	691:	0.002
Loss	after	mini-batch	701:	0.002
Loss	after	mini-batch	711:	0.004
Loss	after	mini-batch	721:	0.002
Loss	after	${\tt mini-batch}$	731:	0.002
Loss	after	${\tt mini-batch}$	741:	0.002
Loss	after	${\tt mini-batch}$	751:	0.001
Loss	after	mini-batch	761:	0.002
Loss	after	${\tt mini-batch}$	771:	0.001
Loss	after	${\tt mini-batch}$	781:	0.002
Loss	after	mini-batch	791:	0.003
Loss	after	mini-batch	801:	0.002
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.003
Loss	after	mini-batch	831:	0.003
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.003
Loss	after	mini-batch	871:	0.002
Loss	after	mini-batch	881:	0.002
Loss	after	mini-batch	891:	0.003
Loss	after	mini-batch	901:	0.002
Loss	after	${\tt mini-batch}$	911:	0.002
Loss	after	${\tt mini-batch}$	921:	0.002
Loss	after	${\tt mini-batch}$	931:	0.001
Loss	after	${\tt mini-batch}$	941:	0.001
Loss	after	${\tt mini-batch}$	951:	0.001
Loss	after	${\tt mini-batch}$	961:	0.002

```
Loss after mini-batch
                        971: 0.003
Loss after mini-batch
                        981: 0.002
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.002
Loss after mini-batch
                       1011: 0.003
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.002
Loss after mini-batch
                       1041: 0.003
Loss after mini-batch
                       1051: 0.004
Loss after mini-batch
                       1061: 0.003
                       1071: 0.002
Loss after mini-batch
Loss after mini-batch
                       1081: 0.001
                       1091: 0.003
Loss after mini-batch
Loss after mini-batch
                       1101: 0.002
Loss after mini-batch
                       1111: 0.002
Loss after mini-batch
                       1121: 0.002
Loss after mini-batch
                       1131: 0.003
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.002
Loss after mini-batch
                       1171: 0.002
Loss after mini-batch
                       1181: 0.003
Loss after mini-batch
                       1191: 0.002
Loss after mini-batch
                       1201: 0.002
Loss after mini-batch
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Loss after mini-batch
                       1221: 0.002
Loss after mini-batch
                       1231: 0.002
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
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Loss after mini-batch
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Loss after mini-batch
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                       1301: 0.002
Loss after mini-batch
                       1311: 0.002
Loss after mini-batch
                       1321: 0.003
Loss after mini-batch
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Loss after mini-batch
                       1341: 0.003
                       1351: 0.003
Loss after mini-batch
Loss after mini-batch
                       1361: 0.002
                       1371: 0.002
Loss after mini-batch
                       1381: 0.002
Loss after mini-batch
Loss after mini-batch
                       1391: 0.002
Loss after mini-batch
                       1401: 0.002
Loss after mini-batch
                       1411: 0.002
Loss after mini-batch
                       1421: 0.002
Loss after mini-batch
                       1431: 0.002
Loss after mini-batch 1441: 0.003
```

```
1451: 0.003
Loss after mini-batch
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.002
Loss after mini-batch
                       1481: 0.004
Loss after mini-batch
                       1491: 0.004
Loss after mini-batch
                       1501: 0.002
Loss after mini-batch
                       1511: 0.002
Loss after mini-batch
                       1521: 0.002
Loss after mini-batch
                       1531: 0.002
Loss after mini-batch
                       1541: 0.002
Loss after mini-batch
                       1551: 0.002
Loss after mini-batch
                       1561: 0.002
                       1571: 0.002
Loss after mini-batch
Loss after mini-batch
                       1581: 0.002
Loss after mini-batch
                       1591: 0.002
Loss after mini-batch
                       1601: 0.002
Loss after mini-batch
                       1611: 0.002
                       1621: 0.003
Loss after mini-batch
Loss after mini-batch
                       1631: 0.002
Loss after mini-batch
                       1641: 0.003
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.002
Loss after mini-batch
                       1671: 0.002
Loss after mini-batch
                       1681: 0.002
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.002
Loss after mini-batch
                       1711: 0.003
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.004
Loss after mini-batch
                       1751: 0.003
Loss after mini-batch
                       1761: 0.002
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Loss after mini-batch
                       1781: 0.003
Loss after mini-batch
                       1791: 0.002
Loss after mini-batch
                       1801: 0.004
Loss after mini-batch
                       1811: 0.002
Loss after mini-batch
                       1821: 0.003
                       1831: 0.004
Loss after mini-batch
Loss after mini-batch
                       1841: 0.002
                       1851: 0.002
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.004
Loss after mini-batch
                       1891: 0.004
Loss after mini-batch
                       1901: 0.003
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch 1921: 0.003
```

```
1931: 0.002
Loss after mini-batch
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.002
Loss after mini-batch
                       1961: 0.002
Loss after mini-batch
                       1971: 0.002
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.002
Loss after mini-batch
                       2031: 0.002
Loss after mini-batch
                       2041: 0.002
                       2051: 0.002
Loss after mini-batch
Loss after mini-batch
                       2061: 0.002
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.002
                       2101: 0.001
Loss after mini-batch
Loss after mini-batch
                       2111: 0.003
Loss after mini-batch
                       2121: 0.002
Loss after mini-batch
                       2131: 0.003
Loss after mini-batch
                       2141: 0.002
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.002
Loss after mini-batch
                       2171: 0.002
Loss after mini-batch
                       2181: 0.002
Loss after mini-batch
                       2191: 0.003
Loss after mini-batch
                       2201: 0.002
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.002
Loss after mini-batch
                       2241: 0.003
Loss after mini-batch
                       2251: 0.003
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.003
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.002
                       2311: 0.002
Loss after mini-batch
Loss after mini-batch
                       2321: 0.002
                       2331: 0.003
Loss after mini-batch
                       2341: 0.002
Loss after mini-batch
                       2351: 0.002
Loss after mini-batch
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.002
Loss after mini-batch
                       2381: 0.002
Loss after mini-batch
                       2391: 0.002
Loss after mini-batch 2401: 0.003
```

```
Loss after mini-batch 2411: 0.003
Loss after mini-batch 2421: 0.001
Loss after mini-batch
                      2431: 0.001
Loss after mini-batch
                      2441: 0.001
Loss after mini-batch 2451: 0.001
Loss after mini-batch
                      2461: 0.004
Loss after mini-batch 2471: 0.001
Loss after mini-batch 2481: 0.002
Loss after mini-batch 2491: 0.002
Loss after mini-batch
                      2501: 0.002
                      2511: 0.002
Loss after mini-batch
Loss after mini-batch
                      2521: 0.002
Loss after mini-batch
                      2531: 0.001
                      2541: 0.001
Loss after mini-batch
Loss after mini-batch
                      2551: 0.004
Loss after mini-batch
                      2561: 0.002
Loss after mini-batch
                      2571: 0.001
Loss after mini-batch
                      2581: 0.002
Loss after mini-batch
                      2591: 0.003
Loss after mini-batch 2601: 0.003
Loss after mini-batch
                      2611: 0.002
                      2621: 0.002
Loss after mini-batch
Loss after mini-batch 2631: 0.001
Loss after mini-batch
                      2641: 0.002
Loss after mini-batch
                      2651: 0.002
Loss after mini-batch
                      2661: 0.002
Loss after mini-batch
                      2671: 0.003
Loss after mini-batch
                      2681: 0.003
Loss after mini-batch
                      2691: 0.002
Loss after mini-batch
                     2701: 0.002
Loss after mini-batch
                      2711: 0.002
Loss after mini-batch
                      2721: 0.002
Loss after mini-batch 2731: 0.002
Loss after mini-batch 2741: 0.003
Loss after mini-batch 2751: 0.002
Loss after mini-batch 2761: 0.001
Loss after mini-batch 2771: 0.001
Loss after mini-batch
                      2781: 0.002
Loss after mini-batch
                      2791: 0.002
Loss after mini-batch
                      2801: 0.002
Loss after mini-batch
                      2811: 0.002
Starting epoch 3
Loss after mini-batch
                          1: 0.000
                         11: 0.002
Loss after mini-batch
Loss after mini-batch
                         21: 0.002
Loss after mini-batch
                        31: 0.002
Loss after mini-batch
                        41: 0.002
Loss after mini-batch
                        51: 0.003
```

Loss	after	${\tt mini-batch}$	61:	0.004
Loss	after	${\tt mini-batch}$	71:	0.002
Loss	after	${\tt mini-batch}$	81:	0.002
Loss	after	${\tt mini-batch}$	91:	0.002
Loss	after	${\tt mini-batch}$	101:	0.002
Loss	after	${\tt mini-batch}$	111:	0.001
Loss	after	${\tt mini-batch}$	121:	0.002
Loss	after	${\tt mini-batch}$	131:	0.002
Loss	after	${\tt mini-batch}$	141:	0.003
Loss	after	${\tt mini-batch}$	151:	0.004
Loss	after	${\tt mini-batch}$	161:	0.002
Loss	after	${\tt mini-batch}$	171:	0.001
Loss	after	${\tt mini-batch}$	181:	0.002
Loss	after	${\tt mini-batch}$	191:	0.002
Loss	after	${\tt mini-batch}$	201:	0.002
Loss	after	${\tt mini-batch}$	211:	0.002
Loss	after	${\tt mini-batch}$	221:	0.003
Loss	after	${\tt mini-batch}$	231:	0.002
Loss	after	${\tt mini-batch}$	241:	0.001
Loss	after	${\tt mini-batch}$	251:	0.002
Loss	after	${\tt mini-batch}$	261:	0.001
Loss	after	${\tt mini-batch}$	271:	0.003
Loss	after	${\tt mini-batch}$	281:	0.003
Loss	after	${\tt mini-batch}$	291:	0.003
Loss	after	${\tt mini-batch}$	301:	0.003
Loss	after	${\tt mini-batch}$	311:	0.002
Loss	after	${\tt mini-batch}$	321:	0.002
Loss	after	${\tt mini-batch}$	331:	0.001
Loss	after	${\tt mini-batch}$	341:	0.002
Loss	after	${\tt mini-batch}$	351:	0.002
Loss	after	${\tt mini-batch}$	361:	0.002
Loss	after	${\tt mini-batch}$	371:	0.002
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.002
Loss	after	mini-batch	411:	0.002
Loss	after	mini-batch	421:	0.002
Loss	after	mini-batch	431:	0.002
Loss	after	${\tt mini-batch}$	441:	0.001
Loss	after	${\tt mini-batch}$	451:	0.001
Loss	after	${\tt mini-batch}$	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.002
Loss	after	${\tt mini-batch}$	501:	0.002
Loss	after	${\tt mini-batch}$	511:	0.001
Loss	after	${\tt mini-batch}$	521:	0.001
Loss	after	${\tt mini-batch}$	531:	0.001

Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.002
Loss	after	mini-batch	571:	0.002
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.002
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.005
Loss	after	mini-batch	621:	0.002
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.002
Loss	after	mini-batch	651:	0.002
Loss	after	mini-batch	661:	0.003
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.002
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.002
Loss	after	mini-batch	721:	0.002
Loss	after	mini-batch	731:	0.002
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.002
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.002
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.002
Loss	after	mini-batch	801:	0.002
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.002
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.002
Loss	after	mini-batch	901:	0.002
Loss	after	mini-batch	911:	0.002
Loss	after	mini-batch	921:	0.002
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.003
Loss	after	mini-batch	951:	0.002
Loss	after	mini-batch	961:	0.002
Loss	after	mini-batch	971:	0.002
Loss	after	${\tt mini-batch}$	981:	0.001
Loss	after	${\tt mini-batch}$	991:	0.002
Loss	after	${\tt mini-batch}$	1001:	0.001
Loss	after	${\tt mini-batch}$	1011:	0.002

```
1021: 0.002
Loss after mini-batch
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.002
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.002
Loss after mini-batch
                       1091: 0.003
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.002
Loss after mini-batch
                       1121: 0.002
Loss after mini-batch
                       1131: 0.002
                       1141: 0.001
Loss after mini-batch
Loss after mini-batch
                       1151: 0.002
Loss after mini-batch
                       1161: 0.002
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
                       1191: 0.003
Loss after mini-batch
Loss after mini-batch
                       1201: 0.002
Loss after mini-batch
                       1211: 0.002
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.002
Loss after mini-batch
                       1241: 0.002
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.002
Loss after mini-batch
                       1311: 0.002
Loss after mini-batch
                       1321: 0.003
Loss after mini-batch
                       1331: 0.003
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.002
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.002
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
                       1401: 0.001
Loss after mini-batch
Loss after mini-batch
                       1411: 0.001
                       1421: 0.002
Loss after mini-batch
                       1431: 0.003
Loss after mini-batch
                       1441: 0.002
Loss after mini-batch
Loss after mini-batch
                       1451: 0.002
Loss after mini-batch
                       1461: 0.002
Loss after mini-batch
                       1471: 0.002
Loss after mini-batch
                       1481: 0.004
Loss after mini-batch 1491: 0.002
```

```
1501: 0.002
Loss after mini-batch
Loss after mini-batch
                       1511: 0.003
Loss after mini-batch
                       1521: 0.002
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.002
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.002
Loss after mini-batch
                       1581: 0.002
Loss after mini-batch
                       1591: 0.002
Loss after mini-batch
                       1601: 0.003
Loss after mini-batch
                       1611: 0.002
                       1621: 0.003
Loss after mini-batch
Loss after mini-batch
                       1631: 0.002
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.002
Loss after mini-batch
                       1661: 0.002
                       1671: 0.001
Loss after mini-batch
Loss after mini-batch
                       1681: 0.002
Loss after mini-batch
                       1691: 0.002
Loss after mini-batch
                       1701: 0.002
Loss after mini-batch
                       1711: 0.002
Loss after mini-batch
                       1721: 0.002
Loss after mini-batch
                       1731: 0.002
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.002
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.002
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.003
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.002
                       1851: 0.001
Loss after mini-batch
Loss after mini-batch
                       1861: 0.002
Loss after mini-batch
                       1871: 0.002
                       1881: 0.001
Loss after mini-batch
Loss after mini-batch
                       1891: 0.001
                       1901: 0.002
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
Loss after mini-batch
                       1921: 0.002
Loss after mini-batch
                       1931: 0.002
Loss after mini-batch
                       1941: 0.002
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.002
Loss after mini-batch 1971: 0.001
```

```
1981: 0.002
Loss after mini-batch
Loss after mini-batch
                       1991: 0.002
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.002
                       2031: 0.001
Loss after mini-batch
Loss after mini-batch
                       2041: 0.002
Loss after mini-batch
                       2051: 0.002
Loss after mini-batch
                       2061: 0.002
Loss after mini-batch
                       2071: 0.003
Loss after mini-batch
                       2081: 0.002
Loss after mini-batch
                       2091: 0.001
                       2101: 0.001
Loss after mini-batch
Loss after mini-batch
                       2111: 0.002
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
                       2151: 0.001
Loss after mini-batch
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.002
Loss after mini-batch
                       2191: 0.002
Loss after mini-batch
                       2201: 0.004
Loss after mini-batch
                       2211: 0.003
Loss after mini-batch
                       2221: 0.002
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.002
Loss after mini-batch
                       2351: 0.002
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.002
                       2381: 0.002
Loss after mini-batch
                       2391: 0.002
Loss after mini-batch
                       2401: 0.002
Loss after mini-batch
Loss after mini-batch
                       2411: 0.003
Loss after mini-batch
                       2421: 0.002
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch 2441: 0.002
Loss after mini-batch 2451: 0.004
```

```
Loss after mini-batch 2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.002
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.003
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.002
Loss after mini-batch
                       2531: 0.002
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
                       2561: 0.002
Loss after mini-batch
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.002
Loss after mini-batch
                       2611: 0.002
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.002
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
                       2661: 0.002
Loss after mini-batch
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.002
Loss after mini-batch
                       2691: 0.002
Loss after mini-batch
                       2701: 0.002
                       2711: 0.001
Loss after mini-batch
Loss after mini-batch
                       2721: 0.002
Loss after mini-batch
                       2731: 0.002
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.002
Loss after mini-batch
                       2761: 0.002
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.001
                       2801: 0.002
Loss after mini-batch
Loss after mini-batch
                       2811: 0.002
Starting epoch 4
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.003
Loss after mini-batch
                         21: 0.002
Loss after mini-batch
                         31: 0.002
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.002
Loss after mini-batch
                         71: 0.002
Loss after mini-batch
                         81: 0.002
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
```

Loss	after	${\tt mini-batch}$	111:	0.001
Loss	after	${\tt mini-batch}$	121:	0.001
Loss	after	${\tt mini-batch}$	131:	0.002
Loss	after	${\tt mini-batch}$	141:	0.002
Loss	after	${\tt mini-batch}$	151:	0.001
Loss	after	${\tt mini-batch}$	161:	0.001
Loss	after	${\tt mini-batch}$	171:	0.001
Loss	after	${\tt mini-batch}$	181:	0.001
Loss	after	${\tt mini-batch}$	191:	0.001
Loss	after	${\tt mini-batch}$	201:	0.002
Loss	after	${\tt mini-batch}$	211:	0.001
Loss	after	${\tt mini-batch}$	221:	0.002
Loss	after	${\tt mini-batch}$	231:	0.001
Loss	after	${\tt mini-batch}$	241:	0.001
Loss	after	${\tt mini-batch}$	251:	0.001
Loss	after	${\tt mini-batch}$	261:	0.002
Loss	after	${\tt mini-batch}$	271:	0.001
Loss	after	${\tt mini-batch}$	281:	0.002
Loss	after	${\tt mini-batch}$	291:	0.002
Loss	after	${\tt mini-batch}$	301:	0.002
Loss	after	${\tt mini-batch}$	311:	0.002
Loss	after	${\tt mini-batch}$	321:	0.002
Loss	after	${\tt mini-batch}$	331:	0.001
Loss	after	${\tt mini-batch}$	341:	0.001
Loss	after	${\tt mini-batch}$	351:	0.001
Loss	after	${\tt mini-batch}$	361:	0.001
Loss	after	${\tt mini-batch}$	371:	0.002
Loss	after	${\tt mini-batch}$	381:	0.003
Loss	after	${\tt mini-batch}$	391:	0.001
Loss	after	${\tt mini-batch}$	401:	0.001
Loss	after	${\tt mini-batch}$	411:	0.002
Loss	after	${\tt mini-batch}$	421:	0.002
Loss	after	${\tt mini-batch}$	431:	0.001
Loss	after	${\tt mini-batch}$	441:	0.002
Loss	after	${\tt mini-batch}$	451:	0.001
Loss	after	${\tt mini-batch}$	461:	0.001
Loss	after	${\tt mini-batch}$	471:	0.001
Loss	after	${\tt mini-batch}$	481:	0.002
Loss	after	${\tt mini-batch}$	491:	0.001
Loss	after	${\tt mini-batch}$	501:	0.001
Loss	after	${\tt mini-batch}$	511:	0.001
Loss	after	${\tt mini-batch}$	521:	0.001
Loss	after	${\tt mini-batch}$	531:	0.001
Loss	after	${\tt mini-batch}$	541:	0.001
Loss	after	${\tt mini-batch}$	551:	0.001
Loss	after	${\tt mini-batch}$	561:	0.001
Loss	after	${\tt mini-batch}$	571:	0.001
Loss	after	${\tt mini-batch}$	581:	0.001

Loss	after	${\tt mini-batch}$	591:	0.001
Loss	after	${\tt mini-batch}$	601:	0.001
Loss	after	${\tt mini-batch}$	611:	0.001
Loss	after	${\tt mini-batch}$	621:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	631:	0.001
Loss	after	mini-batch	641:	0.002
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.002
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.002
Loss	after	mini-batch	691:	0.002
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.003
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.002
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.002
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.002
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.002
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.002
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.002
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.000
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.002
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.001
	001			

```
1071: 0.001
Loss after mini-batch
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.002
Loss after mini-batch
                       1111: 0.002
Loss after mini-batch
                       1121: 0.002
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
                       1191: 0.001
Loss after mini-batch
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
                       1241: 0.002
Loss after mini-batch
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.002
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.002
Loss after mini-batch
                       1331: 0.002
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.002
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.002
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.002
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.002
                       1451: 0.001
Loss after mini-batch
Loss after mini-batch
                       1461: 0.001
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch 1541: 0.001
```

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1551: 0.001
Loss after mini-batch
Loss after mini-batch
                       1561: 0.002
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.002
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.002
Loss after mini-batch
                       1661: 0.002
                       1671: 0.002
Loss after mini-batch
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.002
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
                       1721: 0.002
Loss after mini-batch
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.002
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.002
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.002
                       1931: 0.003
Loss after mini-batch
Loss after mini-batch
                       1941: 0.002
                       1951: 0.002
Loss after mini-batch
                       1961: 0.002
Loss after mini-batch
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch 2021: 0.001
```

```
Loss after mini-batch 2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.002
Loss after mini-batch
                       2071: 0.002
                       2081: 0.002
Loss after mini-batch
Loss after mini-batch
                       2091: 0.003
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.002
Loss after mini-batch
                       2121: 0.002
                       2131: 0.001
Loss after mini-batch
Loss after mini-batch
                       2141: 0.002
                       2151: 0.001
Loss after mini-batch
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.002
Loss after mini-batch
                       2191: 0.001
                       2201: 0.001
Loss after mini-batch
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.002
Loss after mini-batch
                       2241: 0.002
Loss after mini-batch
                      2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.003
Loss after mini-batch
                       2321: 0.002
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.002
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.002
Loss after mini-batch 2421: 0.001
                       2431: 0.002
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch 2491: 0.001
Loss after mini-batch 2501: 0.001
```

```
Loss after mini-batch 2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.002
Loss after mini-batch
                       2541: 0.002
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.003
Loss after mini-batch
                       2621: 0.002
Loss after mini-batch
                       2631: 0.002
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.004
Loss after mini-batch
                       2681: 0.002
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch 2731: 0.001
Loss after mini-batch
                       2741: 0.002
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.000
Loss after mini-batch
                       2771: 0.002
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.003
Loss after mini-batch
                       2811: 0.002
Starting epoch 5
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.002
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.002
                         61: 0.002
Loss after mini-batch
Loss after mini-batch
                         71: 0.002
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.003
Loss after mini-batch
                        151: 0.002
```

Loss	${\tt after}$	mini-batch	161:	0.002
Loss	${\tt after}$	mini-batch	171:	0.001
Loss	${\tt after}$	mini-batch	181:	0.001
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.002
Loss	after	mini-batch	381:	0.002
Loss	after	mini-batch	391:	0.002
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.002
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.002
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	
	after	mini-batch		0.001
	after			0.001
	after			0.001
Loss	after	mini-batch	541:	
Loss	after	mini-batch	551:	
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
		mini-batch		
	after after	mini-batch	581:	0.001
	after	mini-batch		0.001
	after	mini-batch		0.001
_	after	mini-batch	621:	
Loss	after	mini-batch	631:	0.001

Loss	after	${\tt mini-batch}$	641:	0.001
Loss	after	${\tt mini-batch}$	651:	0.001
Loss	after	${\tt mini-batch}$	661:	0.001
Loss	after	${\tt mini-batch}$	671:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	681:	0.002
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.002
Loss	after	mini-batch	711:	0.002
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.002
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.002
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.002
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.002
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.003
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.000
Loss	after	mini-batch	1031:	0.002
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.002
Loss	after	mini-batch	1071:	0.002
Loss	after	mini-batch	1081:	0.001
Loss	after	mini-batch	1091:	0.001
Loss	after	mini-batch	1101:	0.001
Loss	after	mini-batch	1111:	0.001

```
1121: 0.001
Loss after mini-batch
Loss after mini-batch
                       1131: 0.002
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.002
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
                       1241: 0.001
Loss after mini-batch
Loss after mini-batch
                       1251: 0.002
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
                       1291: 0.000
Loss after mini-batch
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.002
Loss after mini-batch
                       1331: 0.003
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.002
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.000
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.002
Loss after mini-batch
                       1491: 0.001
                       1501: 0.001
Loss after mini-batch
Loss after mini-batch
                       1511: 0.001
                       1521: 0.002
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
                       1571: 0.001
Loss after mini-batch
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                      1591: 0.001
```

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1601: 0.001
Loss after mini-batch
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.002
Loss after mini-batch
                       1671: 0.002
Loss after mini-batch
                       1681: 0.002
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.002
Loss after mini-batch
                       1711: 0.000
                       1721: 0.000
Loss after mini-batch
Loss after mini-batch
                       1731: 0.002
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.002
Loss after mini-batch
                       1761: 0.001
                       1771: 0.001
Loss after mini-batch
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.002
Loss after mini-batch
                       1841: 0.002
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.002
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.003
Loss after mini-batch
                       1921: 0.002
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.002
Loss after mini-batch
                       1961: 0.002
Loss after mini-batch
                       1971: 0.002
                       1981: 0.001
Loss after mini-batch
Loss after mini-batch
                       1991: 0.001
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch 2071: 0.001
```

```
Loss after mini-batch 2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.002
                       2131: 0.001
Loss after mini-batch
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch 2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
                       2181: 0.001
Loss after mini-batch
Loss after mini-batch
                       2191: 0.001
                       2201: 0.001
Loss after mini-batch
Loss after mini-batch
                       2211: 0.002
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
                       2251: 0.001
Loss after mini-batch
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.000
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.002
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.002
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.002
Loss after mini-batch
                       2391: 0.002
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
                       2481: 0.001
Loss after mini-batch
Loss after mini-batch
                       2491: 0.001
                       2501: 0.001
Loss after mini-batch
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch 2551: 0.001
```

```
Loss after mini-batch 2561: 0.001
Loss after mini-batch 2571: 0.001
Loss after mini-batch
                      2581: 0.002
Loss after mini-batch 2591: 0.001
Loss after mini-batch 2601: 0.001
Loss after mini-batch
                      2611: 0.001
Loss after mini-batch 2621: 0.002
Loss after mini-batch 2631: 0.002
Loss after mini-batch 2641: 0.001
Loss after mini-batch
                      2651: 0.001
Loss after mini-batch
                      2661: 0.001
Loss after mini-batch
                      2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                      2701: 0.001
Loss after mini-batch 2711: 0.001
Loss after mini-batch 2721: 0.001
Loss after mini-batch 2731: 0.002
Loss after mini-batch 2741: 0.001
Loss after mini-batch 2751: 0.002
Loss after mini-batch 2761: 0.001
Loss after mini-batch 2771: 0.001
Loss after mini-batch 2781: 0.001
Loss after mini-batch 2791: 0.001
Loss after mini-batch
                      2801: 0.000
Loss after mini-batch 2811: 0.001
Starting epoch 6
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.000
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.001
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.002
Loss after mini-batch
                        171: 0.001
Loss after mini-batch
                        181: 0.001
Loss after mini-batch
                        191: 0.001
Loss after mini-batch
                        201: 0.001
```

Loss	after	${\tt mini-batch}$	211:	0.001
Loss	after	${\tt mini-batch}$	221:	0.002
Loss	after	${\tt mini-batch}$	231:	0.001
Loss	after	${\tt mini-batch}$	241:	0.001
Loss	after	${\tt mini-batch}$	251:	0.001
Loss	after	${\tt mini-batch}$	261:	0.001
Loss	after	${\tt mini-batch}$	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.000
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.002
Loss	after	mini-batch	401:	0.003
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.002
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.004
Loss	after	mini-batch	521:	0.002
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.002
Loss	after	mini-batch	561:	0.002
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.002
Loss	after	mini-batch	601:	0.002
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.000
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001

Loss	after	${\tt mini-batch}$	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.000
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.000
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.002
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.003
Loss	after	mini-batch	861:	0.003
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.000
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.002
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.002
Loss	after	mini-batch	1031:	0.002
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.002
Loss	after	mini-batch	1081:	0.001
Loss	after	mini-batch	1091:	0.001
Loss	after	mini-batch	1101:	0.004
Loss	after	mini-batch	1111:	0.001
Loss	after	mini-batch	1121:	0.001
Loss	after	mini-batch	1131:	0.001
Loss	after	mini-batch	1141:	0.002
Loss	after	mini-batch	1151:	0.002
Loss	after	mini-batch	1161:	0.001

```
1171: 0.002
Loss after mini-batch
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.000
Loss after mini-batch
                       1251: 0.002
Loss after mini-batch
                       1261: 0.002
Loss after mini-batch
                       1271: 0.003
Loss after mini-batch
                       1281: 0.003
                       1291: 0.002
Loss after mini-batch
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
                       1471: 0.001
Loss after mini-batch
Loss after mini-batch
                       1481: 0.002
Loss after mini-batch
                       1491: 0.000
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.002
Loss after mini-batch
                       1531: 0.002
Loss after mini-batch
                       1541: 0.001
                       1551: 0.001
Loss after mini-batch
Loss after mini-batch
                       1561: 0.000
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.000
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                      1641: 0.001
```

```
1651: 0.001
Loss after mini-batch
Loss after mini-batch
                       1661: 0.000
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.002
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
                       1771: 0.001
Loss after mini-batch
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.002
Loss after mini-batch
                       1811: 0.001
                       1821: 0.002
Loss after mini-batch
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.002
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.000
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.002
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
                       2031: 0.001
Loss after mini-batch
Loss after mini-batch
                       2041: 0.001
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.000
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch 2121: 0.001
```

```
Loss after mini-batch 2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.002
                       2181: 0.002
Loss after mini-batch
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
                       2231: 0.000
Loss after mini-batch
Loss after mini-batch
                       2241: 0.001
                       2251: 0.001
Loss after mini-batch
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.002
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.000
                       2301: 0.001
Loss after mini-batch
Loss after mini-batch
                       2311: 0.000
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.002
Loss after mini-batch
                       2341: 0.002
Loss after mini-batch
                       2351: 0.002
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.002
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.002
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
                       2531: 0.001
Loss after mini-batch
Loss after mini-batch
                       2541: 0.001
                       2551: 0.001
Loss after mini-batch
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.000
Loss after mini-batch
                       2581: 0.002
Loss after mini-batch
                       2591: 0.002
Loss after mini-batch 2601: 0.001
```

```
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.000
                       2711: 0.001
Loss after mini-batch
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.002
Loss after mini-batch
                       2801: 0.001
                       2811: 0.001
Loss after mini-batch
Starting epoch 7
Loss after mini-batch
                           1: 0.000
Loss after mini-batch
                          11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.003
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.000
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                         101: 0.001
Loss after mini-batch
                         111: 0.002
Loss after mini-batch
                         121: 0.001
Loss after mini-batch
                         131: 0.002
Loss after mini-batch
                         141: 0.001
Loss after mini-batch
                         151: 0.001
Loss after mini-batch
                         161: 0.001
Loss after mini-batch
                         171: 0.001
Loss after mini-batch
                         181: 0.001
Loss after mini-batch
                         191: 0.001
Loss after mini-batch
                         201: 0.001
Loss after mini-batch
                         211: 0.001
Loss after mini-batch
                         221: 0.001
Loss after mini-batch
                         231: 0.001
Loss after mini-batch
                         241: 0.001
Loss after mini-batch
                         251: 0.001
```

Loss	after	${\tt mini-batch}$	261:	0.001
Loss	after	${\tt mini-batch}$	271:	0.001
Loss	after	${\tt mini-batch}$	281:	0.000
Loss	after	${\tt mini-batch}$	291:	0.001
Loss	after	${\tt mini-batch}$	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.003
Loss	after	mini-batch	331:	0.002
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.002
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.002
Loss	after	mini-batch	501:	0.002
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.002
Loss	after	mini-batch	551:	0.002
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.002
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.000
Loss	after	mini-batch	691:	0.000
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001

Loss	after	${\tt mini-batch}$	741:	0.001
Loss	after	${\tt mini-batch}$	751:	0.001
Loss	after	${\tt mini-batch}$	761:	0.002
Loss	after	${\tt mini-batch}$	771:	0.001
Loss	after	${\tt mini-batch}$	781:	0.002
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.000
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.000
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.002
Loss	after	mini-batch	921:	0.002
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.002
Loss	after	mini-batch	1001:	0.000
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.001
Loss	after	mini-batch	1081:	0.002
Loss	after	mini-batch	1091:	0.001
Loss	after	mini-batch	1101:	0.001
Loss	after	mini-batch	1111:	0.001
Loss	after	mini-batch	1121:	0.001
Loss	after	mini-batch	1131:	0.001
Loss	after	mini-batch	1141:	0.001
Loss	after	mini-batch	1151:	0.001
Loss	after	mini-batch	1161:	0.002
Loss	after	mini-batch	1171:	0.002
Loss	after	mini-batch	1181:	0.001
Loss	after	mini-batch	1191:	0.001
Loss	after	mini-batch	1201:	0.000
Loss	after	mini-batch	1211:	0.000
порр	OT OCT	mini batti	1411.	0.001

```
1221: 0.001
Loss after mini-batch
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.002
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
                       1341: 0.001
Loss after mini-batch
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.000
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
                       1391: 0.001
Loss after mini-batch
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
                       1481: 0.001
Loss after mini-batch
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.000
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.000
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.002
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
                       1601: 0.001
Loss after mini-batch
Loss after mini-batch
                       1611: 0.000
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
Loss after mini-batch
                       1641: 0.000
Loss after mini-batch
                       1651: 0.000
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.002
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                      1691: 0.002
```

```
1701: 0.001
Loss after mini-batch
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.002
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.000
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
                       1821: 0.000
Loss after mini-batch
Loss after mini-batch
                       1831: 0.002
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
                       1871: 0.002
Loss after mini-batch
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.002
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.002
Loss after mini-batch
                       1941: 0.002
Loss after mini-batch
                       1951: 0.001
                       1961: 0.001
Loss after mini-batch
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.002
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.002
Loss after mini-batch
                       2071: 0.002
                       2081: 0.001
Loss after mini-batch
Loss after mini-batch
                       2091: 0.002
                       2101: 0.001
Loss after mini-batch
                       2111: 0.002
Loss after mini-batch
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch 2161: 0.001
Loss after mini-batch 2171: 0.001
```

```
Loss after mini-batch 2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
                       2231: 0.000
Loss after mini-batch
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.002
Loss after mini-batch
                       2291: 0.002
                       2301: 0.001
Loss after mini-batch
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.000
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.002
                       2351: 0.001
Loss after mini-batch
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.000
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.002
Loss after mini-batch
                       2531: 0.002
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
                       2581: 0.001
Loss after mini-batch
Loss after mini-batch
                       2591: 0.001
                       2601: 0.001
Loss after mini-batch
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.000
Loss after mini-batch
                       2631: 0.000
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch 2651: 0.001
```

```
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.002
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
                       2761: 0.001
Loss after mini-batch
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 8
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.002
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.001
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.001
                        171: 0.001
Loss after mini-batch
Loss after mini-batch
                        181: 0.001
Loss after mini-batch
                        191: 0.001
Loss after mini-batch
                        201: 0.002
Loss after mini-batch
                        211: 0.001
Loss after mini-batch
                        221: 0.001
Loss after mini-batch
                        231: 0.001
Loss after mini-batch
                        241: 0.001
Loss after mini-batch
                        251: 0.001
Loss after mini-batch
                        261: 0.001
Loss after mini-batch
                        271: 0.001
Loss after mini-batch
                        281: 0.002
Loss after mini-batch
                        291: 0.001
Loss after mini-batch
                        301: 0.001
```

Loss	after	${\tt mini-batch}$	311:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	321:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	331:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	341:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	351:	0.001
Loss	after	${\tt mini-batch}$	361:	0.002
Loss	after	${\tt mini-batch}$	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.002
Loss	after	mini-batch	441:	0.003
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.002
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.000
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.000
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001

Loss	${\tt after}$	mini-batch	791:	0.002
Loss	${\tt after}$	mini-batch	801:	0.001
Loss	${\tt after}$	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.002
Loss	${\tt after}$	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.000
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.000
Loss	after	mini-batch	1051:	0.000
Loss	after	mini-batch	1061:	0.000
Loss	after	mini-batch	1071:	0.001
Loss	after	mini-batch	1081:	0.000
Loss	after	mini-batch	1091:	0.001
Loss	after	mini-batch	1101:	0.001
Loss	after	mini-batch	1111:	0.002
Loss	after	mini-batch	1121:	0.002
Loss	after	mini-batch	1131:	0.002
Loss	after	mini-batch	1141:	0.002
Loss	after	mini-batch	1151:	0.001
Loss	after	mini-batch	1161:	0.001
Loss	after	mini-batch	1171:	0.001
Loss	after	mini-batch	1181:	0.001
Loss	after	mini-batch	1191:	0.000
Loss	after	mini-batch	1201:	0.001
Loss	after	mini-batch	1211:	0.001
Loss	after	mini-batch	1221:	0.001
Loss	after	mini-batch	1231:	0.001
Loss	after	mini-batch	1241:	0.002
Loss	after	mini-batch	1251:	0.003
Loss	after	mini-batch	1261:	0.003

```
1271: 0.002
Loss after mini-batch
Loss after mini-batch
                       1281: 0.002
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.002
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.000
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
                       1391: 0.001
Loss after mini-batch
Loss after mini-batch
                       1401: 0.000
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
                       1441: 0.001
Loss after mini-batch
Loss after mini-batch
                       1451: 0.003
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.002
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.000
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.000
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.002
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
                       1651: 0.001
Loss after mini-batch
Loss after mini-batch
                       1661: 0.000
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch 1741: 0.001
```

```
1751: 0.001
Loss after mini-batch
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.000
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.002
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
                       1871: 0.001
Loss after mini-batch
Loss after mini-batch
                       1881: 0.002
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
                       1921: 0.001
Loss after mini-batch
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.002
Loss after mini-batch
                       2111: 0.002
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.002
Loss after mini-batch 2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.003
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.000
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch 2211: 0.002
Loss after mini-batch 2221: 0.001
```

```
Loss after mini-batch 2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.002
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
                       2331: 0.001
Loss after mini-batch
Loss after mini-batch
                       2341: 0.001
                       2351: 0.002
Loss after mini-batch
Loss after mini-batch
                       2361: 0.002
Loss after mini-batch
                       2371: 0.002
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
                       2401: 0.001
Loss after mini-batch
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.002
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.002
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.000
Loss after mini-batch
                       2581: 0.002
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
                       2611: 0.002
Loss after mini-batch
Loss after mini-batch
                       2621: 0.001
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch 2701: 0.000
```

```
Loss after mini-batch 2711: 0.001
Loss after mini-batch 2721: 0.001
Loss after mini-batch 2731: 0.001
Loss after mini-batch 2741: 0.002
Loss after mini-batch 2751: 0.001
Loss after mini-batch 2761: 0.000
Loss after mini-batch 2771: 0.001
Loss after mini-batch 2781: 0.001
Loss after mini-batch 2791: 0.001
Loss after mini-batch
                       2801: 0.002
Loss after mini-batch
                       2811: 0.001
Starting epoch 9
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.002
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.000
Loss after mini-batch
                         81: 0.000
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.001
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.001
Loss after mini-batch
                        171: 0.001
Loss after mini-batch
                        181: 0.000
Loss after mini-batch
                        191: 0.001
Loss after mini-batch
                        201: 0.001
Loss after mini-batch
                        211: 0.001
Loss after mini-batch
                        221: 0.000
Loss after mini-batch
                        231: 0.001
Loss after mini-batch
                        241: 0.002
Loss after mini-batch
                        251: 0.002
Loss after mini-batch
                        261: 0.001
Loss after mini-batch
                        271: 0.001
Loss after mini-batch
                        281: 0.001
Loss after mini-batch
                        291: 0.001
Loss after mini-batch
                        301: 0.001
Loss after mini-batch
                        311: 0.001
Loss after mini-batch
                        321: 0.001
Loss after mini-batch
                        331: 0.001
Loss after mini-batch
                        341: 0.001
Loss after mini-batch
                        351: 0.001
```

Loss	after	${\tt mini-batch}$	361:	0.001
Loss	after	${\tt mini-batch}$	371:	0.001
Loss	after	${\tt mini-batch}$	381:	0.001
Loss	after	${\tt mini-batch}$	391:	0.002
Loss	after	${\tt mini-batch}$	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.002
Loss	after	mini-batch	431:	0.002
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.002
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.002
Loss	after	mini-batch	691:	0.002
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.000
Loss	after	mini-batch	771:	0.000
Loss	after	mini-batch	781:	0.000
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.000
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001

```
841: 0.001
Loss after mini-batch
Loss after mini-batch
                        851: 0.001
Loss after mini-batch
                        861: 0.001
Loss after mini-batch
                        871: 0.001
Loss after mini-batch
                        881: 0.001
Loss after mini-batch
                        891: 0.001
Loss after mini-batch
                        901: 0.001
Loss after mini-batch
                        911: 0.001
Loss after mini-batch
                        921: 0.002
Loss after mini-batch
                        931: 0.002
Loss after mini-batch
                        941: 0.001
Loss after mini-batch
                        951: 0.001
                        961: 0.000
Loss after mini-batch
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.000
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.000
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.002
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.002
Loss after mini-batch
                       1171: 0.002
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
                       1221: 0.001
Loss after mini-batch
Loss after mini-batch
                       1231: 0.001
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.002
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch 1311: 0.001
```

```
1321: 0.001
Loss after mini-batch
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.002
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.002
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
                       1441: 0.001
Loss after mini-batch
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.002
Loss after mini-batch
                       1481: 0.002
                       1491: 0.001
Loss after mini-batch
Loss after mini-batch
                       1501: 0.003
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.002
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.000
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.002
                       1701: 0.001
Loss after mini-batch
Loss after mini-batch
                       1711: 0.000
                       1721: 0.001
Loss after mini-batch
                       1731: 0.000
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.002
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.002
Loss after mini-batch
                      1791: 0.001
```

```
1801: 0.001
Loss after mini-batch
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.003
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.002
                       1921: 0.001
Loss after mini-batch
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
                       1971: 0.001
Loss after mini-batch
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.000
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.002
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.000
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.000
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.002
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
Loss after mini-batch
                       2231: 0.002
Loss after mini-batch
                       2241: 0.002
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch 2261: 0.001
Loss after mini-batch 2271: 0.001
```

```
2281: 0.001
Loss after mini-batch
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
                       2331: 0.001
Loss after mini-batch
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.000
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
                       2381: 0.001
Loss after mini-batch
Loss after mini-batch
                       2391: 0.001
                       2401: 0.001
Loss after mini-batch
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
                       2451: 0.002
Loss after mini-batch
Loss after mini-batch
                       2461: 0.002
Loss after mini-batch
                       2471: 0.002
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.002
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.000
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.002
Loss after mini-batch
                       2671: 0.001
                       2681: 0.001
Loss after mini-batch
Loss after mini-batch
                       2691: 0.001
                       2701: 0.001
Loss after mini-batch
Loss after mini-batch
                       2711: 0.000
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch 2751: 0.001
```

Loss	after	mini-batch	2761:	0.001
Loss	after	mini-batch	2771:	0.001
Loss	after	mini-batch	2781:	0.001
Loss	after	mini-batch	2791:	0.001
Loss	after	mini-batch	2801:	0.001
Loss	after	mini-batch	2811:	0.002
Start	ting e	ooch 10		
Loss	after	mini-batch	1:	0.000
Loss	after	mini-batch	11:	0.001
Loss	after	mini-batch	21:	0.002
Loss	after	mini-batch	31:	0.001
Loss	after	mini-batch	41:	0.001
Loss	after	mini-batch	51:	0.001
Loss	after	mini-batch	61:	0.001
Loss	after	mini-batch	71:	0.001
Loss	after	mini-batch	81:	0.001
Loss	after	mini-batch	91:	0.000
Loss	after	mini-batch	101:	0.000
Loss	after	mini-batch	111:	0.001
Loss	after	mini-batch	121:	0.001
Loss	after	mini-batch	131:	0.001
Loss	after	mini-batch	141:	0.001
Loss	after	mini-batch	151:	0.001
Loss	after	mini-batch	161:	0.001
Loss	after	mini-batch	171:	0.001
Loss	after	mini-batch	181:	0.001
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.000
Loss	after	mini-batch	221:	0.000
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.000
Loss	after	mini-batch	371:	0.000
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
повв	GT 001	mini parcii	101.	5.501

Loss	after	${\tt mini-batch}$	411:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	421:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	431:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	441:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	451:	0.000
Loss	after	${\tt mini-batch}$	461:	0.001
Loss	after	${\tt mini-batch}$	471:	0.001
Loss	after	${\tt mini-batch}$	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	${\tt mini-batch}$	501:	0.001
Loss	after	mini-batch	511:	0.000
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.000
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.002
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.000
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.000
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.002
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.002
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.002
Loss	after	${\tt mini-batch}$	771:	0.002
Loss	after	${\tt mini-batch}$	781:	0.001
Loss	after	${\tt mini-batch}$	791:	0.001
Loss	after	${\tt mini-batch}$	801:	0.001
Loss	after	${\tt mini-batch}$	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.000
Loss	after	mini-batch	881:	0.000

```
Loss after mini-batch
                        891: 0.001
Loss after mini-batch
                        901: 0.001
Loss after mini-batch
                        911: 0.001
Loss after mini-batch
                        921: 0.001
Loss after mini-batch
                        931: 0.000
Loss after mini-batch
                        941: 0.001
Loss after mini-batch
                        951: 0.001
Loss after mini-batch
                        961: 0.002
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.000
Loss after mini-batch
                       1001: 0.000
                       1011: 0.001
Loss after mini-batch
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
                       1091: 0.001
Loss after mini-batch
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
                       1271: 0.001
Loss after mini-batch
Loss after mini-batch
                       1281: 0.001
                       1291: 0.001
Loss after mini-batch
                       1301: 0.000
Loss after mini-batch
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.000
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.002
Loss after mini-batch
                       1351: 0.002
Loss after mini-batch 1361: 0.001
```

```
1371: 0.001
Loss after mini-batch
Loss after mini-batch
                       1381: 0.000
Loss after mini-batch
                       1391: 0.000
Loss after mini-batch
                       1401: 0.002
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
                       1491: 0.001
Loss after mini-batch
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.000
Loss after mini-batch
                       1531: 0.001
                       1541: 0.001
Loss after mini-batch
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.000
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.000
Loss after mini-batch
                       1741: 0.001
                       1751: 0.001
Loss after mini-batch
Loss after mini-batch
                       1761: 0.002
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.000
Loss after mini-batch
                       1831: 0.000
Loss after mini-batch
                       1841: 0.001
```

```
1851: 0.001
Loss after mini-batch
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.000
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
                       1971: 0.001
Loss after mini-batch
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
                       2021: 0.001
Loss after mini-batch
Loss after mini-batch
                       2031: 0.002
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.000
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.000
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
                       2251: 0.000
Loss after mini-batch
Loss after mini-batch
                       2261: 0.001
                       2271: 0.002
Loss after mini-batch
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.000
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch 2321: 0.001
```

```
Loss after mini-batch 2331: 0.000
Loss after mini-batch
                       2341: 0.000
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
                       2381: 0.001
Loss after mini-batch
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.002
Loss after mini-batch
                       2421: 0.001
                       2431: 0.001
Loss after mini-batch
Loss after mini-batch
                       2441: 0.001
                       2451: 0.001
Loss after mini-batch
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.000
Loss after mini-batch
                       2481: 0.002
Loss after mini-batch
                       2491: 0.001
                       2501: 0.001
Loss after mini-batch
Loss after mini-batch
                       2511: 0.002
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.002
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.000
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.000
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
                       2731: 0.002
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.002
Loss after mini-batch 2801: 0.001
```

Loss	after		2811:	0.001
_		poch 11		
Loss	after	mini-batch	1:	0.000
Loss	after	mini-batch	11:	0.001
Loss	after	mini-batch	21:	0.001
Loss	after	mini-batch	31:	0.000
Loss	after	mini-batch	41:	0.001
Loss	after	mini-batch	51:	0.001
Loss	after	mini-batch	61:	0.001
Loss	after	mini-batch	71:	0.001
Loss	after	mini-batch	81:	0.001
Loss	after	mini-batch	91:	0.001
Loss	after	mini-batch	101:	0.001
Loss	after	mini-batch	111:	0.001
Loss	after	mini-batch	121:	0.001
Loss	after	mini-batch	131:	0.001
Loss	after	mini-batch	141:	0.001
Loss	after	mini-batch	151:	0.001
Loss	after	mini-batch	161:	0.002
Loss	after	mini-batch	171:	0.001
Loss	after	mini-batch	181:	0.001
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.000
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.000
Loss	after	mini-batch	411:	
Loss	after	mini-batch	421:	0.001
Loss	_	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	_	mini-batch	451:	

Loss	${\tt after}$	mini-batch	461:	0.001
Loss	${\tt after}$	mini-batch	471:	0.001
Loss	${\tt after}$	mini-batch	481:	0.001
Loss	${\tt after}$	mini-batch	491:	0.001
Loss	${\tt after}$	mini-batch	501:	0.000
Loss	${\tt after}$	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.000
Loss	${\tt after}$	mini-batch	531:	0.001
Loss	${\tt after}$	mini-batch	541:	0.001
Loss	${\tt after}$	mini-batch	551:	0.000
Loss	${\tt after}$	mini-batch	561:	0.001
Loss	${\tt after}$	mini-batch	571:	0.001
Loss	${\tt after}$	mini-batch	581:	0.000
Loss	${\tt after}$	mini-batch	591:	0.000
Loss	${\tt after}$	mini-batch	601:	0.001
Loss	${\tt after}$	mini-batch	611:	0.001
Loss	${\tt after}$	mini-batch	621:	0.001
Loss	${\tt after}$	mini-batch	631:	0.000
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	${\tt after}$	mini-batch	661:	0.002
Loss	${\tt after}$	mini-batch	671:	0.002
Loss	${\tt after}$	mini-batch	681:	0.001
Loss	${\tt after}$	mini-batch	691:	0.001
Loss	${\tt after}$	mini-batch	701:	0.000
Loss	${\tt after}$	mini-batch	711:	0.001
Loss	${\tt after}$	mini-batch	721:	0.001
Loss	${\tt after}$	mini-batch	731:	0.001
Loss	${\tt after}$	mini-batch	741:	0.001
Loss	${\tt after}$	mini-batch	751:	0.001
Loss	${\tt after}$	mini-batch	761:	0.001
Loss	${\tt after}$	mini-batch	771:	0.002
Loss	${\tt after}$	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.000
Loss	${\tt after}$	mini-batch	801:	0.001
Loss	${\tt after}$	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	${\tt after}$	mini-batch	831:	0.000
Loss	${\tt after}$	mini-batch	841:	0.001
Loss	${\tt after}$	mini-batch	851:	0.001
Loss	${\tt after}$	mini-batch	861:	0.001
Loss	${\tt after}$	mini-batch	871:	0.001
Loss	${\tt after}$	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.003
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001

```
Loss after mini-batch
                        941: 0.001
Loss after mini-batch
                        951: 0.002
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.001
                       1041: 0.001
Loss after mini-batch
Loss after mini-batch
                       1051: 0.001
                       1061: 0.001
Loss after mini-batch
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.002
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.000
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.002
Loss after mini-batch
                       1191: 0.000
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
                       1321: 0.001
Loss after mini-batch
Loss after mini-batch
                       1331: 0.002
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.002
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.002
Loss after mini-batch 1411: 0.001
```

```
1421: 0.001
Loss after mini-batch
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.002
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.000
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.002
                       1541: 0.001
Loss after mini-batch
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.000
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.002
Loss after mini-batch
                       1771: 0.002
Loss after mini-batch
                       1781: 0.002
Loss after mini-batch
                       1791: 0.001
                       1801: 0.000
Loss after mini-batch
Loss after mini-batch
                       1811: 0.001
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
Loss after mini-batch
                       1841: 0.002
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                      1891: 0.001
```

```
1901: 0.001
Loss after mini-batch
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.000
Loss after mini-batch
                       1931: 0.000
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.000
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
                       2021: 0.001
Loss after mini-batch
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
                       2071: 0.001
Loss after mini-batch
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.004
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.000
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.000
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
Loss after mini-batch
                       2321: 0.000
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.002
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch 2371: 0.001
```

```
Loss after mini-batch 2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.000
Loss after mini-batch
                       2421: 0.000
Loss after mini-batch
                       2431: 0.000
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch 2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.000
                       2481: 0.001
Loss after mini-batch
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.000
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.000
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
                       2591: 0.001
Loss after mini-batch
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.000
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 12
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
```

Loss	after	${\tt mini-batch}$	31:	0.001
Loss	after	${\tt mini-batch}$	41:	0.001
Loss	after	${\tt mini-batch}$	51:	0.002
Loss	after	${\tt mini-batch}$	61:	0.002
Loss	after	${\tt mini-batch}$	71:	0.001
Loss	after	${\tt mini-batch}$	81:	0.001
Loss	after	${\tt mini-batch}$	91:	0.001
Loss	after	${\tt mini-batch}$	101:	0.000
Loss	after	${\tt mini-batch}$	111:	0.001
Loss	after	${\tt mini-batch}$	121:	0.000
Loss	after	${\tt mini-batch}$	131:	0.001
Loss	after	${\tt mini-batch}$	141:	0.000
Loss	after	${\tt mini-batch}$	151:	0.001
Loss	after	${\tt mini-batch}$	161:	0.001
Loss	after	${\tt mini-batch}$	171:	0.001
Loss	after	${\tt mini-batch}$	181:	0.001
Loss	after	${\tt mini-batch}$	191:	0.001
Loss	after	${\tt mini-batch}$	201:	0.001
Loss	after	${\tt mini-batch}$	211:	0.001
Loss	after	${\tt mini-batch}$	221:	0.001
Loss	after	${\tt mini-batch}$	231:	0.001
Loss	after	${\tt mini-batch}$	241:	0.001
Loss	after	${\tt mini-batch}$	251:	0.001
Loss	after	${\tt mini-batch}$	261:	0.001
Loss	after	${\tt mini-batch}$	271:	0.001
Loss	after	${\tt mini-batch}$	281:	0.001
Loss	after	${\tt mini-batch}$	291:	0.001
Loss	after	${\tt mini-batch}$	301:	0.001
Loss	after	${\tt mini-batch}$	311:	0.000
Loss	after	${\tt mini-batch}$	321:	0.001
Loss	after	${\tt mini-batch}$	331:	0.001
Loss	after	${\tt mini-batch}$	341:	0.001
Loss	after	${\tt mini-batch}$	351:	0.001
Loss	after	${\tt mini-batch}$	361:	0.001
Loss	after	${\tt mini-batch}$	371:	0.001
Loss	after	${\tt mini-batch}$	381:	0.001
Loss	after	${\tt mini-batch}$	391:	0.001
Loss	after	${\tt mini-batch}$	401:	0.000
Loss	after	${\tt mini-batch}$	411:	0.000
Loss	after	${\tt mini-batch}$	421:	0.001
Loss	after	${\tt mini-batch}$	431:	0.001
Loss	after	${\tt mini-batch}$	441:	0.000
Loss	after	${\tt mini-batch}$	451:	0.001
Loss	after	${\tt mini-batch}$	461:	0.001
Loss	after	${\tt mini-batch}$	471:	0.002
Loss	after	${\tt mini-batch}$	481:	0.001
Loss	after	${\tt mini-batch}$	491:	0.002
Loss	after	${\tt mini-batch}$	501:	0.001

Loss	${\tt after}$	${\tt mini-batch}$	511:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	521:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	531:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	541:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	551:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	561:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	571:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	581:	0.001
Loss	after	${\tt mini-batch}$	591:	0.001
Loss	after	${\tt mini-batch}$	601:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	611:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	621:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	631:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	641:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	651:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	661:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	671:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	681:	0.001
Loss	after	${\tt mini-batch}$	691:	0.001
Loss	after	${\tt mini-batch}$	701:	0.001
Loss	after	${\tt mini-batch}$	711:	0.001
Loss	after	${\tt mini-batch}$	721:	0.001
Loss	after	${\tt mini-batch}$	731:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	741:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	${\tt mini-batch}$	771:	0.001
Loss	after	${\tt mini-batch}$	781:	0.001
Loss	after	${\tt mini-batch}$	791:	0.001
Loss	after	${\tt mini-batch}$	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.000
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.000
Loss	after	${\tt mini-batch}$	891:	0.000
Loss	after	${\tt mini-batch}$	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.000
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.002
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.002

```
991: 0.001
Loss after mini-batch
Loss after mini-batch
                       1001: 0.000
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.002
Loss after mini-batch
                       1061: 0.002
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
                       1111: 0.001
Loss after mini-batch
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.002
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.002
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.000
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
                       1371: 0.001
Loss after mini-batch
Loss after mini-batch
                       1381: 0.001
                       1391: 0.000
Loss after mini-batch
                       1401: 0.000
Loss after mini-batch
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch 1461: 0.001
```

```
1471: 0.001
Loss after mini-batch
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.000
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
                       1591: 0.001
Loss after mini-batch
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.000
Loss after mini-batch
                       1631: 0.001
                       1641: 0.001
Loss after mini-batch
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.000
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.002
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.000
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.002
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
                       1851: 0.001
Loss after mini-batch
Loss after mini-batch
                       1861: 0.001
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.002
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch 1941: 0.001
```

```
1951: 0.001
Loss after mini-batch
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.002
                       2001: 0.001
Loss after mini-batch
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.000
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.002
                       2071: 0.002
Loss after mini-batch
Loss after mini-batch
                       2081: 0.002
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
                       2121: 0.001
Loss after mini-batch
Loss after mini-batch
                       2131: 0.000
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.000
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.000
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.002
Loss after mini-batch
                       2221: 0.003
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
                       2371: 0.001
Loss after mini-batch
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch 2411: 0.001
Loss after mini-batch 2421: 0.001
```

```
Loss after mini-batch 2431: 0.003
Loss after mini-batch 2441: 0.001
Loss after mini-batch
                      2451: 0.001
Loss after mini-batch
                      2461: 0.002
Loss after mini-batch 2471: 0.001
Loss after mini-batch
                      2481: 0.001
Loss after mini-batch
                      2491: 0.001
Loss after mini-batch 2501: 0.001
Loss after mini-batch 2511: 0.001
Loss after mini-batch
                      2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                      2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                      2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                      2611: 0.001
Loss after mini-batch
                      2621: 0.000
Loss after mini-batch
                      2631: 0.001
Loss after mini-batch
                      2641: 0.001
Loss after mini-batch
                      2651: 0.001
Loss after mini-batch
                      2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.000
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                      2721: 0.001
Loss after mini-batch
                      2731: 0.001
Loss after mini-batch
                      2741: 0.000
Loss after mini-batch
                      2751: 0.001
Loss after mini-batch
                      2761: 0.001
Loss after mini-batch
                      2771: 0.002
Loss after mini-batch
                      2781: 0.002
Loss after mini-batch
                      2791: 0.003
Loss after mini-batch
                       2801: 0.002
Loss after mini-batch
                       2811: 0.001
Starting epoch 13
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.002
Loss after mini-batch
                         21: 0.000
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
```

Loss	after	${\tt mini-batch}$	81:	0.001
Loss	after	${\tt mini-batch}$	91:	0.001
Loss	after	${\tt mini-batch}$	101:	0.000
Loss	after	${\tt mini-batch}$	111:	0.002
Loss	after	${\tt mini-batch}$	121:	0.001
Loss	after	${\tt mini-batch}$	131:	0.001
Loss	after	${\tt mini-batch}$	141:	0.002
Loss	after	mini-batch	151:	0.002
Loss	after	mini-batch	161:	0.002
Loss	after	mini-batch	171:	0.002
Loss	after	mini-batch	181:	0.001
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.002
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.000
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.000
Loss	after	mini-batch	331:	0.000
Loss	after	mini-batch	341:	0.000
Loss	after	mini-batch	351:	0.000
Loss	after	mini-batch	361:	0.000
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.002
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.002
Loss	after	mini-batch	551:	0.001
порр	OT OCT	mini Datell	551.	0.001

Loss	after	${\tt mini-batch}$	561:	0.001
Loss	after	mini-batch	571:	0.000
Loss	after	mini-batch	581:	0.000
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.002
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.000
Loss	after	mini-batch	661:	0.000
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.002
Loss	after	mini-batch	721:	0.002
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.000
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.000
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.000
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.002
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.000
Loss	after	${\tt mini-batch}$	991:	0.001
Loss	after	mini-batch	1001:	0.002
Loss	after	${\tt mini-batch}$	1011:	0.001
Loss	after	${\tt mini-batch}$	1021:	0.001
Loss	after	${\tt mini-batch}$	1031:	0.001

```
1041: 0.001
Loss after mini-batch
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.000
Loss after mini-batch
                       1081: 0.000
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.000
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
                       1161: 0.001
Loss after mini-batch
Loss after mini-batch
                       1171: 0.002
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.000
Loss after mini-batch
                       1201: 0.002
                       1211: 0.001
Loss after mini-batch
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.002
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
                       1421: 0.001
Loss after mini-batch
Loss after mini-batch
                       1431: 0.001
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
Loss after mini-batch
                       1461: 0.002
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
                       1491: 0.002
Loss after mini-batch
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch 1511: 0.001
```

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1521: 0.000
Loss after mini-batch
Loss after mini-batch
                       1531: 0.000
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
                       1641: 0.001
Loss after mini-batch
Loss after mini-batch
                       1651: 0.002
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.000
Loss after mini-batch
                       1681: 0.001
                       1691: 0.001
Loss after mini-batch
Loss after mini-batch
                       1701: 0.000
Loss after mini-batch
                       1711: 0.000
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.000
Loss after mini-batch
                       1751: 0.002
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.002
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.000
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
                       1901: 0.002
Loss after mini-batch
Loss after mini-batch
                       1911: 0.002
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
Loss after mini-batch
                       1941: 0.000
Loss after mini-batch
                       1951: 0.000
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.000
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.000
```

```
Loss after mini-batch 2001: 0.000
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.000
                       2051: 0.001
Loss after mini-batch
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.000
                       2121: 0.001
Loss after mini-batch
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
                       2171: 0.001
Loss after mini-batch
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.002
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch 2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.000
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.000
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.000
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.002
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch 2461: 0.001
Loss after mini-batch 2471: 0.001
```

```
Loss after mini-batch 2481: 0.001
Loss after mini-batch 2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
                       2531: 0.001
Loss after mini-batch
Loss after mini-batch
                       2541: 0.000
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.000
Starting epoch 14
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
                         31: 0.001
Loss after mini-batch
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.000
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.000
Loss after mini-batch
                        121: 0.001
```

Loss	after	${\tt mini-batch}$	131:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	141:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	151:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	161:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	171:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	181:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	191:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	201:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	211:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	221:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	231:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	241:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	251:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	261:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	271:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	281:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	291:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	301:	0.001
Loss	after	mini-batch	311:	0.002
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	351:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	361:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	391:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	401:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	411:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	421:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	431:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	441:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	471:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	481:	0.000
Loss	after	mini-batch	491:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	501:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	511:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	521:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	531:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	541:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	551:	0.001
Loss	after	${\tt mini-batch}$	561:	0.001
Loss	after	${\tt mini-batch}$	571:	0.001
Loss	after	${\tt mini-batch}$	581:	0.001
Loss	after	${\tt mini-batch}$	591:	0.000
Loss	after	${\tt mini-batch}$	601:	0.000

Loss	after	${\tt mini-batch}$	611:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	621:	0.000
Loss	${\tt after}$	mini-batch	631:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	641:	0.001
Loss	${\tt after}$	mini-batch	651:	0.002
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.000
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.000
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.000
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.002
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.000
Loss	after	mini-batch	1071:	0.001
Loss	after	mini-batch	1081:	0.001

```
1091: 0.001
Loss after mini-batch
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.002
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.000
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.002
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
                       1211: 0.000
Loss after mini-batch
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.000
                       1261: 0.002
Loss after mini-batch
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.003
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.000
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.004
                       1471: 0.001
Loss after mini-batch
Loss after mini-batch
                       1481: 0.001
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.002
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch 1561: 0.001
```

```
1571: 0.001
Loss after mini-batch
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.002
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.000
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
                       1691: 0.000
Loss after mini-batch
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
                       1741: 0.001
Loss after mini-batch
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.000
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.002
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.000
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.002
Loss after mini-batch
                       1921: 0.002
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.000
                       1951: 0.001
Loss after mini-batch
Loss after mini-batch
                       1961: 0.001
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.000
Loss after mini-batch 2041: 0.001
```

```
Loss after mini-batch 2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.000
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.000
                       2101: 0.001
Loss after mini-batch
Loss after mini-batch
                       2111: 0.002
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
                       2151: 0.001
Loss after mini-batch
Loss after mini-batch
                       2161: 0.001
                       2171: 0.001
Loss after mini-batch
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
                       2221: 0.001
Loss after mini-batch
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
                       2251: 0.001
Loss after mini-batch
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.002
Loss after mini-batch
                       2321: 0.002
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.000
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
                       2471: 0.001
Loss after mini-batch
Loss after mini-batch
                       2481: 0.000
Loss after mini-batch
                       2491: 0.000
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.000
Loss after mini-batch 2521: 0.001
```

```
Loss after mini-batch 2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.002
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.000
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.000
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.000
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.000
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch 2721: 0.001
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch 2751: 0.000
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 15
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.000
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.002
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.000
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.001
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.001
Loss after mini-batch
                        171: 0.001
```

Loss	after	${\tt mini-batch}$	181:	0.002
Loss	after	${\tt mini-batch}$	191:	0.001
Loss	after	${\tt mini-batch}$	201:	0.001
Loss	after	${\tt mini-batch}$	211:	0.001
Loss	after	${\tt mini-batch}$	221:	0.001
Loss	after	${\tt mini-batch}$	231:	0.001
Loss	after	${\tt mini-batch}$	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.000
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.002
Loss	after	mini-batch	391:	0.002
Loss	after	mini-batch	401:	0.003
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.002
Loss	after	mini-batch	511:	0.000
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.000
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.000
Loss	after	mini-batch	581:	0.000
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001

Loss	after	${\tt mini-batch}$	661:	0.000
Loss	after	${\tt mini-batch}$	671:	0.001
Loss	after	${\tt mini-batch}$	681:	0.000
Loss	after	${\tt mini-batch}$	691:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	701:	0.001
Loss	after	${\tt mini-batch}$	711:	0.001
Loss	after	${\tt mini-batch}$	721:	0.000
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	${\tt mini-batch}$	751:	0.002
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.000
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.002
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.002
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.002
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.000
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.001
Loss	after	mini-batch	1081:	0.001
Loss	after	mini-batch	1091:	0.001
Loss	after	mini-batch	1101:	0.000
Loss	after	mini-batch	1111:	0.001
Loss	after	mini-batch	1121:	0.000
Loss	after	mini-batch	1131:	0.000

```
1141: 0.001
Loss after mini-batch
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.003
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
                       1261: 0.001
Loss after mini-batch
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.000
Loss after mini-batch
                       1351: 0.000
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.000
Loss after mini-batch
                       1391: 0.001
                       1401: 0.001
Loss after mini-batch
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.000
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.000
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.000
Loss after mini-batch
                       1491: 0.000
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
                       1521: 0.001
Loss after mini-batch
Loss after mini-batch
                       1531: 0.001
                       1541: 0.000
Loss after mini-batch
                       1551: 0.000
Loss after mini-batch
Loss after mini-batch
                       1561: 0.000
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                      1611: 0.001
```

```
1621: 0.001
Loss after mini-batch
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.000
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
                       1741: 0.001
Loss after mini-batch
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.002
Loss after mini-batch
                       1771: 0.002
Loss after mini-batch
                       1781: 0.001
                       1791: 0.001
Loss after mini-batch
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.000
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.000
                       2001: 0.000
Loss after mini-batch
Loss after mini-batch
                       2011: 0.001
                       2021: 0.001
Loss after mini-batch
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch 2091: 0.001
```

```
Loss after mini-batch 2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.000
Loss after mini-batch 2141: 0.001
                       2151: 0.001
Loss after mini-batch
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch 2171: 0.001
Loss after mini-batch 2181: 0.000
Loss after mini-batch
                       2191: 0.001
                       2201: 0.001
Loss after mini-batch
Loss after mini-batch
                       2211: 0.001
                       2221: 0.001
Loss after mini-batch
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.000
Loss after mini-batch
                       2261: 0.001
                       2271: 0.001
Loss after mini-batch
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.000
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.002
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.000
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.000
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.000
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch 2571: 0.001
```

```
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.000
                       2681: 0.000
Loss after mini-batch
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.000
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.000
Loss after mini-batch
                       2771: 0.001
                       2781: 0.002
Loss after mini-batch
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 16
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
                         31: 0.001
Loss after mini-batch
Loss after mini-batch
                         41: 0.000
Loss after mini-batch
                         51: 0.000
Loss after mini-batch
                         61: 0.000
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.000
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.000
Loss after mini-batch
                        171: 0.002
Loss after mini-batch
                        181: 0.000
Loss after mini-batch
                        191: 0.001
Loss after mini-batch
                        201: 0.001
Loss after mini-batch
                        211: 0.000
Loss after mini-batch
                        221: 0.000
```

Loss	${\tt after}$	mini-batch	231:	0.001
Loss	${\tt after}$	mini-batch	241:	0.000
Loss	${\tt after}$	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	${\tt after}$	mini-batch	271:	0.001
Loss	${\tt after}$	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.000
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.000
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.000
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.000
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.000
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.002
Loss	after	mini-batch	551:	0.002
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.002
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.000
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.002
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001

Loss	${\tt after}$	${\tt mini-batch}$	711:	0.001
Loss	after	${\tt mini-batch}$	721:	0.001
Loss	after	${\tt mini-batch}$	731:	0.001
Loss	after	${\tt mini-batch}$	741:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.000
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.000
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.000
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.001
Loss	after	mini-batch	1081:	0.001
Loss	after	mini-batch	1091:	0.001
Loss	after	mini-batch	1101:	0.001
Loss	after	mini-batch	1111:	0.001
Loss	after	mini-batch	1121:	0.001
Loss	after	mini-batch	1131:	0.001
Loss	after	mini-batch	1141:	0.001
Loss	after	mini-batch	1151:	0.001
Loss	after	mini-batch	1161:	0.001
Loss	after	mini-batch	1171:	0.001
Loss	after	mini-batch	1181:	0.001

```
1191: 0.001
Loss after mini-batch
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.000
Loss after mini-batch
                       1271: 0.000
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
                       1311: 0.001
Loss after mini-batch
Loss after mini-batch
                       1321: 0.000
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.002
                       1361: 0.001
Loss after mini-batch
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.003
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.002
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.000
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
                       1571: 0.001
Loss after mini-batch
Loss after mini-batch
                       1581: 0.001
                       1591: 0.000
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                      1661: 0.000
```

```
1671: 0.000
Loss after mini-batch
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.000
Loss after mini-batch
                       1771: 0.000
Loss after mini-batch
                       1781: 0.001
                       1791: 0.001
Loss after mini-batch
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.000
                       1841: 0.001
Loss after mini-batch
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.000
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.000
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.000
                       2051: 0.000
Loss after mini-batch
Loss after mini-batch
                       2061: 0.001
                       2071: 0.000
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.002
Loss after mini-batch
                       2121: 0.000
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch 2141: 0.001
```

```
Loss after mini-batch 2151: 0.001
Loss after mini-batch
                       2161: 0.002
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
                       2201: 0.001
Loss after mini-batch
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.000
                       2251: 0.001
Loss after mini-batch
Loss after mini-batch
                       2261: 0.001
                       2271: 0.001
Loss after mini-batch
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
                       2321: 0.001
Loss after mini-batch
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.002
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.000
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.002
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.000
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.000
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.000
Loss after mini-batch
                       2491: 0.000
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
                       2551: 0.001
Loss after mini-batch
Loss after mini-batch
                       2561: 0.001
                       2571: 0.001
Loss after mini-batch
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch 2621: 0.001
```

```
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.002
Loss after mini-batch
                       2661: 0.002
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.000
                       2711: 0.001
Loss after mini-batch
Loss after mini-batch
                       2721: 0.001
                       2731: 0.001
Loss after mini-batch
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.002
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.000
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 17
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
                         51: 0.001
Loss after mini-batch
Loss after mini-batch
                         61: 0.002
Loss after mini-batch
                         71: 0.001
                         81: 0.000
Loss after mini-batch
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.000
Loss after mini-batch
                        131: 0.001
                        141: 0.001
Loss after mini-batch
Loss after mini-batch
                        151: 0.000
Loss after mini-batch
                        161: 0.000
Loss after mini-batch
                        171: 0.001
Loss after mini-batch
                        181: 0.001
Loss after mini-batch
                        191: 0.000
Loss after mini-batch
                        201: 0.001
Loss after mini-batch
                        211: 0.001
Loss after mini-batch
                        221: 0.001
Loss after mini-batch
                        231: 0.001
Loss after mini-batch
                        241: 0.001
Loss after mini-batch
                        251: 0.001
Loss after mini-batch
                        261: 0.001
Loss after mini-batch
                        271: 0.001
```

Loss	after	${\tt mini-batch}$	281:	0.001
Loss	after	${\tt mini-batch}$	291:	0.001
Loss	after	${\tt mini-batch}$	301:	0.001
Loss	after	${\tt mini-batch}$	311:	0.001
Loss	after	${\tt mini-batch}$	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.000
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.002
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.002
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.003
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.002
Loss	after	mini-batch	711:	0.002
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.000

Loss	${\tt after}$	mini-batch	761:	0.000
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	${\tt after}$	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.000
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.002
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.002
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.000
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.001
Loss	after	mini-batch	1081:	0.000
Loss	after	mini-batch	1091:	0.001
Loss	after	mini-batch	1101:	0.001
Loss	after	mini-batch	1111:	0.001
Loss	after	mini-batch	1121:	0.000
Loss	after	mini-batch	1131:	0.001
Loss	after	mini-batch	1141:	0.001
Loss	after	mini-batch	1151:	0.001
Loss	after	mini-batch	1161:	0.001
Loss	after	mini-batch	1171:	0.001
Loss	after	mini-batch	1181:	0.000
Loss	after	mini-batch	1191:	0.001
Loss	after	mini-batch	1201:	0.001
Loss	after	mini-batch	1211:	0.002
Loss	after	mini-batch	1221:	0.000
Loss	after	mini-batch	1231:	0.000

```
1241: 0.001
Loss after mini-batch
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.002
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.000
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.000
                       1361: 0.001
Loss after mini-batch
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.000
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
                       1411: 0.001
Loss after mini-batch
Loss after mini-batch
                       1421: 0.000
Loss after mini-batch
                       1431: 0.000
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.000
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.000
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.000
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
                       1621: 0.001
Loss after mini-batch
Loss after mini-batch
                       1631: 0.000
                       1641: 0.001
Loss after mini-batch
                       1651: 0.000
Loss after mini-batch
Loss after mini-batch
                       1661: 0.000
Loss after mini-batch
                       1671: 0.000
Loss after mini-batch
                       1681: 0.000
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                      1711: 0.001
```

```
1721: 0.001
Loss after mini-batch
Loss after mini-batch
                       1731: 0.000
Loss after mini-batch
                       1741: 0.000
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
                       1841: 0.001
Loss after mini-batch
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
                       1891: 0.001
Loss after mini-batch
Loss after mini-batch
                       1901: 0.000
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.000
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.000
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.000
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.000
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.000
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
                       2121: 0.001
Loss after mini-batch
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.000
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.000
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch 2191: 0.001
```

```
Loss after mini-batch 2201: 0.001
Loss after mini-batch
                       2211: 0.000
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch 2241: 0.002
                       2251: 0.001
Loss after mini-batch
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch 2271: 0.000
Loss after mini-batch 2281: 0.000
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
                       2321: 0.001
Loss after mini-batch
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
                       2371: 0.001
Loss after mini-batch
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch 2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.000
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.000
Loss after mini-batch
                       2511: 0.000
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
                       2581: 0.000
Loss after mini-batch
Loss after mini-batch
                       2591: 0.001
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
Loss after mini-batch
                       2631: 0.002
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.002
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch 2671: 0.000
```

```
Loss after mini-batch 2681: 0.001
Loss after mini-batch
                       2691: 0.002
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch 2721: 0.001
Loss after mini-batch 2731: 0.001
Loss after mini-batch 2741: 0.001
Loss after mini-batch 2751: 0.001
Loss after mini-batch 2761: 0.001
Loss after mini-batch
                       2771: 0.001
                       2781: 0.000
Loss after mini-batch
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 18
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.000
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.000
Loss after mini-batch
                         61: 0.000
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.002
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.000
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.001
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.001
Loss after mini-batch
                        171: 0.001
Loss after mini-batch
                        181: 0.001
                        191: 0.000
Loss after mini-batch
Loss after mini-batch
                        201: 0.000
Loss after mini-batch
                        211: 0.001
Loss after mini-batch
                        221: 0.001
Loss after mini-batch
                        231: 0.001
Loss after mini-batch
                        241: 0.002
Loss after mini-batch
                        251: 0.001
Loss after mini-batch
                        261: 0.001
Loss after mini-batch
                        271: 0.001
Loss after mini-batch
                        281: 0.001
Loss after mini-batch
                        291: 0.001
Loss after mini-batch
                        301: 0.001
Loss after mini-batch
                        311: 0.001
Loss after mini-batch
                        321: 0.001
```

Loss	${\tt after}$	mini-batch	331:	0.001
Loss	${\tt after}$	mini-batch	341:	0.001
Loss	${\tt after}$	mini-batch	351:	0.001
Loss	${\tt after}$	mini-batch	361:	0.001
Loss	${\tt after}$	mini-batch	371:	0.001
Loss	${\tt after}$	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	${\tt after}$	mini-batch	401:	0.001
Loss	${\tt after}$	mini-batch	411:	0.001
Loss	${\tt after}$	mini-batch	421:	0.001
Loss	${\tt after}$	mini-batch	431:	0.001
Loss	${\tt after}$	mini-batch	441:	0.001
Loss	${\tt after}$	mini-batch	451:	0.001
Loss	${\tt after}$	mini-batch	461:	0.000
Loss	${\tt after}$	mini-batch	471:	0.002
Loss	${\tt after}$	mini-batch	481:	0.001
Loss	${\tt after}$	mini-batch	491:	0.001
Loss	${\tt after}$	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	${\tt after}$	mini-batch	521:	0.001
Loss	${\tt after}$	mini-batch	531:	0.001
Loss	${\tt after}$	mini-batch	541:	0.001
Loss	${\tt after}$	mini-batch	551:	0.001
Loss	${\tt after}$	mini-batch	561:	0.001
Loss	${\tt after}$	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	${\tt after}$	mini-batch	591:	0.001
Loss	${\tt after}$	mini-batch	601:	0.000
Loss	${\tt after}$	mini-batch	611:	0.001
Loss	${\tt after}$	mini-batch	621:	0.001
Loss	${\tt after}$	mini-batch	631:	0.001
Loss	${\tt after}$	mini-batch	641:	0.001
Loss	${\tt after}$	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	${\tt after}$	mini-batch	671:	0.001
Loss	${\tt after}$	mini-batch	681:	0.001
Loss	${\tt after}$	mini-batch	691:	0.001
Loss	${\tt after}$	mini-batch	701:	0.001
Loss	${\tt after}$	mini-batch	711:	0.001
Loss	${\tt after}$	mini-batch	721:	0.001
Loss	${\tt after}$	mini-batch	731:	0.001
Loss	${\tt after}$	mini-batch	741:	0.002
Loss	${\tt after}$	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001

```
Loss after mini-batch
                        811: 0.001
Loss after mini-batch
                        821: 0.001
Loss after mini-batch
                        831: 0.001
Loss after mini-batch
                        841: 0.001
Loss after mini-batch
                        851: 0.001
Loss after mini-batch
                        861: 0.001
Loss after mini-batch
                        871: 0.001
Loss after mini-batch
                        881: 0.001
Loss after mini-batch
                        891: 0.001
Loss after mini-batch
                        901: 0.001
Loss after mini-batch
                        911: 0.001
Loss after mini-batch
                        921: 0.001
                        931: 0.001
Loss after mini-batch
Loss after mini-batch
                        941: 0.001
Loss after mini-batch
                        951: 0.002
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.000
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.000
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
                       1071: 0.000
Loss after mini-batch
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.000
Loss after mini-batch
                       1101: 0.000
Loss after mini-batch
                       1111: 0.000
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
                       1191: 0.001
Loss after mini-batch
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.000
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.002
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch 1281: 0.001
```

```
1291: 0.001
Loss after mini-batch
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.000
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.000
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
                       1411: 0.001
Loss after mini-batch
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.000
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
                       1461: 0.000
Loss after mini-batch
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.000
Loss after mini-batch
                       1501: 0.000
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.000
Loss after mini-batch
                       1531: 0.000
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
                       1671: 0.001
Loss after mini-batch
Loss after mini-batch
                       1681: 0.001
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
Loss after mini-batch
                       1711: 0.002
Loss after mini-batch
                       1721: 0.002
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch 1761: 0.001
```

```
1771: 0.001
Loss after mini-batch
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.000
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.000
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
                       1891: 0.001
Loss after mini-batch
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
                       1941: 0.001
Loss after mini-batch
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.000
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.000
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.002
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.000
Loss after mini-batch
                       2171: 0.001
                       2181: 0.000
Loss after mini-batch
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.000
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch 2231: 0.001
Loss after mini-batch 2241: 0.001
```

```
Loss after mini-batch 2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.000
                       2301: 0.001
Loss after mini-batch
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.002
Loss after mini-batch
                       2361: 0.001
                       2371: 0.000
Loss after mini-batch
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
                       2421: 0.001
Loss after mini-batch
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch 2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.000
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.000
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.000
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
                       2631: 0.001
Loss after mini-batch
Loss after mini-batch
                       2641: 0.001
                       2651: 0.001
Loss after mini-batch
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch 2711: 0.001
Loss after mini-batch 2721: 0.001
```

Loss	after	mini-batch	2731:	0.001
Loss	after	mini-batch	2741:	0.001
Loss	after	mini-batch	2751:	0.001
Loss	after	mini-batch	2761:	0.001
Loss	after	mini-batch	2771:	0.001
Loss	after	mini-batch	2781:	0.001
Loss	after	mini-batch	2791:	0.001
Loss	after	mini-batch	2801:	0.000
Loss	after	mini-batch	2811:	0.001
Start	ting ep	poch 19		
Loss	${\tt after}$	mini-batch	1:	0.000
Loss	${\tt after}$	mini-batch	11:	0.001
Loss	${\tt after}$	mini-batch	21:	0.002
Loss	${\tt after}$	mini-batch	31:	0.001
Loss	${\tt after}$	mini-batch	41:	0.001
Loss	${\tt after}$	mini-batch	51:	0.001
Loss	${\tt after}$	mini-batch	61:	0.001
Loss	${\tt after}$	mini-batch	71:	0.001
Loss	after	mini-batch	81:	0.001
Loss	after	mini-batch	91:	0.001
Loss	after	mini-batch	101:	0.001
Loss	${\tt after}$	mini-batch	111:	0.001
Loss	${\tt after}$	mini-batch	121:	0.000
Loss	${\tt after}$	mini-batch	131:	0.001
Loss	${\tt after}$	mini-batch	141:	0.001
Loss	after	mini-batch	151:	0.001
Loss	after	mini-batch	161:	0.001
Loss	after	mini-batch	171:	0.001
Loss	after	mini-batch	181:	0.000
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.000
Loss	after	mini-batch	241:	0.000
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.000
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	${\tt after}$	mini-batch	371:	0.002

Loss	${\tt after}$	mini-batch	381:	0.001
Loss	${\tt after}$	mini-batch	391:	0.001
Loss	${\tt after}$	mini-batch	401:	0.001
Loss	${\tt after}$	mini-batch	411:	0.000
Loss	${\tt after}$	mini-batch	421:	0.001
Loss	${\tt after}$	mini-batch	431:	0.001
Loss	${\tt after}$	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.000
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.002
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.000
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.000
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.000
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.000
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.000

```
Loss after mini-batch
                        861: 0.001
Loss after mini-batch
                        871: 0.001
Loss after mini-batch
                        881: 0.000
Loss after mini-batch
                        891: 0.001
Loss after mini-batch
                        901: 0.001
Loss after mini-batch
                        911: 0.001
Loss after mini-batch
                        921: 0.000
Loss after mini-batch
                        931: 0.001
Loss after mini-batch
                        941: 0.001
Loss after mini-batch
                        951: 0.001
Loss after mini-batch
                        961: 0.000
Loss after mini-batch
                        971: 0.001
                        981: 0.001
Loss after mini-batch
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.002
Loss after mini-batch
                       1021: 0.002
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.000
Loss after mini-batch
                       1071: 0.002
Loss after mini-batch
                       1081: 0.002
Loss after mini-batch
                       1091: 0.002
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.000
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.000
Loss after mini-batch
                       1231: 0.001
                       1241: 0.001
Loss after mini-batch
Loss after mini-batch
                       1251: 0.000
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
Loss after mini-batch
                       1281: 0.000
Loss after mini-batch
                       1291: 0.002
Loss after mini-batch
                       1301: 0.001
                       1311: 0.001
Loss after mini-batch
Loss after mini-batch
                       1321: 0.000
Loss after mini-batch 1331: 0.000
```

```
1341: 0.001
Loss after mini-batch
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.000
Loss after mini-batch
                       1381: 0.000
Loss after mini-batch
                       1391: 0.000
Loss after mini-batch
                       1401: 0.000
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.000
                       1461: 0.001
Loss after mini-batch
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.000
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.000
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.000
Loss after mini-batch
                       1711: 0.001
                       1721: 0.001
Loss after mini-batch
Loss after mini-batch
                       1731: 0.000
                       1741: 0.001
Loss after mini-batch
                       1751: 0.000
Loss after mini-batch
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.003
Loss after mini-batch
                       1801: 0.002
Loss after mini-batch 1811: 0.002
```

```
1821: 0.001
Loss after mini-batch
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.000
Loss after mini-batch
                       1861: 0.000
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.000
                       1941: 0.001
Loss after mini-batch
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.000
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
                       1991: 0.001
Loss after mini-batch
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.000
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.000
Loss after mini-batch
                       2061: 0.000
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.000
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.000
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
                       2221: 0.001
Loss after mini-batch
Loss after mini-batch
                       2231: 0.001
                       2241: 0.000
Loss after mini-batch
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch 2291: 0.003
```

```
2301: 0.001
Loss after mini-batch
Loss after mini-batch
                       2311: 0.000
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.000
Loss after mini-batch
                       2341: 0.000
                       2351: 0.001
Loss after mini-batch
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.000
                       2401: 0.000
Loss after mini-batch
Loss after mini-batch
                       2411: 0.001
                       2421: 0.001
Loss after mini-batch
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
                       2471: 0.000
Loss after mini-batch
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.002
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.000
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.000
Loss after mini-batch
                       2621: 0.000
Loss after mini-batch
                       2631: 0.000
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
                       2681: 0.001
Loss after mini-batch
Loss after mini-batch
                       2691: 0.001
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch 2771: 0.001
```

Loss	after	mini-batch	2781:	0.001
Loss	after	mini-batch	2791:	0.001
Loss	after	mini-batch	2801:	0.001
Loss	after	mini-batch	2811:	0.001
Start	ting e	poch 20		
Loss	after	mini-batch	1:	0.000
Loss	after	mini-batch	11:	0.001
Loss	after	mini-batch	21:	0.001
Loss	after	mini-batch	31:	0.001
Loss	after	mini-batch	41:	0.001
Loss	after	mini-batch	51:	0.001
Loss	after	mini-batch	61:	0.001
Loss	after	mini-batch	71:	0.001
Loss	after	mini-batch	81:	0.001
Loss	after	mini-batch	91:	0.001
Loss	after	mini-batch	101:	0.000
Loss	after	mini-batch	111:	0.001
Loss	after	mini-batch	121:	0.000
Loss	after	mini-batch	131:	0.001
Loss	after	mini-batch	141:	0.001
Loss	after	mini-batch	151:	0.001
Loss	after	mini-batch	161:	0.001
Loss	after	mini-batch	171:	0.001
Loss	after	mini-batch	181:	0.002
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.000
Loss	after	mini-batch	241:	0.000
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.000
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.000
Loss	after	mini-batch	301:	0.000
Loss	after	mini-batch	311:	0.000
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.002
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.002
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001

Loss	after	${\tt mini-batch}$	431:	0.001
Loss	after	${\tt mini-batch}$	441:	0.001
Loss	after	${\tt mini-batch}$	451:	0.001
Loss	after	${\tt mini-batch}$	461:	0.002
Loss	after	${\tt mini-batch}$	471:	0.001
Loss	after	${\tt mini-batch}$	481:	0.001
Loss	after	${\tt mini-batch}$	491:	0.001
Loss	after	${\tt mini-batch}$	501:	0.000
Loss	after	${\tt mini-batch}$	511:	0.000
Loss	after	${\tt mini-batch}$	521:	0.001
Loss	after	${\tt mini-batch}$	531:	0.001
Loss	after	${\tt mini-batch}$	541:	0.001
Loss	after	${\tt mini-batch}$	551:	0.001
Loss	after	${\tt mini-batch}$	561:	0.000
Loss	after	${\tt mini-batch}$	571:	0.001
Loss	after	${\tt mini-batch}$	581:	0.001
Loss	after	${\tt mini-batch}$	591:	0.001
Loss	after	${\tt mini-batch}$	601:	0.001
Loss	after	${\tt mini-batch}$	611:	0.001
Loss	after	${\tt mini-batch}$	621:	0.000
Loss	after	${\tt mini-batch}$	631:	0.001
Loss	after	${\tt mini-batch}$	641:	0.001
Loss	after	${\tt mini-batch}$	651:	0.001
Loss	after	${\tt mini-batch}$	661:	0.001
Loss	after	${\tt mini-batch}$	671:	0.001
Loss	after	${\tt mini-batch}$	681:	0.001
Loss	after	${\tt mini-batch}$	691:	0.001
Loss	after	${\tt mini-batch}$	701:	0.001
Loss	after	${\tt mini-batch}$	711:	0.001
Loss	after	${\tt mini-batch}$	721:	0.002
Loss	after	${\tt mini-batch}$	731:	0.003
Loss	after	${\tt mini-batch}$	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.000
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	${\tt mini-batch}$	811:	0.001
Loss	after	${\tt mini-batch}$	821:	0.001
Loss	after	${\tt mini-batch}$	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.002
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.002
Loss	after	mini-batch	891:	0.001
Loss	after	${\tt mini-batch}$	901:	0.000

```
Loss after mini-batch
                        911: 0.001
Loss after mini-batch
                        921: 0.001
Loss after mini-batch
                        931: 0.001
Loss after mini-batch
                        941: 0.001
Loss after mini-batch
                        951: 0.001
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.001
                       1031: 0.001
Loss after mini-batch
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.000
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.000
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
                       1291: 0.001
Loss after mini-batch
Loss after mini-batch
                       1301: 0.001
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                      1381: 0.001
```

```
1391: 0.001
Loss after mini-batch
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.000
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.002
Loss after mini-batch
                       1501: 0.001
                       1511: 0.001
Loss after mini-batch
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.000
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.000
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.002
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.002
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.000
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
                       1771: 0.001
Loss after mini-batch
Loss after mini-batch
                       1781: 0.001
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.000
Loss after mini-batch
                       1851: 0.000
Loss after mini-batch 1861: 0.001
```

```
1871: 0.001
Loss after mini-batch
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.000
Loss after mini-batch
                       1901: 0.000
Loss after mini-batch
                       1911: 0.000
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.000
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.000
Loss after mini-batch
                       1981: 0.000
                       1991: 0.001
Loss after mini-batch
Loss after mini-batch
                       2001: 0.000
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.000
Loss after mini-batch
                       2031: 0.001
                       2041: 0.001
Loss after mini-batch
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
                       2131: 0.000
Loss after mini-batch
Loss after mini-batch
                       2141: 0.000
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.000
Loss after mini-batch
                       2181: 0.000
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.002
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch 2341: 0.001
```

```
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
                       2401: 0.001
Loss after mini-batch
Loss after mini-batch
                       2411: 0.000
Loss after mini-batch
                       2421: 0.002
                       2431: 0.000
Loss after mini-batch
Loss after mini-batch
                       2441: 0.000
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.000
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.000
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.000
Loss after mini-batch
                       2591: 0.001
                       2601: 0.000
Loss after mini-batch
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.000
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
                       2691: 0.001
Loss after mini-batch
Loss after mini-batch
                       2701: 0.002
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.000
Loss after mini-batch
                       2811: 0.000
Starting epoch 21
```

Loss	after	${\tt mini-batch}$	1:	0.000
Loss	after	mini-batch	11:	0.001
Loss	after	mini-batch	21:	0.001
Loss	after	mini-batch	31:	0.001
Loss	after	mini-batch	41:	0.001
Loss	after	mini-batch	51:	0.002
Loss	after	mini-batch	61:	0.002
Loss	after	mini-batch	71:	0.001
Loss	after	mini-batch	81:	0.002
Loss	after	mini-batch	91:	0.001
Loss	after	mini-batch	101:	0.001
Loss	after	mini-batch	111:	0.002
Loss	after	mini-batch	121:	0.001
Loss	after	mini-batch	131:	0.001
Loss	after	mini-batch	141:	0.000
Loss	after	mini-batch	151:	0.001
Loss	after	mini-batch	161:	0.001
Loss	after	mini-batch	171:	0.001
Loss	after	mini-batch	181:	0.001
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.000
Loss	after	mini-batch	301:	0.000
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.000
Loss	after	mini-batch	331:	0.000
Loss	after	mini-batch	341:	0.000
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.000
Loss	after	mini-batch	391:	0.000
Loss	after	mini-batch	401:	0.000
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
TOSS	arter	mini-parcu	411:	0.001

Loss	after	${\tt mini-batch}$	481:	0.000
Loss	after	${\tt mini-batch}$	491:	0.001
Loss	after	${\tt mini-batch}$	501:	0.000
Loss	after	${\tt mini-batch}$	511:	0.001
Loss	after	${\tt mini-batch}$	521:	0.001
Loss	after	${\tt mini-batch}$	531:	0.001
Loss	after	${\tt mini-batch}$	541:	0.001
Loss	after	mini-batch	551:	0.002
Loss	after	mini-batch	561:	0.000
Loss	after	${\tt mini-batch}$	571:	0.001
Loss	after	mini-batch	581:	0.000
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.000
Loss	after	mini-batch	641:	0.000
Loss	after	mini-batch	651:	0.000
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.000
Loss	after	mini-batch	681:	0.000
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.000
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.002
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.000
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.000
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.000
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	

```
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.000
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.000
Loss after mini-batch
                       1011: 0.002
Loss after mini-batch
                       1021: 0.002
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.000
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.001
                       1081: 0.001
Loss after mini-batch
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.000
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.000
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.000
Loss after mini-batch
                       1211: 0.000
Loss after mini-batch
                       1221: 0.000
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.000
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.002
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
                       1341: 0.001
Loss after mini-batch
Loss after mini-batch
                       1351: 0.001
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.000
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch 1431: 0.001
```

```
1441: 0.001
Loss after mini-batch
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
                       1561: 0.000
Loss after mini-batch
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
                       1611: 0.001
Loss after mini-batch
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.000
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.000
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.000
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.000
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
                       1821: 0.001
Loss after mini-batch
Loss after mini-batch
                       1831: 0.001
                       1841: 0.000
Loss after mini-batch
                       1851: 0.000
Loss after mini-batch
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.000
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                      1911: 0.001
```

```
1921: 0.001
Loss after mini-batch
Loss after mini-batch
                       1931: 0.000
Loss after mini-batch
                       1941: 0.000
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.002
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.000
Loss after mini-batch
                       1991: 0.000
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
                       2041: 0.000
Loss after mini-batch
Loss after mini-batch
                       2051: 0.002
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.002
Loss after mini-batch
                       2081: 0.000
                       2091: 0.001
Loss after mini-batch
Loss after mini-batch
                       2101: 0.000
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.000
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.000
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
                       2181: 0.000
Loss after mini-batch
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.002
Loss after mini-batch
                       2221: 0.002
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
                       2321: 0.000
Loss after mini-batch
Loss after mini-batch
                       2331: 0.001
                       2341: 0.000
Loss after mini-batch
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.000
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch 2391: 0.001
```

```
Loss after mini-batch 2401: 0.001
Loss after mini-batch 2411: 0.000
Loss after mini-batch 2421: 0.001
Loss after mini-batch 2431: 0.001
Loss after mini-batch 2441: 0.001
Loss after mini-batch 2451: 0.001
Loss after mini-batch 2461: 0.000
Loss after mini-batch 2471: 0.001
Loss after mini-batch 2481: 0.001
Loss after mini-batch 2491: 0.001
                      2501: 0.001
Loss after mini-batch
Loss after mini-batch
                      2511: 0.001
Loss after mini-batch
                      2521: 0.001
Loss after mini-batch
                      2531: 0.001
Loss after mini-batch
                      2541: 0.001
Loss after mini-batch
                      2551: 0.001
Loss after mini-batch
                      2561: 0.001
Loss after mini-batch
                      2571: 0.001
Loss after mini-batch 2581: 0.001
Loss after mini-batch 2591: 0.001
Loss after mini-batch
                      2601: 0.001
Loss after mini-batch
                      2611: 0.001
Loss after mini-batch 2621: 0.001
Loss after mini-batch 2631: 0.001
Loss after mini-batch
                      2641: 0.001
Loss after mini-batch
                      2651: 0.001
Loss after mini-batch
                      2661: 0.002
Loss after mini-batch
                      2671: 0.001
Loss after mini-batch
                      2681: 0.002
Loss after mini-batch
                      2691: 0.001
Loss after mini-batch
                      2701: 0.000
Loss after mini-batch
                      2711: 0.001
Loss after mini-batch 2721: 0.001
Loss after mini-batch 2731: 0.001
Loss after mini-batch 2741: 0.001
Loss after mini-batch 2751: 0.001
Loss after mini-batch 2761: 0.000
Loss after mini-batch 2771: 0.000
Loss after mini-batch 2781: 0.001
Loss after mini-batch 2791: 0.000
Loss after mini-batch
                      2801: 0.001
Loss after mini-batch
                      2811: 0.002
Starting epoch 22
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.000
Loss after mini-batch
                        21: 0.001
Loss after mini-batch
                        31: 0.001
Loss after mini-batch
                        41: 0.001
```

Loss	after	mini-batch	51:	0.001
Loss	after	${\tt mini-batch}$	61:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	71:	0.002
Loss	after	${\tt mini-batch}$	81:	0.001
Loss	after	${\tt mini-batch}$	91:	0.001
Loss	after	${\tt mini-batch}$	101:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	111:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	121:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	131:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	141:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	151:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	161:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	171:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	181:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	191:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	201:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	211:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	221:	0.002
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.000
Loss	after	${\tt mini-batch}$	261:	0.001
Loss	after	mini-batch	271:	0.000
Loss	after	${\tt mini-batch}$	281:	0.001
Loss	after	${\tt mini-batch}$	291:	0.000
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.000
Loss	after	${\tt mini-batch}$	321:	0.001
Loss	after	${\tt mini-batch}$	331:	0.000
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.000
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	${\tt mini-batch}$	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.000
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001

Loss	${\tt after}$	mini-batch	531:	0.000
Loss	${\tt after}$	mini-batch	541:	0.000
Loss	${\tt after}$	mini-batch	551:	0.001
Loss	${\tt after}$	mini-batch	561:	0.001
Loss	${\tt after}$	mini-batch	571:	0.001
Loss	${\tt after}$	mini-batch	581:	0.001
Loss	${\tt after}$	mini-batch	591:	0.001
Loss	${\tt after}$	mini-batch	601:	0.001
Loss	${\tt after}$	mini-batch	611:	0.001
Loss	${\tt after}$	mini-batch	621:	0.001
Loss	${\tt after}$	mini-batch	631:	0.001
Loss	${\tt after}$	mini-batch	641:	0.001
Loss	${\tt after}$	mini-batch	651:	0.001
Loss	${\tt after}$	mini-batch	661:	0.001
Loss	${\tt after}$	mini-batch	671:	0.001
Loss	${\tt after}$	mini-batch	681:	0.001
Loss	${\tt after}$	mini-batch	691:	0.001
Loss	${\tt after}$	mini-batch	701:	0.000
Loss	${\tt after}$	mini-batch	711:	0.001
Loss	${\tt after}$	mini-batch	721:	0.000
Loss	${\tt after}$	mini-batch	731:	0.001
Loss	${\tt after}$	mini-batch	741:	0.001
Loss	${\tt after}$	mini-batch	751:	0.001
Loss	${\tt after}$	mini-batch	761:	0.001
Loss	${\tt after}$	mini-batch	771:	0.001
Loss	${\tt after}$	mini-batch	781:	0.001
Loss	${\tt after}$	mini-batch	791:	0.001
Loss	${\tt after}$	mini-batch	801:	0.001
Loss	${\tt after}$	mini-batch	811:	0.000
Loss	${\tt after}$	mini-batch	821:	0.001
Loss	${\tt after}$	mini-batch	831:	0.000
Loss	after	mini-batch	841:	0.000
Loss	${\tt after}$	mini-batch	851:	0.001
Loss	${\tt after}$	mini-batch	861:	0.001
Loss	${\tt after}$	mini-batch	871:	0.001
Loss	${\tt after}$	mini-batch	881:	0.001
Loss	${\tt after}$	mini-batch	891:	0.001
Loss	${\tt after}$	mini-batch	901:	0.001
Loss	${\tt after}$	mini-batch	911:	0.001
Loss	${\tt after}$	mini-batch	921:	0.002
Loss	${\tt after}$	mini-batch	931:	0.000
Loss	${\tt after}$	mini-batch	941:	0.000
Loss	${\tt after}$	mini-batch	951:	0.000
Loss	after	mini-batch	961:	0.001
Loss	${\tt after}$	mini-batch	971:	0.001
Loss	${\tt after}$	mini-batch	981:	0.001
Loss	${\tt after}$	mini-batch	991:	0.001
Loss	${\tt after}$	mini-batch	1001:	0.001

```
1011: 0.001
Loss after mini-batch
Loss after mini-batch
                       1021: 0.000
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.000
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.000
Loss after mini-batch
                       1121: 0.001
                       1131: 0.001
Loss after mini-batch
Loss after mini-batch
                       1141: 0.000
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.000
Loss after mini-batch
                       1171: 0.000
                       1181: 0.001
Loss after mini-batch
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.000
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.000
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.000
Loss after mini-batch
                       1331: 0.002
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.002
Loss after mini-batch
                       1381: 0.001
                       1391: 0.001
Loss after mini-batch
Loss after mini-batch
                       1401: 0.000
                       1411: 0.000
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
Loss after mini-batch
                       1431: 0.000
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.000
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch 1481: 0.001
```

```
1491: 0.001
Loss after mini-batch
Loss after mini-batch
                       1501: 0.000
Loss after mini-batch
                       1511: 0.002
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.000
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.000
                       1611: 0.001
Loss after mini-batch
Loss after mini-batch
                       1621: 0.000
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.002
                       1661: 0.001
Loss after mini-batch
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.000
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.000
Loss after mini-batch
                       1721: 0.000
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.000
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
                       1841: 0.001
Loss after mini-batch
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.000
                       1871: 0.000
Loss after mini-batch
Loss after mini-batch
                       1881: 0.001
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                      1961: 0.001
```

```
1971: 0.001
Loss after mini-batch
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
                       2021: 0.001
Loss after mini-batch
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
                       2071: 0.000
Loss after mini-batch
Loss after mini-batch
                       2081: 0.001
                       2091: 0.000
Loss after mini-batch
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
                       2141: 0.001
Loss after mini-batch
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.000
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.000
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.002
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.000
Loss after mini-batch
                       2291: 0.000
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.000
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
                       2371: 0.001
Loss after mini-batch
                       2381: 0.000
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch 2431: 0.000
Loss after mini-batch 2441: 0.001
```

```
Loss after mini-batch 2451: 0.000
Loss after mini-batch 2461: 0.002
Loss after mini-batch
                      2471: 0.001
Loss after mini-batch
                      2481: 0.001
Loss after mini-batch 2491: 0.001
                      2501: 0.001
Loss after mini-batch
Loss after mini-batch
                      2511: 0.001
Loss after mini-batch
                      2521: 0.001
Loss after mini-batch 2531: 0.001
Loss after mini-batch
                      2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.002
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                      2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.000
Loss after mini-batch
                      2631: 0.001
Loss after mini-batch
                      2641: 0.001
Loss after mini-batch
                      2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                      2671: 0.000
Loss after mini-batch
                      2681: 0.001
Loss after mini-batch
                       2691: 0.000
Loss after mini-batch
                      2701: 0.000
Loss after mini-batch
                       2711: 0.000
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                      2741: 0.001
Loss after mini-batch
                      2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                      2771: 0.001
Loss after mini-batch
                      2781: 0.001
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 23
                          1: 0.000
Loss after mini-batch
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.002
Loss after mini-batch
                         31: 0.000
Loss after mini-batch
                         41: 0.000
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.000
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.001
```

Loss	after	${\tt mini-batch}$	101:	0.001
Loss	after	${\tt mini-batch}$	111:	0.001
Loss	after	${\tt mini-batch}$	121:	0.001
Loss	after	${\tt mini-batch}$	131:	0.000
Loss	after	${\tt mini-batch}$	141:	0.001
Loss	after	${\tt mini-batch}$	151:	0.001
Loss	after	${\tt mini-batch}$	161:	0.001
Loss	after	mini-batch	171:	0.001
Loss	after	mini-batch	181:	0.001
Loss	after	${\tt mini-batch}$	191:	0.001
Loss	after	${\tt mini-batch}$	201:	0.001
Loss	after	${\tt mini-batch}$	211:	0.001
Loss	after	${\tt mini-batch}$	221:	0.000
Loss	after	${\tt mini-batch}$	231:	0.000
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.000
Loss	after	mini-batch	261:	0.001
Loss	after	${\tt mini-batch}$	271:	0.000
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.002
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.000
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.000
Loss	after	${\tt mini-batch}$	381:	0.000
Loss	after	mini-batch	391:	0.000
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.002
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.000
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001

Loss	${\tt after}$	${\tt mini-batch}$	581:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	591:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	601:	0.002
Loss	${\tt after}$	mini-batch	611:	0.001
Loss	${\tt after}$	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.000
Loss	after	mini-batch	681:	0.000
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.000
Loss	after	mini-batch	791:	0.000
Loss	after	mini-batch	801:	0.000
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.000
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.002
Loss	after	mini-batch	881:	0.003
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.000
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.000
Loss	after	mini-batch	951:	0.000
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.000
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.001
Loss	${\tt after}$	mini-batch	1051:	0.001

```
1061: 0.000
Loss after mini-batch
Loss after mini-batch
                       1071: 0.000
Loss after mini-batch
                       1081: 0.000
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.000
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.000
Loss after mini-batch
                       1161: 0.000
Loss after mini-batch
                       1171: 0.001
                       1181: 0.001
Loss after mini-batch
Loss after mini-batch
                       1191: 0.000
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.000
Loss after mini-batch
                       1281: 0.000
Loss after mini-batch
                       1291: 0.000
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.000
Loss after mini-batch
                       1341: 0.000
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.000
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.000
Loss after mini-batch
                       1421: 0.000
Loss after mini-batch
                       1431: 0.002
                       1441: 0.001
Loss after mini-batch
Loss after mini-batch
                       1451: 0.001
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.002
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch 1531: 0.001
```

```
1541: 0.000
Loss after mini-batch
Loss after mini-batch
                       1551: 0.000
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.000
Loss after mini-batch
                       1621: 0.000
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
                       1661: 0.001
Loss after mini-batch
Loss after mini-batch
                       1671: 0.000
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
                       1711: 0.001
Loss after mini-batch
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.000
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.000
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.000
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.000
Loss after mini-batch
                       1911: 0.001
                       1921: 0.001
Loss after mini-batch
Loss after mini-batch
                       1931: 0.001
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
Loss after mini-batch
                       1961: 0.000
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
```

```
2021: 0.001
Loss after mini-batch
Loss after mini-batch
                       2031: 0.000
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.000
Loss after mini-batch
                       2061: 0.000
                       2071: 0.001
Loss after mini-batch
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.002
                       2121: 0.001
Loss after mini-batch
Loss after mini-batch
                       2131: 0.001
                       2141: 0.001
Loss after mini-batch
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
                       2191: 0.001
Loss after mini-batch
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
                       2221: 0.000
Loss after mini-batch
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.000
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.000
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.000
Loss after mini-batch
                       2411: 0.001
                       2421: 0.001
Loss after mini-batch
Loss after mini-batch
                       2431: 0.001
                       2441: 0.001
Loss after mini-batch
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.000
Loss after mini-batch
                       2481: 0.000
Loss after mini-batch 2491: 0.000
```

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Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.000
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.000
Loss after mini-batch
                       2571: 0.000
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
                       2601: 0.001
Loss after mini-batch
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.002
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.000
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.000
Loss after mini-batch
                       2811: 0.001
Starting epoch 24
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.000
Loss after mini-batch
                         31: 0.002
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.002
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.000
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.000
Loss after mini-batch
                        121: 0.000
Loss after mini-batch
                        131: 0.000
Loss after mini-batch
                        141: 0.001
```

Loss	after	${\tt mini-batch}$	151:	0.001
Loss	after	${\tt mini-batch}$	161:	0.001
Loss	after	${\tt mini-batch}$	171:	0.001
Loss	after	${\tt mini-batch}$	181:	0.001
Loss	after	${\tt mini-batch}$	191:	0.001
Loss	after	${\tt mini-batch}$	201:	0.001
Loss	after	${\tt mini-batch}$	211:	0.000
Loss	after	${\tt mini-batch}$	221:	0.001
Loss	after	mini-batch	231:	0.001
Loss	after	${\tt mini-batch}$	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.000
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.000
Loss	after	mini-batch	311:	0.000
Loss	after	mini-batch	321:	0.000
Loss	after	mini-batch	331:	0.000
Loss	after	mini-batch	341:	0.000
Loss	after	mini-batch	351:	0.000
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.000
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	${\tt mini-batch}$	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.002
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.000
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.000

Loss	after	mini-batch	631:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	641:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	651:	0.000
Loss	${\tt after}$	mini-batch	661:	0.001
Loss	${\tt after}$	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.000
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.000
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.000
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.000
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.000
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.002
Loss	after	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.001
Loss	after	mini-batch	1081:	0.000
Loss	after	mini-batch	1091:	0.001
Loss	after	mini-batch	1101:	0.002

```
1111: 0.001
Loss after mini-batch
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.000
Loss after mini-batch
                       1221: 0.000
                       1231: 0.001
Loss after mini-batch
Loss after mini-batch
                       1241: 0.000
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.000
                       1281: 0.001
Loss after mini-batch
Loss after mini-batch
                       1291: 0.000
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.000
Loss after mini-batch
                       1361: 0.001
                       1371: 0.000
Loss after mini-batch
Loss after mini-batch
                       1381: 0.000
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.000
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.000
Loss after mini-batch
                       1481: 0.001
                       1491: 0.000
Loss after mini-batch
Loss after mini-batch
                       1501: 0.001
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                      1581: 0.000
```

```
1591: 0.000
Loss after mini-batch
Loss after mini-batch
                       1601: 0.000
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
                       1711: 0.001
Loss after mini-batch
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.000
Loss after mini-batch
                       1751: 0.000
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.000
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.000
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.000
Loss after mini-batch
                       1851: 0.000
Loss after mini-batch
                       1861: 0.000
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.000
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.000
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.002
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.000
                       1971: 0.001
Loss after mini-batch
Loss after mini-batch
                       1981: 0.001
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.000
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.000
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch 2061: 0.001
```

```
Loss after mini-batch 2071: 0.000
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.002
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch 2111: 0.001
                       2121: 0.000
Loss after mini-batch
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch 2141: 0.001
Loss after mini-batch 2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
                       2191: 0.001
Loss after mini-batch
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
                       2241: 0.000
Loss after mini-batch
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                     2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.002
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch 2461: 0.001
                       2471: 0.001
Loss after mini-batch
                       2481: 0.000
Loss after mini-batch
                       2491: 0.000
Loss after mini-batch
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.000
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch 2541: 0.000
```

```
Loss after mini-batch
                       2551: 0.000
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.000
Loss after mini-batch
                       2591: 0.000
Loss after mini-batch
                       2601: 0.000
Loss after mini-batch
                       2611: 0.000
Loss after mini-batch
                       2621: 0.001
                       2631: 0.001
Loss after mini-batch
Loss after mini-batch
                       2641: 0.001
                       2651: 0.001
Loss after mini-batch
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.000
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.000
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.000
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 25
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.000
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.000
                         61: 0.001
Loss after mini-batch
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.000
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.002
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.001
Loss after mini-batch
                        171: 0.001
Loss after mini-batch
                        181: 0.001
Loss after mini-batch
                        191: 0.001
```

Loss	${\tt after}$	${\tt mini-batch}$	201:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	211:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	221:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	231:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	241:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	251:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	261:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	271:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	281:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	291:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	301:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	311:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	321:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	331:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	341:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	351:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	361:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	371:	0.001
Loss	after	mini-batch	381:	0.000
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.000
Loss	after	mini-batch	411:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	421:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	431:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	481:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	491:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	501:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	511:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	521:	0.001
Loss	after	mini-batch	531:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	541:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	571:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	581:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	591:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	601:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	611:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	621:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	631:	0.001
Loss	after	${\tt mini-batch}$	641:	0.001
Loss	after	${\tt mini-batch}$	651:	0.001
Loss	after	${\tt mini-batch}$	661:	0.001
Loss	after	${\tt mini-batch}$	671:	0.001

Loss	${\tt after}$	${\tt mini-batch}$	681:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	691:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	701:	0.002
Loss	${\tt after}$	${\tt mini-batch}$	711:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.000
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.000
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.000
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.000
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.001
Loss	after	mini-batch	1081:	0.001
Loss	after	mini-batch	1091:	0.001
Loss	after	mini-batch	1101:	0.001
Loss	after	mini-batch	1111:	0.001
Loss	after	mini-batch	1121:	0.001
Loss	after	mini-batch	1131:	0.001
Loss	after	mini-batch	1141:	0.001
Loss	after	mini-batch	1151:	0.000

```
1161: 0.000
Loss after mini-batch
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.000
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.000
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
                       1281: 0.001
Loss after mini-batch
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
                       1331: 0.001
Loss after mini-batch
Loss after mini-batch
                       1341: 0.000
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.000
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
                       1421: 0.001
Loss after mini-batch
Loss after mini-batch
                       1431: 0.000
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.000
Loss after mini-batch
                       1491: 0.000
Loss after mini-batch
                       1501: 0.000
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
                       1541: 0.001
Loss after mini-batch
Loss after mini-batch
                       1551: 0.001
                       1561: 0.001
Loss after mini-batch
                       1571: 0.000
Loss after mini-batch
Loss after mini-batch
                       1581: 0.000
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.000
Loss after mini-batch
                       1611: 0.000
Loss after mini-batch
                       1621: 0.000
Loss after mini-batch
                      1631: 0.001
```

```
1641: 0.001
Loss after mini-batch
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.002
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.000
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.000
Loss after mini-batch
                       1751: 0.001
                       1761: 0.001
Loss after mini-batch
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.000
Loss after mini-batch
                       1791: 0.000
Loss after mini-batch
                       1801: 0.000
Loss after mini-batch
                       1811: 0.000
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.000
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.000
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.000
Loss after mini-batch
                       1891: 0.000
                       1901: 0.000
Loss after mini-batch
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.000
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.000
Loss after mini-batch
                       1981: 0.000
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
                       2021: 0.001
Loss after mini-batch
Loss after mini-batch
                       2031: 0.000
                       2041: 0.001
Loss after mini-batch
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.000
Loss after mini-batch
                       2091: 0.000
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch 2111: 0.000
```

```
Loss after mini-batch 2121: 0.001
Loss after mini-batch 2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch 2161: 0.002
                       2171: 0.001
Loss after mini-batch
Loss after mini-batch
                       2181: 0.000
Loss after mini-batch 2191: 0.000
Loss after mini-batch 2201: 0.002
Loss after mini-batch
                       2211: 0.001
                       2221: 0.001
Loss after mini-batch
Loss after mini-batch
                       2231: 0.001
                       2241: 0.001
Loss after mini-batch
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
                       2291: 0.000
Loss after mini-batch
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.000
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.002
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
                       2521: 0.000
Loss after mini-batch
Loss after mini-batch
                       2531: 0.000
                       2541: 0.001
Loss after mini-batch
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.000
Loss after mini-batch 2591: 0.001
```

```
Loss after mini-batch
                       2601: 0.000
Loss after mini-batch
                       2611: 0.000
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.000
Loss after mini-batch
                       2651: 0.000
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.000
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
                       2701: 0.001
Loss after mini-batch
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch 2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 26
                          1: 0.000
Loss after mini-batch
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.000
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
                         51: 0.000
Loss after mini-batch
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.002
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.000
                        111: 0.001
Loss after mini-batch
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.001
Loss after mini-batch
                        151: 0.000
Loss after mini-batch
                        161: 0.001
Loss after mini-batch
                        171: 0.001
Loss after mini-batch
                        181: 0.001
Loss after mini-batch
                        191: 0.001
Loss after mini-batch
                        201: 0.001
Loss after mini-batch
                        211: 0.001
Loss after mini-batch
                        221: 0.001
Loss after mini-batch
                        231: 0.001
Loss after mini-batch
                        241: 0.001
```

Loss	after	${\tt mini-batch}$	251:	0.001
Loss	after	${\tt mini-batch}$	261:	0.000
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.000
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.000
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.000
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.000
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.000
Loss	after	mini-batch	491:	0.000
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.000
Loss	after	mini-batch	561:	0.000
Loss	after	mini-batch	571:	0.000
Loss	after	mini-batch	581:	0.000
Loss	after	mini-batch	591:	0.002
Loss	after	mini-batch	601:	0.000
Loss	after	mini-batch	611:	0.000
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.000
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.000

Loss	${\tt after}$	${\tt mini-batch}$	731:	0.001
Loss	after	${\tt mini-batch}$	741:	0.001
Loss	after	${\tt mini-batch}$	751:	0.000
Loss	after	${\tt mini-batch}$	761:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.000
Loss	after	mini-batch	801:	0.000
Loss	after	mini-batch	811:	0.000
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.000
Loss	after	mini-batch	881:	0.000
Loss	after	mini-batch	891:	0.000
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.000
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.000
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.002
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.001
Loss	after	mini-batch	1081:	0.001
Loss	after	mini-batch	1091:	0.001
Loss	after	mini-batch	1101:	0.001
Loss	after	mini-batch	1111:	0.001
Loss	after	mini-batch	1121:	0.000
Loss	after	mini-batch	1131:	0.000
Loss	after	mini-batch	1141:	0.001
Loss	after	mini-batch	1151:	0.001
Loss	after	mini-batch	1161:	0.001
Loss	after	mini-batch	1171:	0.001
Loss	after	mini-batch	1181:	0.000
Loss	after	mini-batch	1191:	0.000
Loss	after	mini-batch	1201:	0.001
порр	OT OCT	mini batti	1201.	0.001

```
1211: 0.000
Loss after mini-batch
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.000
Loss after mini-batch
                       1261: 0.000
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.000
Loss after mini-batch
                       1291: 0.000
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.000
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
                       1381: 0.000
Loss after mini-batch
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.000
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.000
Loss after mini-batch
                       1461: 0.000
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.000
                       1591: 0.001
Loss after mini-batch
Loss after mini-batch
                       1601: 0.001
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
Loss after mini-batch
                       1631: 0.000
Loss after mini-batch
                       1641: 0.000
Loss after mini-batch
                       1651: 0.000
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
```

```
1691: 0.001
Loss after mini-batch
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.000
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.000
Loss after mini-batch
                       1771: 0.000
Loss after mini-batch
                       1781: 0.000
Loss after mini-batch
                       1791: 0.000
Loss after mini-batch
                       1801: 0.001
                       1811: 0.002
Loss after mini-batch
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.000
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.000
                       1861: 0.001
Loss after mini-batch
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.000
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.000
Loss after mini-batch
                       1941: 0.001
                       1951: 0.000
Loss after mini-batch
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.000
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.000
Loss after mini-batch
                       2061: 0.001
                       2071: 0.001
Loss after mini-batch
Loss after mini-batch
                       2081: 0.001
                       2091: 0.001
Loss after mini-batch
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.000
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.000
Loss after mini-batch
                       2141: 0.000
Loss after mini-batch
                       2151: 0.000
Loss after mini-batch 2161: 0.001
```

```
Loss after mini-batch 2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.000
Loss after mini-batch
                       2211: 0.001
                       2221: 0.000
Loss after mini-batch
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
                       2271: 0.001
Loss after mini-batch
Loss after mini-batch
                       2281: 0.001
                       2291: 0.001
Loss after mini-batch
Loss after mini-batch
                       2301: 0.000
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
                       2341: 0.001
Loss after mini-batch
Loss after mini-batch
                       2351: 0.000
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.000
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.000
Loss after mini-batch
                       2521: 0.000
Loss after mini-batch
                       2531: 0.000
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.000
Loss after mini-batch
                       2561: 0.001
                       2571: 0.000
Loss after mini-batch
Loss after mini-batch
                       2581: 0.001
                       2591: 0.001
Loss after mini-batch
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.000
Loss after mini-batch
                       2631: 0.000
Loss after mini-batch 2641: 0.001
```

```
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.002
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch 2721: 0.001
Loss after mini-batch 2731: 0.000
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.000
Loss after mini-batch
                       2781: 0.000
Loss after mini-batch
                       2791: 0.000
Loss after mini-batch
                       2801: 0.000
Loss after mini-batch
                       2811: 0.001
Starting epoch 27
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.001
                         71: 0.001
Loss after mini-batch
Loss after mini-batch
                         81: 0.000
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.000
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.001
Loss after mini-batch
                        171: 0.001
Loss after mini-batch
                        181: 0.000
Loss after mini-batch
                        191: 0.000
Loss after mini-batch
                        201: 0.000
Loss after mini-batch
                        211: 0.001
Loss after mini-batch
                        221: 0.001
Loss after mini-batch
                        231: 0.001
Loss after mini-batch
                        241: 0.000
Loss after mini-batch
                        251: 0.001
Loss after mini-batch
                        261: 0.001
Loss after mini-batch
                        271: 0.001
Loss after mini-batch
                        281: 0.001
Loss after mini-batch
                        291: 0.001
```

Loss	after	mini-batch	301:	0.000
Loss	${\tt after}$	mini-batch	311:	0.000
Loss	${\tt after}$	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.000
Loss	${\tt after}$	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.000
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.000
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.000
Loss	after	mini-batch	511:	0.000
Loss	after	mini-batch	521:	0.000
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.002
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.000
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.000
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.000
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.002
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001

Loss	${\tt after}$	mini-batch	781:	0.001
Loss	${\tt after}$	mini-batch	791:	0.002
Loss	${\tt after}$	mini-batch	801:	0.002
Loss	${\tt after}$	mini-batch	811:	0.001
Loss	${\tt after}$	mini-batch	821:	0.000
Loss	${\tt after}$	mini-batch	831:	0.000
Loss	${\tt after}$	mini-batch	841:	0.001
Loss	${\tt after}$	mini-batch	851:	0.001
Loss	${\tt after}$	mini-batch	861:	0.000
Loss	${\tt after}$	mini-batch	871:	0.001
Loss	${\tt after}$	mini-batch	881:	0.001
Loss	${\tt after}$	mini-batch	891:	0.000
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.000
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.000
Loss	after	mini-batch	961:	0.000
Loss	after	mini-batch	971:	0.000
Loss	after	mini-batch	981:	0.000
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.000
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.001
Loss	after	mini-batch	1081:	0.001
Loss	after	mini-batch	1091:	0.001
Loss	after	mini-batch	1101:	0.001
Loss	after	mini-batch	1111:	0.001
Loss	after	mini-batch	1121:	0.001
Loss	after	mini-batch	1131:	0.000
Loss	after	mini-batch	1141:	0.000
Loss	after	mini-batch	1151:	0.001
Loss	after	mini-batch	1161:	0.001
Loss	after	mini-batch	1171:	0.000
Loss	after	mini-batch	1181:	0.000
Loss	after	mini-batch	1191:	0.001
Loss	after	mini-batch	1201:	0.001
Loss	after	mini-batch	1211:	0.001
Loss	after	mini-batch	1221:	0.001
Loss	after	mini-batch	1231:	0.001
Loss	after	mini-batch	1241:	0.001
Loss	after	mini-batch	1251:	0.000

```
1261: 0.000
Loss after mini-batch
Loss after mini-batch
                       1271: 0.000
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.000
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.000
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
                       1381: 0.001
Loss after mini-batch
Loss after mini-batch
                       1391: 0.000
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.000
Loss after mini-batch
                       1421: 0.000
                       1431: 0.001
Loss after mini-batch
Loss after mini-batch
                       1441: 0.000
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.002
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
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Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.000
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.000
Loss after mini-batch
                       1611: 0.000
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
                       1641: 0.001
Loss after mini-batch
Loss after mini-batch
                       1651: 0.001
                       1661: 0.001
Loss after mini-batch
                       1671: 0.000
Loss after mini-batch
Loss after mini-batch
                       1681: 0.000
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.000
Loss after mini-batch
                       1721: 0.000
Loss after mini-batch
                      1731: 0.001
```

```
1741: 0.001
Loss after mini-batch
Loss after mini-batch
                       1751: 0.002
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.000
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.000
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
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Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.000
Loss after mini-batch
                       1851: 0.001
                       1861: 0.001
Loss after mini-batch
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.000
                       1911: 0.001
Loss after mini-batch
Loss after mini-batch
                       1921: 0.000
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.000
Loss after mini-batch
                       1991: 0.000
                       2001: 0.001
Loss after mini-batch
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.000
Loss after mini-batch
                       2041: 0.000
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.000
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.000
Loss after mini-batch
                       2201: 0.000
Loss after mini-batch 2211: 0.001
```

```
Loss after mini-batch 2221: 0.002
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
                       2271: 0.001
Loss after mini-batch
Loss after mini-batch
                       2281: 0.000
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.000
                       2321: 0.001
Loss after mini-batch
Loss after mini-batch
                       2331: 0.001
                       2341: 0.001
Loss after mini-batch
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.002
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
                       2391: 0.000
Loss after mini-batch
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.000
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.000
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.000
Loss after mini-batch
                       2601: 0.000
Loss after mini-batch
                       2611: 0.001
                       2621: 0.001
Loss after mini-batch
Loss after mini-batch
                       2631: 0.001
                       2641: 0.000
Loss after mini-batch
Loss after mini-batch
                       2651: 0.000
Loss after mini-batch
                       2661: 0.000
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch 2691: 0.001
```

```
Loss after mini-batch 2701: 0.001
Loss after mini-batch 2711: 0.000
Loss after mini-batch 2721: 0.001
Loss after mini-batch 2731: 0.000
Loss after mini-batch 2741: 0.001
Loss after mini-batch 2751: 0.001
Loss after mini-batch 2761: 0.000
Loss after mini-batch 2771: 0.001
Loss after mini-batch 2781: 0.001
Loss after mini-batch
                       2791: 0.001
                       2801: 0.001
Loss after mini-batch
Loss after mini-batch 2811: 0.001
Starting epoch 28
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.000
Loss after mini-batch
                         81: 0.000
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.000
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.000
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.000
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.001
Loss after mini-batch
                        171: 0.001
Loss after mini-batch
                        181: 0.001
Loss after mini-batch
                        191: 0.000
Loss after mini-batch
                        201: 0.001
Loss after mini-batch
                        211: 0.001
Loss after mini-batch
                        221: 0.001
Loss after mini-batch
                        231: 0.001
Loss after mini-batch
                        241: 0.001
Loss after mini-batch
                        251: 0.001
Loss after mini-batch
                        261: 0.001
Loss after mini-batch
                        271: 0.000
Loss after mini-batch
                        281: 0.000
Loss after mini-batch
                        291: 0.001
Loss after mini-batch
                        301: 0.000
Loss after mini-batch
                        311: 0.000
Loss after mini-batch
                        321: 0.001
Loss after mini-batch
                        331: 0.000
Loss after mini-batch
                        341: 0.001
```

Loss	${\tt after}$	mini-batch	351:	0.001
Loss	${\tt after}$	mini-batch	361:	0.000
Loss	${\tt after}$	mini-batch	371:	0.001
Loss	${\tt after}$	mini-batch	381:	0.001
Loss	${\tt after}$	mini-batch	391:	0.001
Loss	${\tt after}$	mini-batch	401:	0.002
Loss	${\tt after}$	mini-batch	411:	0.001
Loss	${\tt after}$	mini-batch	421:	0.001
Loss	${\tt after}$	mini-batch	431:	0.001
Loss	${\tt after}$	mini-batch	441:	0.001
Loss	${\tt after}$	mini-batch	451:	0.001
Loss	${\tt after}$	mini-batch	461:	0.001
Loss	${\tt after}$	mini-batch	471:	0.001
Loss	${\tt after}$	mini-batch	481:	0.001
Loss	${\tt after}$	mini-batch	491:	0.000
Loss	${\tt after}$	mini-batch	501:	0.001
Loss	${\tt after}$	mini-batch	511:	0.001
Loss	${\tt after}$	mini-batch	521:	0.001
Loss	${\tt after}$	mini-batch	531:	0.001
Loss	${\tt after}$	mini-batch	541:	0.000
Loss	${\tt after}$	mini-batch	551:	0.001
Loss	${\tt after}$	mini-batch	561:	0.000
Loss	${\tt after}$	mini-batch	571:	0.001
Loss	${\tt after}$	mini-batch	581:	0.001
Loss	${\tt after}$	mini-batch	591:	0.000
Loss	${\tt after}$	mini-batch	601:	0.001
Loss	${\tt after}$	mini-batch	611:	0.001
Loss	${\tt after}$	mini-batch	621:	0.001
Loss	${\tt after}$	mini-batch	631:	0.001
Loss	${\tt after}$	mini-batch	641:	0.002
Loss	${\tt after}$	mini-batch	651:	0.001
Loss	${\tt after}$	mini-batch	661:	0.001
Loss	${\tt after}$	mini-batch	671:	0.000
Loss	after	mini-batch	681:	0.001
Loss	${\tt after}$	mini-batch	691:	0.001
Loss	${\tt after}$	mini-batch	701:	0.001
Loss	${\tt after}$	mini-batch	711:	0.002
Loss	${\tt after}$	mini-batch	721:	0.001
Loss	${\tt after}$	mini-batch	731:	0.000
Loss	${\tt after}$	mini-batch	741:	0.002
Loss	${\tt after}$	mini-batch	751:	0.001
Loss	${\tt after}$	mini-batch	761:	0.000
Loss	${\tt after}$	mini-batch	771:	0.000
Loss	after	mini-batch	781:	0.001
Loss	${\tt after}$	mini-batch	791:	0.001
Loss	${\tt after}$	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001

```
Loss after mini-batch
                        831: 0.000
Loss after mini-batch
                        841: 0.000
Loss after mini-batch
                        851: 0.002
Loss after mini-batch
                        861: 0.001
Loss after mini-batch
                        871: 0.002
Loss after mini-batch
                        881: 0.001
Loss after mini-batch
                        891: 0.001
Loss after mini-batch
                        901: 0.001
Loss after mini-batch
                        911: 0.001
Loss after mini-batch
                        921: 0.001
Loss after mini-batch
                        931: 0.001
Loss after mini-batch
                        941: 0.001
                        951: 0.000
Loss after mini-batch
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.000
Loss after mini-batch
                       1011: 0.000
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.000
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.002
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.000
Loss after mini-batch
                       1171: 0.000
                       1181: 0.001
Loss after mini-batch
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
                       1211: 0.001
Loss after mini-batch
Loss after mini-batch
                       1221: 0.000
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
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Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.000
Loss after mini-batch
                       1271: 0.000
Loss after mini-batch
                       1281: 0.000
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch 1301: 0.001
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1311: 0.000
Loss after mini-batch
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.000
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.000
Loss after mini-batch
                       1361: 0.000
Loss after mini-batch
                       1371: 0.000
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
                       1431: 0.001
Loss after mini-batch
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.000
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.000
Loss after mini-batch
                       1601: 0.000
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.000
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.000
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.000
                       1691: 0.000
Loss after mini-batch
Loss after mini-batch
                       1701: 0.000
                       1711: 0.001
Loss after mini-batch
                       1721: 0.000
Loss after mini-batch
Loss after mini-batch
                       1731: 0.000
Loss after mini-batch
                       1741: 0.000
Loss after mini-batch
                       1751: 0.000
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch 1781: 0.001
```

```
1791: 0.001
Loss after mini-batch
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.000
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
                       1911: 0.001
Loss after mini-batch
Loss after mini-batch
                       1921: 0.000
Loss after mini-batch
                       1931: 0.000
Loss after mini-batch
                       1941: 0.000
Loss after mini-batch
                       1951: 0.000
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.002
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.000
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.000
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.000
Loss after mini-batch
                       2141: 0.000
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.000
Loss after mini-batch
                       2191: 0.000
                       2201: 0.000
Loss after mini-batch
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch 2251: 0.001
Loss after mini-batch 2261: 0.001
```

```
Loss after mini-batch 2271: 0.001
Loss after mini-batch
                       2281: 0.000
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
                       2321: 0.001
Loss after mini-batch
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.000
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
                       2391: 0.000
Loss after mini-batch
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.000
Loss after mini-batch
                       2421: 0.000
Loss after mini-batch
                       2431: 0.001
                       2441: 0.001
Loss after mini-batch
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.002
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.000
Loss after mini-batch
                       2501: 0.000
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.002
Loss after mini-batch
                       2541: 0.000
Loss after mini-batch
                       2551: 0.000
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.000
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.000
Loss after mini-batch
                       2641: 0.000
                       2651: 0.001
Loss after mini-batch
Loss after mini-batch
                       2661: 0.001
                       2671: 0.000
Loss after mini-batch
Loss after mini-batch
                       2681: 0.001
                       2691: 0.001
Loss after mini-batch
Loss after mini-batch
                       2701: 0.002
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch 2731: 0.002
Loss after mini-batch 2741: 0.001
```

Loss	after	mini-batch	2751:	0.001
Loss	after	mini-batch	2761:	0.001
Loss	after	mini-batch	2771:	0.000
Loss	after	mini-batch	2781:	0.001
Loss	after	mini-batch	2791:	0.001
Loss	after	mini-batch	2801:	0.001
Loss	after	mini-batch	2811:	0.001
Start	ting e	ooch 29		
Loss	after	mini-batch	1:	0.000
Loss	after	mini-batch	11:	0.001
Loss	after	mini-batch	21:	0.000
Loss	after	mini-batch	31:	0.001
Loss	after	mini-batch	41:	0.001
Loss	after	mini-batch	51:	0.001
Loss	after	mini-batch	61:	0.001
Loss	after	mini-batch	71:	0.001
Loss	after	mini-batch	81:	0.002
Loss	after	mini-batch	91:	0.001
Loss	after	mini-batch	101:	0.001
Loss	after	mini-batch	111:	0.001
Loss	after	mini-batch	121:	0.001
Loss	after	mini-batch	131:	0.001
Loss	after	mini-batch	141:	0.001
Loss	after	mini-batch	151:	0.001
Loss	after	mini-batch	161:	0.001
Loss	after	mini-batch	171:	0.001
Loss	after	mini-batch	181:	0.000
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.000
Loss	after	mini-batch	281:	0.000
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.000
Loss	after	mini-batch	351:	0.002
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.002
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001

Loss	${\tt after}$	mini-batch	401:	0.001
Loss	${\tt after}$	mini-batch	411:	0.000
Loss	${\tt after}$	mini-batch	421:	0.001
Loss	${\tt after}$	mini-batch	431:	0.001
Loss	${\tt after}$	mini-batch	441:	0.001
Loss	${\tt after}$	mini-batch	451:	0.001
Loss	${\tt after}$	mini-batch	461:	0.001
Loss	${\tt after}$	mini-batch	471:	0.001
Loss	${\tt after}$	mini-batch	481:	0.001
Loss	${\tt after}$	mini-batch	491:	0.001
Loss	${\tt after}$	mini-batch	501:	0.001
Loss	${\tt after}$	mini-batch	511:	0.001
Loss	${\tt after}$	mini-batch	521:	0.001
Loss	${\tt after}$	mini-batch	531:	0.002
Loss	${\tt after}$	mini-batch	541:	0.001
Loss	${\tt after}$	mini-batch	551:	0.001
Loss	${\tt after}$	mini-batch	561:	0.000
Loss	${\tt after}$	mini-batch	571:	0.001
Loss	${\tt after}$	mini-batch	581:	0.000
Loss	${\tt after}$	mini-batch	591:	0.001
Loss	${\tt after}$	mini-batch	601:	0.000
Loss	${\tt after}$	mini-batch	611:	0.001
Loss	${\tt after}$	mini-batch	621:	0.000
Loss	${\tt after}$	mini-batch	631:	0.001
Loss	${\tt after}$	mini-batch	641:	0.001
Loss	${\tt after}$	mini-batch	651:	0.000
Loss	${\tt after}$	mini-batch	661:	0.001
Loss	${\tt after}$	mini-batch	671:	0.001
Loss	${\tt after}$	mini-batch	681:	0.000
Loss	${\tt after}$	mini-batch	691:	0.001
Loss	${\tt after}$	mini-batch	701:	0.001
Loss	${\tt after}$	mini-batch	711:	0.001
Loss	${\tt after}$	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	${\tt after}$	mini-batch	741:	0.001
Loss	${\tt after}$	mini-batch	751:	0.001
Loss	${\tt after}$	mini-batch	761:	0.001
Loss	${\tt after}$	mini-batch	771:	0.001
Loss	${\tt after}$	mini-batch	781:	0.000
Loss	${\tt after}$	mini-batch	791:	0.001
Loss	${\tt after}$	mini-batch	801:	0.001
Loss	${\tt after}$	mini-batch	811:	0.000
Loss	${\tt after}$	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	${\tt after}$	mini-batch	841:	0.001
Loss	${\tt after}$	mini-batch	851:	0.001
Loss	${\tt after}$	mini-batch	861:	0.000
Loss	after	mini-batch	871:	0.001

```
Loss after mini-batch
                        881: 0.000
Loss after mini-batch
                        891: 0.001
Loss after mini-batch
                        901: 0.001
Loss after mini-batch
                        911: 0.000
Loss after mini-batch
                        921: 0.001
Loss after mini-batch
                        931: 0.001
Loss after mini-batch
                        941: 0.001
Loss after mini-batch
                        951: 0.000
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.001
                       1001: 0.001
Loss after mini-batch
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.002
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.000
Loss after mini-batch
                       1151: 0.000
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.000
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.000
Loss after mini-batch
                       1241: 0.000
Loss after mini-batch
                       1251: 0.000
                       1261: 0.000
Loss after mini-batch
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
                       1291: 0.001
Loss after mini-batch
Loss after mini-batch
                       1301: 0.000
Loss after mini-batch
                       1311: 0.000
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch 1351: 0.001
```

```
1361: 0.003
Loss after mini-batch
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.000
Loss after mini-batch
                       1471: 0.001
                       1481: 0.000
Loss after mini-batch
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
                       1531: 0.001
Loss after mini-batch
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.000
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.000
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.000
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.000
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.000
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.000
                       1741: 0.001
Loss after mini-batch
Loss after mini-batch
                       1751: 0.001
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
Loss after mini-batch
                       1781: 0.002
Loss after mini-batch
                       1791: 0.000
Loss after mini-batch
                       1801: 0.000
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                      1831: 0.001
```

```
1841: 0.001
Loss after mini-batch
Loss after mini-batch
                       1851: 0.002
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.000
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.000
Loss after mini-batch 1921: 0.001
Loss after mini-batch
                       1931: 0.002
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
                       1961: 0.001
Loss after mini-batch
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
                       2011: 0.001
Loss after mini-batch
Loss after mini-batch
                       2021: 0.000
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.000
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.000
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.000
Loss after mini-batch 2231: 0.001
Loss after mini-batch 2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch 2301: 0.001
Loss after mini-batch 2311: 0.001
```

```
2321: 0.000
Loss after mini-batch
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.000
Loss after mini-batch
                       2361: 0.001
                       2371: 0.001
Loss after mini-batch
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
                       2421: 0.001
Loss after mini-batch
Loss after mini-batch
                       2431: 0.001
                       2441: 0.000
Loss after mini-batch
Loss after mini-batch
                       2451: 0.000
Loss after mini-batch
                       2461: 0.000
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
                       2491: 0.001
Loss after mini-batch
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.000
Loss after mini-batch
                       2551: 0.000
Loss after mini-batch
                       2561: 0.000
Loss after mini-batch
                       2571: 0.000
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.000
Loss after mini-batch
                       2661: 0.000
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
                       2721: 0.001
Loss after mini-batch
                       2731: 0.000
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
Loss after mini-batch
                       2751: 0.000
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch 2791: 0.001
```

Loss	after	mini-batch	2801:	0.001
Loss	after	mini-batch	2811:	0.001
Start	ing e	ooch 30		
Loss	after	mini-batch	1:	0.000
Loss	after	mini-batch	11:	0.001
Loss	after	mini-batch	21:	0.001
Loss	after	mini-batch	31:	0.001
Loss	after	mini-batch	41:	0.002
Loss	after	mini-batch	51:	0.001
Loss	after	mini-batch	61:	0.001
Loss	after	mini-batch	71:	0.001
Loss	after	mini-batch	81:	0.001
Loss	after	mini-batch	91:	0.000
Loss	after	mini-batch	101:	0.001
Loss	after	mini-batch	111:	0.000
Loss	after	mini-batch	121:	0.000
Loss	after	mini-batch	131:	0.000
Loss		mini-batch		
	after		141:	0.001
Loss	after	mini-batch	151:	0.001
Loss	after	mini-batch	161:	0.000
Loss	after	mini-batch	171:	0.000
Loss	after	mini-batch	181:	0.001
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.002
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.000
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.000
Loss	${\tt after}$	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.000
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.000
Loss	after	mini-batch	381:	0.000
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.000
Loss	after	mini-batch	411:	0.000
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.000
			•	

Loss	${\tt after}$	mini-batch	451:	0.001
Loss	${\tt after}$	mini-batch	461:	0.000
Loss	${\tt after}$	mini-batch	471:	0.000
Loss	${\tt after}$	mini-batch	481:	0.001
Loss	${\tt after}$	mini-batch	491:	0.000
Loss	${\tt after}$	mini-batch	501:	0.001
Loss	${\tt after}$	mini-batch	511:	0.000
Loss	${\tt after}$	mini-batch	521:	0.001
Loss	${\tt after}$	mini-batch	531:	0.001
Loss	${\tt after}$	mini-batch	541:	0.000
Loss	${\tt after}$	mini-batch	551:	0.001
Loss	${\tt after}$	mini-batch	561:	0.000
Loss	${\tt after}$	mini-batch	571:	0.001
Loss	${\tt after}$	mini-batch	581:	0.001
Loss	${\tt after}$	mini-batch	591:	0.000
Loss	${\tt after}$	mini-batch	601:	0.000
Loss	${\tt after}$	mini-batch	611:	0.000
Loss	${\tt after}$	mini-batch	621:	0.001
Loss	${\tt after}$	mini-batch	631:	0.000
Loss	${\tt after}$	mini-batch	641:	0.001
Loss	${\tt after}$	mini-batch	651:	0.001
Loss	${\tt after}$	mini-batch	661:	0.001
Loss	${\tt after}$	mini-batch	671:	0.001
Loss	${\tt after}$	mini-batch	681:	0.001
Loss	${\tt after}$	mini-batch	691:	0.001
Loss	${\tt after}$	mini-batch	701:	0.000
Loss	${\tt after}$	mini-batch	711:	0.000
Loss	${\tt after}$	mini-batch	721:	0.001
Loss	${\tt after}$	mini-batch	731:	0.001
Loss	${\tt after}$	mini-batch	741:	0.000
Loss	${\tt after}$	mini-batch	751:	0.000
Loss	${\tt after}$	mini-batch	761:	0.001
Loss	${\tt after}$	mini-batch	771:	0.000
Loss	after	mini-batch	781:	0.000
Loss	${\tt after}$	mini-batch	791:	0.000
Loss	${\tt after}$	mini-batch	801:	0.000
Loss	after	mini-batch	811:	0.000
Loss	${\tt after}$	mini-batch	821:	0.000
Loss	${\tt after}$	mini-batch	831:	0.001
Loss	${\tt after}$	mini-batch	841:	0.001
Loss	${\tt after}$	mini-batch	851:	0.000
Loss	${\tt after}$	mini-batch	861:	0.001
Loss	${\tt after}$	mini-batch	871:	0.002
Loss	after	mini-batch	881:	0.001
Loss	${\tt after}$	mini-batch	891:	0.001
Loss	${\tt after}$	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001

```
Loss after mini-batch
                        931: 0.000
Loss after mini-batch
                        941: 0.002
Loss after mini-batch
                        951: 0.001
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.000
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.000
Loss after mini-batch
                       1041: 0.001
                       1051: 0.000
Loss after mini-batch
Loss after mini-batch
                       1061: 0.000
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.000
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.002
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.000
Loss after mini-batch
                       1281: 0.000
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.002
                       1311: 0.001
Loss after mini-batch
Loss after mini-batch
                       1321: 0.001
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.000
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.000
Loss after mini-batch 1401: 0.001
```

```
1411: 0.001
Loss after mini-batch
Loss after mini-batch
                       1421: 0.000
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.000
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.002
Loss after mini-batch
                       1481: 0.000
Loss after mini-batch
                       1491: 0.000
Loss after mini-batch
                       1501: 0.000
Loss after mini-batch
                       1511: 0.000
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
                       1581: 0.001
Loss after mini-batch
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.000
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.000
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.000
Loss after mini-batch
                       1741: 0.000
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
                       1791: 0.001
Loss after mini-batch
Loss after mini-batch
                       1801: 0.001
                       1811: 0.001
Loss after mini-batch
                       1821: 0.000
Loss after mini-batch
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
```

```
1891: 0.000
Loss after mini-batch
Loss after mini-batch
                       1901: 0.000
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.000
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.000
Loss after mini-batch
                       1991: 0.000
Loss after mini-batch
                       2001: 0.001
                       2011: 0.001
Loss after mini-batch
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.000
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.000
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.000
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.000
                       2151: 0.000
Loss after mini-batch
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
                       2291: 0.001
Loss after mini-batch
                       2301: 0.000
Loss after mini-batch
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.002
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.000
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch 2361: 0.001
```

```
Loss after mini-batch 2371: 0.000
Loss after mini-batch 2381: 0.001
Loss after mini-batch
                      2391: 0.001
Loss after mini-batch 2401: 0.001
Loss after mini-batch 2411: 0.000
Loss after mini-batch 2421: 0.001
Loss after mini-batch 2431: 0.001
Loss after mini-batch 2441: 0.001
Loss after mini-batch 2451: 0.001
Loss after mini-batch 2461: 0.002
Loss after mini-batch
                      2471: 0.002
Loss after mini-batch
                     2481: 0.001
Loss after mini-batch
                      2491: 0.000
Loss after mini-batch
                      2501: 0.000
Loss after mini-batch
                      2511: 0.000
Loss after mini-batch
                      2521: 0.001
Loss after mini-batch
                      2531: 0.001
Loss after mini-batch
                      2541: 0.000
Loss after mini-batch 2551: 0.000
Loss after mini-batch 2561: 0.001
Loss after mini-batch
                      2571: 0.001
Loss after mini-batch 2581: 0.001
Loss after mini-batch 2591: 0.000
Loss after mini-batch
                      2601: 0.000
Loss after mini-batch
                      2611: 0.001
Loss after mini-batch
                      2621: 0.001
Loss after mini-batch
                      2631: 0.001
Loss after mini-batch
                      2641: 0.000
Loss after mini-batch
                      2651: 0.000
Loss after mini-batch
                      2661: 0.000
Loss after mini-batch
                      2671: 0.001
Loss after mini-batch
                      2681: 0.001
Loss after mini-batch
                      2691: 0.001
Loss after mini-batch
                      2701: 0.001
Loss after mini-batch 2711: 0.001
Loss after mini-batch 2721: 0.001
Loss after mini-batch 2731: 0.001
Loss after mini-batch 2741: 0.002
Loss after mini-batch
                      2751: 0.001
Loss after mini-batch 2761: 0.001
Loss after mini-batch
                      2771: 0.001
Loss after mini-batch
                      2781: 0.001
Loss after mini-batch
                      2791: 0.001
Loss after mini-batch
                      2801: 0.000
Loss after mini-batch
                      2811: 0.001
Starting epoch 31
Loss after mini-batch
                         1: 0.001
Loss after mini-batch
                        11: 0.001
```

Loss	${\tt after}$	mini-batch	21:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	31:	0.001
Loss	after	mini-batch	41:	0.000
Loss	${\tt after}$	mini-batch	51:	0.000
Loss	${\tt after}$	mini-batch	61:	0.001
Loss	after	mini-batch	71:	0.001
Loss	after	mini-batch	81:	0.000
Loss	after	mini-batch	91:	0.000
Loss	after	mini-batch	101:	0.000
Loss	after	mini-batch	111:	0.000
Loss	after	mini-batch	121:	0.000
Loss	after	mini-batch	131:	0.000
Loss	after	mini-batch	141:	0.001
Loss	after	mini-batch	151:	0.001
Loss	after	mini-batch	161:	0.001
Loss	after	mini-batch	171:	0.001
Loss	after	mini-batch	181:	0.001
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.000
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.000
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.000
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.000
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.000
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.000
Loss			451:	
Loss	after	mini-batch	461:	0.001
Loss	after		471:	
Loss	after	mini-batch	481:	0.000
Loss			491:	
		230011		

Loss	after	mini-batch	501:	0.001
Loss	after	${\tt mini-batch}$	511:	0.000
Loss	after	${\tt mini-batch}$	521:	0.000
Loss	after	${\tt mini-batch}$	531:	0.001
Loss	after	${\tt mini-batch}$	541:	0.001
Loss	after	${\tt mini-batch}$	551:	0.001
Loss	after	${\tt mini-batch}$	561:	0.001
Loss	after	${\tt mini-batch}$	571:	0.000
Loss	after	${\tt mini-batch}$	581:	0.000
Loss	after	${\tt mini-batch}$	591:	0.000
Loss	after	${\tt mini-batch}$	601:	0.000
Loss	after	${\tt mini-batch}$	611:	0.001
Loss	after	${\tt mini-batch}$	621:	0.001
Loss	after	${\tt mini-batch}$	631:	0.001
Loss	after	${\tt mini-batch}$	641:	0.001
Loss	after	${\tt mini-batch}$	651:	0.001
Loss	after	${\tt mini-batch}$	661:	0.001
Loss	after	${\tt mini-batch}$	671:	0.001
Loss	after	${\tt mini-batch}$	681:	0.001
Loss	after	${\tt mini-batch}$	691:	0.001
Loss	after	${\tt mini-batch}$	701:	0.001
Loss	after	${\tt mini-batch}$	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	${\tt mini-batch}$	731:	0.001
Loss	after	${\tt mini-batch}$	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	${\tt mini-batch}$	761:	0.001
Loss	after	${\tt mini-batch}$	771:	0.000
Loss	after	${\tt mini-batch}$	781:	0.001
Loss	after	${\tt mini-batch}$	791:	0.001
Loss	after	${\tt mini-batch}$	801:	0.001
Loss	after	${\tt mini-batch}$	811:	0.001
Loss	after	${\tt mini-batch}$	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.000
Loss	after	mini-batch	901:	0.000
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.000
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.000
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.002

```
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.000
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.000
Loss after mini-batch
                       1071: 0.000
Loss after mini-batch
                       1081: 0.000
Loss after mini-batch
                       1091: 0.000
                       1101: 0.000
Loss after mini-batch
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.000
Loss after mini-batch
                       1141: 0.000
Loss after mini-batch
                       1151: 0.000
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.000
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.000
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.000
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.000
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.000
                       1331: 0.000
Loss after mini-batch
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
                       1361: 0.001
Loss after mini-batch
Loss after mini-batch
                       1371: 0.001
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch 1451: 0.001
```

```
1461: 0.001
Loss after mini-batch
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.000
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.000
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.000
Loss after mini-batch
                       1541: 0.000
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.000
                       1581: 0.001
Loss after mini-batch
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
                       1631: 0.001
Loss after mini-batch
Loss after mini-batch
                       1641: 0.000
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.002
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.000
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.000
                       1841: 0.001
Loss after mini-batch
Loss after mini-batch
                       1851: 0.000
                       1861: 0.000
Loss after mini-batch
                       1871: 0.000
Loss after mini-batch
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.000
Loss after mini-batch
                       1901: 0.000
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                      1931: 0.001
```

```
1941: 0.001
Loss after mini-batch
Loss after mini-batch
                       1951: 0.000
Loss after mini-batch
                       1961: 0.000
Loss after mini-batch
                       1971: 0.000
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
                       2061: 0.001
Loss after mini-batch
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
                       2111: 0.001
Loss after mini-batch
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.000
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.000
Loss after mini-batch
                       2231: 0.000
Loss after mini-batch
                       2241: 0.000
Loss after mini-batch
                       2251: 0.000
Loss after mini-batch
                       2261: 0.000
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.000
Loss after mini-batch
                       2301: 0.000
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
                       2341: 0.001
Loss after mini-batch
                       2351: 0.000
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.000
Loss after mini-batch 2411: 0.001
```

```
Loss after mini-batch 2421: 0.001
Loss after mini-batch 2431: 0.000
Loss after mini-batch
                      2441: 0.002
Loss after mini-batch
                      2451: 0.001
Loss after mini-batch 2461: 0.001
                      2471: 0.002
Loss after mini-batch
Loss after mini-batch
                      2481: 0.002
Loss after mini-batch 2491: 0.001
Loss after mini-batch 2501: 0.000
Loss after mini-batch
                      2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.000
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.000
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                      2601: 0.001
Loss after mini-batch
                      2611: 0.000
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                      2641: 0.001
Loss after mini-batch
                      2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.000
Loss after mini-batch
                       2691: 0.000
Loss after mini-batch
                       2701: 0.000
Loss after mini-batch
                      2711: 0.001
Loss after mini-batch
                      2721: 0.000
Loss after mini-batch
                      2731: 0.001
Loss after mini-batch
                      2741: 0.001
Loss after mini-batch
                      2751: 0.000
                      2761: 0.001
Loss after mini-batch
Loss after mini-batch
                      2771: 0.001
Loss after mini-batch
                      2781: 0.001
Loss after mini-batch
                       2791: 0.000
                      2801: 0.000
Loss after mini-batch
Loss after mini-batch 2811: 0.001
Starting epoch 32
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.002
Loss after mini-batch
                         51: 0.000
Loss after mini-batch
                         61: 0.000
```

Loss	after	mini-batch	71:	0.000
Loss	after	${\tt mini-batch}$	81:	0.000
Loss	after	${\tt mini-batch}$	91:	0.001
Loss	after	${\tt mini-batch}$	101:	0.000
Loss	after	${\tt mini-batch}$	111:	0.000
Loss	after	${\tt mini-batch}$	121:	0.000
Loss	after	${\tt mini-batch}$	131:	0.001
Loss	after	${\tt mini-batch}$	141:	0.000
Loss	after	${\tt mini-batch}$	151:	0.000
Loss	after	${\tt mini-batch}$	161:	0.000
Loss	after	${\tt mini-batch}$	171:	0.001
Loss	after	${\tt mini-batch}$	181:	0.000
Loss	after	mini-batch	191:	0.001
Loss	after	${\tt mini-batch}$	201:	0.001
Loss	after	${\tt mini-batch}$	211:	0.002
Loss	after	${\tt mini-batch}$	221:	0.001
Loss	after	${\tt mini-batch}$	231:	0.000
Loss	after	${\tt mini-batch}$	241:	0.001
Loss	after	${\tt mini-batch}$	251:	0.001
Loss	after	${\tt mini-batch}$	261:	0.002
Loss	after	${\tt mini-batch}$	271:	0.001
Loss	after	${\tt mini-batch}$	281:	0.001
Loss	after	${\tt mini-batch}$	291:	0.001
Loss	after	${\tt mini-batch}$	301:	0.001
Loss	after	${\tt mini-batch}$	311:	0.000
Loss	after	${\tt mini-batch}$	321:	0.001
Loss	after	${\tt mini-batch}$	331:	0.001
Loss	after	${\tt mini-batch}$	341:	0.001
Loss	after	${\tt mini-batch}$	351:	0.000
Loss	after	${\tt mini-batch}$	361:	0.001
Loss	after	${\tt mini-batch}$	371:	0.000
Loss	after	${\tt mini-batch}$	381:	0.001
Loss	after	${\tt mini-batch}$	391:	0.001
Loss	after	${\tt mini-batch}$	401:	0.001
Loss	after	${\tt mini-batch}$	411:	0.000
Loss	after	${\tt mini-batch}$	421:	0.000
Loss	after	${\tt mini-batch}$	431:	0.001
Loss	after	${\tt mini-batch}$	441:	0.000
Loss	after	${\tt mini-batch}$	451:	0.000
Loss	after	${\tt mini-batch}$	461:	0.001
Loss	after	${\tt mini-batch}$	471:	0.001
Loss	after	mini-batch	481:	0.002
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	${\tt mini-batch}$	541:	0.001

Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.000
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.000
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.000
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.000
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.002
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.000
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.000
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.000
Loss	after	mini-batch	961:	0.000
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.000
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.000

```
1031: 0.001
Loss after mini-batch
Loss after mini-batch
                       1041: 0.000
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.000
Loss after mini-batch
                       1071: 0.000
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.000
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.000
Loss after mini-batch
                       1141: 0.000
                       1151: 0.000
Loss after mini-batch
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.000
Loss after mini-batch
                       1201: 0.000
Loss after mini-batch
                       1211: 0.000
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.000
Loss after mini-batch
                       1271: 0.000
Loss after mini-batch
                       1281: 0.000
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.000
Loss after mini-batch
                       1381: 0.000
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
                       1411: 0.001
Loss after mini-batch
Loss after mini-batch
                       1421: 0.000
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.000
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch 1501: 0.001
```

```
1511: 0.001
Loss after mini-batch
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.000
Loss after mini-batch
                       1571: 0.000
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.000
Loss after mini-batch
                       1601: 0.000
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
                       1631: 0.001
Loss after mini-batch
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.000
Loss after mini-batch
                       1671: 0.000
                       1681: 0.000
Loss after mini-batch
Loss after mini-batch
                       1691: 0.000
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.000
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.000
Loss after mini-batch
                       1881: 0.001
                       1891: 0.001
Loss after mini-batch
Loss after mini-batch
                       1901: 0.001
                       1911: 0.000
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.000
Loss after mini-batch
                       1951: 0.000
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                      1981: 0.001
```

```
1991: 0.000
Loss after mini-batch
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
                       2041: 0.001
Loss after mini-batch
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
                       2091: 0.001
Loss after mini-batch
Loss after mini-batch
                       2101: 0.001
                       2111: 0.000
Loss after mini-batch
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.000
Loss after mini-batch
                       2141: 0.000
Loss after mini-batch
                       2151: 0.000
                       2161: 0.000
Loss after mini-batch
Loss after mini-batch
                       2171: 0.000
Loss after mini-batch
                       2181: 0.000
Loss after mini-batch
                       2191: 0.000
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.000
Loss after mini-batch
                       2251: 0.000
Loss after mini-batch
                       2261: 0.000
Loss after mini-batch
                       2271: 0.000
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.000
Loss after mini-batch
                       2361: 0.000
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
                       2391: 0.001
Loss after mini-batch
Loss after mini-batch
                       2401: 0.002
                       2411: 0.001
Loss after mini-batch
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch 2451: 0.001
Loss after mini-batch 2461: 0.001
```

```
Loss after mini-batch 2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.000
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
                       2551: 0.001
Loss after mini-batch
Loss after mini-batch
                       2561: 0.000
                       2571: 0.000
Loss after mini-batch
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.000
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.000
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.000
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.000
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.000
Loss after mini-batch
                       2811: 0.000
Starting epoch 33
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                          11: 0.001
Loss after mini-batch
                         21: 0.000
Loss after mini-batch
                         31: 0.000
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.001
                         71: 0.001
Loss after mini-batch
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.000
```

Loss	after	${\tt mini-batch}$	121:	0.001
Loss	after	${\tt mini-batch}$	131:	0.000
Loss	after	${\tt mini-batch}$	141:	0.001
Loss	after	${\tt mini-batch}$	151:	0.001
Loss	after	${\tt mini-batch}$	161:	0.001
Loss	after	mini-batch	171:	0.001
Loss	after	mini-batch	181:	0.001
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.000
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.002
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.000
Loss	after	mini-batch	291:	0.000
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.000
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.000
Loss	after	mini-batch	341:	0.000
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.002
Loss	after	mini-batch	411:	0.000
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.002
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.000
Loss	after	mini-batch	561:	0.000
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001

Loss	after	${\tt mini-batch}$	601:	0.001
Loss	after	${\tt mini-batch}$	611:	0.000
Loss	after	mini-batch	621:	0.000
Loss	after	${\tt mini-batch}$	631:	0.001
Loss	after	${\tt mini-batch}$	641:	0.001
Loss	after	${\tt mini-batch}$	651:	0.000
Loss	after	${\tt mini-batch}$	661:	0.000
Loss	after	${\tt mini-batch}$	671:	0.000
Loss	after	${\tt mini-batch}$	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	${\tt mini-batch}$	701:	0.001
Loss	after	${\tt mini-batch}$	711:	0.001
Loss	after	mini-batch	721:	0.000
Loss	after	mini-batch	731:	0.001
Loss	after	${\tt mini-batch}$	741:	0.000
Loss	after	${\tt mini-batch}$	751:	0.000
Loss	after	${\tt mini-batch}$	761:	0.001
Loss	after	${\tt mini-batch}$	771:	0.001
Loss	after	${\tt mini-batch}$	781:	0.000
Loss	after	${\tt mini-batch}$	791:	0.001
Loss	after	${\tt mini-batch}$	801:	0.001
Loss	after	${\tt mini-batch}$	811:	0.001
Loss	after	${\tt mini-batch}$	821:	0.001
Loss	after	${\tt mini-batch}$	831:	0.000
Loss	after	${\tt mini-batch}$	841:	0.000
Loss	after	${\tt mini-batch}$	851:	0.001
Loss	after	${\tt mini-batch}$	861:	0.001
Loss	after	${\tt mini-batch}$	871:	0.001
Loss	after	${\tt mini-batch}$	881:	0.001
Loss	after	${\tt mini-batch}$	891:	0.000
Loss	after	${\tt mini-batch}$	901:	0.001
Loss	after	${\tt mini-batch}$	911:	0.001
Loss	after	${\tt mini-batch}$	921:	0.000
Loss	after	mini-batch	931:	0.000
Loss	after	${\tt mini-batch}$	941:	0.000
Loss	after	${\tt mini-batch}$	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	${\tt mini-batch}$	981:	0.001
Loss	after	${\tt mini-batch}$	991:	0.001
Loss	after	${\tt mini-batch}$	1001:	0.000
Loss	after	${\tt mini-batch}$	1011:	0.002
Loss	after	${\tt mini-batch}$	1021:	0.001
Loss	after	${\tt mini-batch}$	1031:	0.001
Loss	after	${\tt mini-batch}$	1041:	0.001
Loss	after	${\tt mini-batch}$	1051:	0.001
Loss	after	${\tt mini-batch}$	1061:	0.001
Loss	after	${\tt mini-batch}$	1071:	0.001

```
1081: 0.001
Loss after mini-batch
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.000
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.000
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.000
Loss after mini-batch
                       1191: 0.000
                       1201: 0.001
Loss after mini-batch
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.002
                       1251: 0.000
Loss after mini-batch
Loss after mini-batch
                       1261: 0.000
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.000
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.000
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.000
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.002
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.002
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.000
Loss after mini-batch
                       1441: 0.002
Loss after mini-batch
                       1451: 0.001
                       1461: 0.001
Loss after mini-batch
Loss after mini-batch
                       1471: 0.000
                       1481: 0.001
Loss after mini-batch
                       1491: 0.000
Loss after mini-batch
Loss after mini-batch
                       1501: 0.000
Loss after mini-batch
                       1511: 0.000
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                      1551: 0.001
```

```
1561: 0.001
Loss after mini-batch
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.000
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.000
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.000
Loss after mini-batch
                       1671: 0.001
                       1681: 0.001
Loss after mini-batch
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
                       1731: 0.001
Loss after mini-batch
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.000
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.000
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.002
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.002
Loss after mini-batch
                       1921: 0.002
Loss after mini-batch
                       1931: 0.002
                       1941: 0.001
Loss after mini-batch
Loss after mini-batch
                       1951: 0.001
                       1961: 0.001
Loss after mini-batch
                       1971: 0.000
Loss after mini-batch
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.002
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch 2031: 0.001
```

```
Loss after mini-batch 2041: 0.002
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.002
                       2091: 0.001
Loss after mini-batch
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.000
Loss after mini-batch
                       2121: 0.000
Loss after mini-batch
                       2131: 0.001
                       2141: 0.000
Loss after mini-batch
Loss after mini-batch
                       2151: 0.001
                       2161: 0.000
Loss after mini-batch
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.000
Loss after mini-batch
                       2201: 0.001
                       2211: 0.001
Loss after mini-batch
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.000
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.000
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.000
Loss after mini-batch
                       2341: 0.000
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.000
Loss after mini-batch
                       2401: 0.000
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
                       2451: 0.000
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.000
Loss after mini-batch 2511: 0.001
```

```
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.000
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.000
Loss after mini-batch
                       2561: 0.000
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
                       2601: 0.002
Loss after mini-batch
Loss after mini-batch
                       2611: 0.000
                       2621: 0.001
Loss after mini-batch
Loss after mini-batch
                       2631: 0.000
Loss after mini-batch
                       2641: 0.000
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.000
Loss after mini-batch
                       2721: 0.001
                       2731: 0.001
Loss after mini-batch
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.000
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.000
Starting epoch 34
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.002
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.000
Loss after mini-batch
                         81: 0.000
Loss after mini-batch
                         91: 0.002
Loss after mini-batch
                        101: 0.000
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.000
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.001
```

Loss	after	mini-batch	171:	0.001
Loss	after	mini-batch	181:	0.001
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.000
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.000
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.000
Loss	after	mini-batch	271:	0.000
Loss	after	mini-batch	281:	0.000
Loss	after	mini-batch	291:	0.000
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.000
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.000
Loss	after	mini-batch	401:	0.000
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.000
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	
Loss		mini-batch		
Loss		mini-batch		
Loss		mini-batch		
Loss		mini-batch	541:	
Loss	after	mini-batch		
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch		
Loss	after	mini-batch	581:	0.003
Loss	after	mini-batch		
Loss	after	mini-batch	601:	
Loss	after	mini-batch	611:	
Loss		mini-batch	621:	
Loss		mini-batch		
Loss		mini-batch		

Loss	after	mini-batch	651:	0.000
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.000
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.000
Loss	after	mini-batch	711:	0.000
Loss	after	mini-batch	721:	0.000
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.000
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.000
Loss	after	mini-batch	791:	0.000
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.000
Loss	after	mini-batch	861:	0.000
Loss	after	mini-batch	871:	0.000
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.002
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.002
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.000
Loss	after	mini-batch	1081:	0.001
Loss	after	mini-batch	1091:	0.001
Loss	after	mini-batch	1101:	0.000
Loss	after	mini-batch	1111:	0.001
Loss	after	mini-batch	1121:	0.000

```
1131: 0.001
Loss after mini-batch
Loss after mini-batch
                       1141: 0.000
Loss after mini-batch
                       1151: 0.000
Loss after mini-batch
                       1161: 0.002
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
                       1251: 0.001
Loss after mini-batch
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.000
Loss after mini-batch
                       1281: 0.000
Loss after mini-batch
                       1291: 0.000
                       1301: 0.001
Loss after mini-batch
Loss after mini-batch
                       1311: 0.000
Loss after mini-batch
                       1321: 0.000
Loss after mini-batch
                       1331: 0.000
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.000
Loss after mini-batch
                       1361: 0.002
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.002
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.000
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.000
Loss after mini-batch
                       1441: 0.000
Loss after mini-batch
                       1451: 0.000
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
                       1511: 0.001
Loss after mini-batch
Loss after mini-batch
                       1521: 0.001
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.000
Loss after mini-batch
                       1571: 0.002
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                      1601: 0.001
```

```
1611: 0.001
Loss after mini-batch
Loss after mini-batch
                       1621: 0.000
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
                       1731: 0.000
Loss after mini-batch
Loss after mini-batch
                       1741: 0.000
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.000
Loss after mini-batch
                       1771: 0.001
                       1781: 0.001
Loss after mini-batch
Loss after mini-batch
                       1791: 0.000
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.000
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.000
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
                       1991: 0.000
Loss after mini-batch
Loss after mini-batch
                       2001: 0.001
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
Loss after mini-batch
                       2031: 0.000
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch 2081: 0.001
```

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Loss after mini-batch 2091: 0.000
Loss after mini-batch 2101: 0.000
Loss after mini-batch
                      2111: 0.001
Loss after mini-batch
                      2121: 0.000
Loss after mini-batch 2131: 0.001
                      2141: 0.001
Loss after mini-batch
Loss after mini-batch
                      2151: 0.000
Loss after mini-batch 2161: 0.001
Loss after mini-batch 2171: 0.000
Loss after mini-batch
                      2181: 0.001
Loss after mini-batch
                      2191: 0.001
Loss after mini-batch
                      2201: 0.000
                       2211: 0.000
Loss after mini-batch
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                      2231: 0.001
Loss after mini-batch
                      2241: 0.001
Loss after mini-batch
                      2251: 0.001
                       2261: 0.000
Loss after mini-batch
Loss after mini-batch
                      2271: 0.000
Loss after mini-batch
                      2281: 0.001
Loss after mini-batch
                      2291: 0.000
Loss after mini-batch
                      2301: 0.000
Loss after mini-batch 2311: 0.000
Loss after mini-batch
                      2321: 0.001
Loss after mini-batch
                      2331: 0.001
Loss after mini-batch
                      2341: 0.001
Loss after mini-batch
                       2351: 0.000
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                      2381: 0.001
Loss after mini-batch
                      2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                      2411: 0.001
Loss after mini-batch
                      2421: 0.001
Loss after mini-batch
                      2431: 0.001
Loss after mini-batch
                      2441: 0.001
Loss after mini-batch 2451: 0.001
Loss after mini-batch
                      2461: 0.001
Loss after mini-batch
                      2471: 0.001
Loss after mini-batch 2481: 0.000
                      2491: 0.000
Loss after mini-batch
Loss after mini-batch
                      2501: 0.002
Loss after mini-batch
                       2511: 0.000
Loss after mini-batch
                       2521: 0.000
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                      2551: 0.001
Loss after mini-batch 2561: 0.001
```

```
Loss after mini-batch 2571: 0.001
Loss after mini-batch 2581: 0.000
Loss after mini-batch
                      2591: 0.000
Loss after mini-batch
                      2601: 0.000
Loss after mini-batch 2611: 0.001
Loss after mini-batch
                      2621: 0.001
Loss after mini-batch 2631: 0.001
Loss after mini-batch 2641: 0.001
Loss after mini-batch 2651: 0.001
Loss after mini-batch
                      2661: 0.000
                       2671: 0.001
Loss after mini-batch
Loss after mini-batch
                      2681: 0.001
Loss after mini-batch
                       2691: 0.000
Loss after mini-batch
                      2701: 0.002
Loss after mini-batch
                      2711: 0.001
Loss after mini-batch 2721: 0.001
Loss after mini-batch 2731: 0.000
Loss after mini-batch 2741: 0.001
Loss after mini-batch 2751: 0.001
Loss after mini-batch 2761: 0.001
Loss after mini-batch 2771: 0.001
Loss after mini-batch 2781: 0.001
Loss after mini-batch 2791: 0.001
Loss after mini-batch 2801: 0.001
Loss after mini-batch
                      2811: 0.001
Starting epoch 35
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.000
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.000
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.000
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.000
Loss after mini-batch
                        131: 0.000
Loss after mini-batch
                        141: 0.000
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.001
Loss after mini-batch
                        171: 0.001
Loss after mini-batch
                        181: 0.001
Loss after mini-batch
                        191: 0.001
Loss after mini-batch
                        201: 0.001
Loss after mini-batch
                        211: 0.001
```

Loss	after	${\tt mini-batch}$	221:	0.001
Loss	after	${\tt mini-batch}$	231:	0.000
Loss	after	${\tt mini-batch}$	241:	0.000
Loss	after	${\tt mini-batch}$	251:	0.001
Loss	after	${\tt mini-batch}$	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.000
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.000
Loss	after	mini-batch	341:	0.002
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.000
Loss	after	mini-batch	381:	0.000
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.000
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.000
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.002
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.000
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.000
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001

Loss	${\tt after}$	${\tt mini-batch}$	701:	0.000
Loss	after	${\tt mini-batch}$	711:	0.001
Loss	after	${\tt mini-batch}$	721:	0.001
Loss	after	${\tt mini-batch}$	731:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.000
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.000
Loss	after	mini-batch	811:	0.000
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.000
Loss	after	mini-batch	871:	0.000
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.002
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.003
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.000
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.000
Loss	after	mini-batch	1071:	0.000
Loss	after	mini-batch	1081:	0.000
Loss	after	mini-batch	1091:	0.000
Loss	after	mini-batch	1101:	0.001
Loss	after	mini-batch	1111:	0.001
Loss	after	mini-batch	1121:	0.001
Loss	after	mini-batch	1131:	0.001
Loss	after	mini-batch	1141:	0.001
Loss	after	mini-batch	1151:	0.001
Loss	after	mini-batch	1161:	0.000
Loss	after	mini-batch	1171:	0.000
порр	OT OCT	mini batti	TT1 T.	0.001

```
1181: 0.001
Loss after mini-batch
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.000
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.000
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.000
                       1301: 0.001
Loss after mini-batch
Loss after mini-batch
                       1311: 0.000
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.000
Loss after mini-batch
                       1351: 0.000
Loss after mini-batch
                       1361: 0.000
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
                       1441: 0.001
Loss after mini-batch
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.000
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.000
                       1561: 0.000
Loss after mini-batch
Loss after mini-batch
                       1571: 0.001
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
Loss after mini-batch
                       1601: 0.000
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.000
Loss after mini-batch
                       1641: 0.000
Loss after mini-batch
                      1651: 0.000
```

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1661: 0.001
Loss after mini-batch
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.000
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.000
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.000
Loss after mini-batch
                       1771: 0.000
                       1781: 0.000
Loss after mini-batch
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
                       1831: 0.000
Loss after mini-batch
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.000
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.000
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.000
Loss after mini-batch
                       1951: 0.000
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.002
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.000
                       2041: 0.000
Loss after mini-batch
Loss after mini-batch
                       2051: 0.001
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch 2131: 0.001
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Loss after mini-batch 2141: 0.001
Loss after mini-batch 2151: 0.000
Loss after mini-batch
                      2161: 0.001
Loss after mini-batch
                      2171: 0.001
Loss after mini-batch 2181: 0.001
                      2191: 0.001
Loss after mini-batch
Loss after mini-batch
                      2201: 0.001
Loss after mini-batch 2211: 0.001
Loss after mini-batch 2221: 0.001
Loss after mini-batch
                      2231: 0.001
Loss after mini-batch
                      2241: 0.001
Loss after mini-batch
                      2251: 0.001
                       2261: 0.001
Loss after mini-batch
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                      2291: 0.001
Loss after mini-batch
                       2301: 0.000
                       2311: 0.001
Loss after mini-batch
Loss after mini-batch
                      2321: 0.001
Loss after mini-batch
                      2331: 0.001
Loss after mini-batch
                       2341: 0.002
Loss after mini-batch
                       2351: 0.000
Loss after mini-batch
                      2361: 0.001
Loss after mini-batch
                      2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                      2391: 0.000
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.000
Loss after mini-batch
                       2421: 0.000
Loss after mini-batch
                      2431: 0.000
Loss after mini-batch
                      2441: 0.000
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                      2471: 0.001
Loss after mini-batch
                       2481: 0.000
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                      2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                      2531: 0.001
                      2541: 0.002
Loss after mini-batch
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                      2601: 0.001
Loss after mini-batch 2611: 0.000
```

```
Loss after mini-batch 2621: 0.000
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.002
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.000
Loss after mini-batch
                       2671: 0.000
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch 2701: 0.000
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.000
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.000
Loss after mini-batch
                       2801: 0.000
Loss after mini-batch
                       2811: 0.000
Starting epoch 36
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.002
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.000
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.000
Loss after mini-batch
                        141: 0.001
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.001
                        171: 0.001
Loss after mini-batch
Loss after mini-batch
                        181: 0.001
Loss after mini-batch
                        191: 0.001
Loss after mini-batch
                        201: 0.001
Loss after mini-batch
                        211: 0.001
Loss after mini-batch
                        221: 0.001
Loss after mini-batch
                        231: 0.001
Loss after mini-batch
                        241: 0.001
Loss after mini-batch
                        251: 0.001
Loss after mini-batch
                        261: 0.000
```

Loss	after	${\tt mini-batch}$	271:	0.000
Loss	after	${\tt mini-batch}$	281:	0.000
Loss	after	${\tt mini-batch}$	291:	0.000
Loss	after	${\tt mini-batch}$	301:	0.001
Loss	after	${\tt mini-batch}$	311:	0.000
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.000
Loss	after	mini-batch	341:	0.000
Loss	after	mini-batch	351:	0.002
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.000
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.002
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.000
Loss	after	mini-batch	491:	0.000
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.000
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.000
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.000
Loss	after	mini-batch	631:	0.000
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.000
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.000
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.000

Loss	after	${\tt mini-batch}$	751:	0.000
Loss	after	${\tt mini-batch}$	761:	0.001
Loss	after	${\tt mini-batch}$	771:	0.001
Loss	after	${\tt mini-batch}$	781:	0.001
Loss	after	${\tt mini-batch}$	791:	0.002
Loss	after	${\tt mini-batch}$	801:	0.001
Loss	after	${\tt mini-batch}$	811:	0.001
Loss	after	${\tt mini-batch}$	821:	0.000
Loss	after	${\tt mini-batch}$	831:	0.000
Loss	after	${\tt mini-batch}$	841:	0.001
Loss	after	${\tt mini-batch}$	851:	0.000
Loss	after	${\tt mini-batch}$	861:	0.001
Loss	after	${\tt mini-batch}$	871:	0.001
Loss	after	${\tt mini-batch}$	881:	0.000
Loss	after	${\tt mini-batch}$	891:	0.000
Loss	after	${\tt mini-batch}$	901:	0.001
Loss	after	${\tt mini-batch}$	911:	0.000
Loss	after	${\tt mini-batch}$	921:	0.001
Loss	after	${\tt mini-batch}$	931:	0.000
Loss	after	${\tt mini-batch}$	941:	0.001
Loss	after	${\tt mini-batch}$	951:	0.000
Loss	after	${\tt mini-batch}$	961:	0.001
Loss	after	${\tt mini-batch}$	971:	0.001
Loss	after	${\tt mini-batch}$	981:	0.001
Loss	after	${\tt mini-batch}$	991:	0.000
Loss	after	${\tt mini-batch}$	1001:	0.001
Loss	after	${\tt mini-batch}$	1011:	0.000
Loss	after	${\tt mini-batch}$	1021:	0.000
Loss	after	${\tt mini-batch}$	1031:	0.001
Loss	after	${\tt mini-batch}$	1041:	0.001
Loss	after	${\tt mini-batch}$	1051:	0.001
Loss	after	${\tt mini-batch}$	1061:	0.001
Loss	after	${\tt mini-batch}$	1071:	0.001
Loss	after	mini-batch	1081:	0.001
Loss	after	${\tt mini-batch}$	1091:	0.001
Loss	after	${\tt mini-batch}$	1101:	0.001
Loss	after	mini-batch	1111:	0.001
Loss	after	${\tt mini-batch}$	1121:	0.002
Loss	after	${\tt mini-batch}$	1131:	0.002
Loss	after	${\tt mini-batch}$	1141:	0.001
Loss	after	${\tt mini-batch}$	1151:	0.001
Loss	after	${\tt mini-batch}$	1161:	0.000
Loss	after	${\tt mini-batch}$	1171:	0.001
Loss	after	${\tt mini-batch}$	1181:	0.000
Loss	after	${\tt mini-batch}$	1191:	0.001
Loss	after	${\tt mini-batch}$	1201:	0.000
Loss	after	${\tt mini-batch}$	1211:	0.000
Loss	after	${\tt mini-batch}$	1221:	0.001

```
1231: 0.001
Loss after mini-batch
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.000
Loss after mini-batch
                       1261: 0.000
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.000
Loss after mini-batch
                       1291: 0.000
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.000
Loss after mini-batch
                       1331: 0.000
Loss after mini-batch
                       1341: 0.001
                       1351: 0.000
Loss after mini-batch
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.000
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.000
Loss after mini-batch
                       1421: 0.000
Loss after mini-batch
                       1431: 0.002
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.000
Loss after mini-batch
                       1481: 0.000
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.000
Loss after mini-batch
                       1531: 0.000
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.000
                       1611: 0.001
Loss after mini-batch
Loss after mini-batch
                       1621: 0.000
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.000
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                      1701: 0.000
```

```
1711: 0.000
Loss after mini-batch
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.000
Loss after mini-batch
                       1751: 0.000
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
                       1831: 0.001
Loss after mini-batch
Loss after mini-batch
                       1841: 0.000
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.000
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
                       1971: 0.001
Loss after mini-batch
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.000
Loss after mini-batch
                       2011: 0.000
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.002
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.000
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
                       2091: 0.001
Loss after mini-batch
Loss after mini-batch
                       2101: 0.001
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
Loss after mini-batch
                       2131: 0.000
Loss after mini-batch
                       2141: 0.000
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.000
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch 2181: 0.000
```

```
Loss after mini-batch 2191: 0.000
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
                       2241: 0.001
Loss after mini-batch
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.000
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.000
                       2291: 0.000
Loss after mini-batch
Loss after mini-batch
                       2301: 0.000
                       2311: 0.001
Loss after mini-batch
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.000
                       2361: 0.001
Loss after mini-batch
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.000
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.000
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.000
Loss after mini-batch
                       2431: 0.000
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.000
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.000
Loss after mini-batch
                       2531: 0.000
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.000
Loss after mini-batch
                       2561: 0.001
                       2571: 0.002
Loss after mini-batch
Loss after mini-batch
                       2581: 0.001
                       2591: 0.001
Loss after mini-batch
Loss after mini-batch
                       2601: 0.001
                       2611: 0.001
Loss after mini-batch
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch 2661: 0.001
```

```
Loss after mini-batch 2671: 0.001
Loss after mini-batch 2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.000
Loss after mini-batch 2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch 2731: 0.002
Loss after mini-batch 2741: 0.001
Loss after mini-batch 2751: 0.000
Loss after mini-batch
                       2761: 0.001
                       2771: 0.000
Loss after mini-batch
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.000
Starting epoch 37
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.000
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.000
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.000
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.001
Loss after mini-batch
                        151: 0.000
Loss after mini-batch
                        161: 0.001
Loss after mini-batch
                        171: 0.001
Loss after mini-batch
                        181: 0.001
Loss after mini-batch
                        191: 0.001
Loss after mini-batch
                        201: 0.001
Loss after mini-batch
                        211: 0.001
Loss after mini-batch
                        221: 0.000
Loss after mini-batch
                        231: 0.001
Loss after mini-batch
                        241: 0.001
Loss after mini-batch
                        251: 0.001
Loss after mini-batch
                        261: 0.001
Loss after mini-batch
                        271: 0.000
Loss after mini-batch
                        281: 0.001
Loss after mini-batch
                        291: 0.001
Loss after mini-batch
                        301: 0.001
Loss after mini-batch
                        311: 0.001
```

Loss	${\tt after}$	mini-batch	321:	0.002
Loss	${\tt after}$	mini-batch	331:	0.002
Loss	${\tt after}$	mini-batch	341:	0.001
Loss	${\tt after}$	mini-batch	351:	0.000
Loss	${\tt after}$	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.000
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.002
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.000
Loss	after	mini-batch	431:	0.000
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.000
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.000
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.000
Loss	after	mini-batch	581:	0.000
Loss	after	mini-batch	591:	0.000
Loss	after	mini-batch	601:	0.000
Loss	after	mini-batch	611:	0.000
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.000
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.000
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.000
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.000
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.000
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.000

Loss	after	${\tt mini-batch}$	801:	0.000
Loss	after	${\tt mini-batch}$	811:	0.001
Loss	after	${\tt mini-batch}$	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.000
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.000
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.000
Loss	after	mini-batch	911:	0.002
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.000
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.000
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.000
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.001
Loss	after	mini-batch	1081:	0.001
Loss	after	mini-batch	1091:	0.001
Loss	after	mini-batch	1101:	0.000
Loss	after	mini-batch	1111:	0.000
Loss	after	mini-batch	1121:	0.000
Loss	after	mini-batch	1131:	0.001
Loss	after	mini-batch	1141:	0.001
	after	mini-batch		0.001
	after	mini-batch	1161:	0.002
Loss	after	mini-batch	1171:	0.000
Loss	after	mini-batch	1181:	0.000
Loss	after	mini-batch	1191:	0.001
Loss	after	mini-batch	1201:	0.000
Loss	after	mini-batch	1211:	0.001
	after	mini-batch	1221:	0.000
	after	mini-batch	1231:	
	after	mini-batch	1241:	0.001
	after	mini-batch	1251:	0.001
Loss	after	mini-batch	1261:	
Loss	_	mini-batch	1271:	
	001			0.001

```
1281: 0.001
Loss after mini-batch
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.000
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.000
Loss after mini-batch
                       1391: 0.001
                       1401: 0.001
Loss after mini-batch
Loss after mini-batch
                       1411: 0.000
Loss after mini-batch
                       1421: 0.000
Loss after mini-batch
                       1431: 0.000
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.000
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.000
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.000
Loss after mini-batch
                       1571: 0.000
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.000
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.000
Loss after mini-batch
                       1651: 0.001
                       1661: 0.000
Loss after mini-batch
Loss after mini-batch
                       1671: 0.000
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.000
Loss after mini-batch
                       1741: 0.000
Loss after mini-batch 1751: 0.001
```

```
1761: 0.001
Loss after mini-batch
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.000
Loss after mini-batch
                       1861: 0.000
Loss after mini-batch
                       1871: 0.001
                       1881: 0.000
Loss after mini-batch
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.000
                       1931: 0.001
Loss after mini-batch
Loss after mini-batch
                       1941: 0.000
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.000
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.000
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.000
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.000
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.000
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch 2221: 0.001
Loss after mini-batch 2231: 0.001
```

```
Loss after mini-batch 2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
                       2291: 0.001
Loss after mini-batch
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.000
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
                       2361: 0.001
Loss after mini-batch
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
                       2411: 0.002
Loss after mini-batch
Loss after mini-batch
                       2421: 0.000
Loss after mini-batch
                       2431: 0.000
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.000
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.000
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.000
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.000
Loss after mini-batch
                       2591: 0.000
Loss after mini-batch
                       2601: 0.000
Loss after mini-batch
                       2611: 0.000
                       2621: 0.001
Loss after mini-batch
Loss after mini-batch
                       2631: 0.000
                       2641: 0.001
Loss after mini-batch
Loss after mini-batch
                       2651: 0.001
                       2661: 0.000
Loss after mini-batch
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.000
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch 2711: 0.001
```

Loss	after	mini-batch	2721:	0.000
Loss	after	mini-batch	2731:	0.001
Loss	after	mini-batch	2741:	0.001
Loss	after	mini-batch	2751:	0.001
Loss	after	mini-batch	2761:	0.000
Loss	after	mini-batch	2771:	0.002
Loss	after	mini-batch	2781:	0.001
Loss	after	mini-batch	2791:	0.001
Loss	after	mini-batch	2801:	0.000
Loss	after	mini-batch	2811:	0.001
Start	ting e	poch 38		
Loss	after	mini-batch	1:	0.000
Loss	after	mini-batch	11:	0.000
Loss	after	mini-batch	21:	0.001
Loss	after	mini-batch	31:	0.001
Loss	after	mini-batch	41:	0.000
Loss	after	mini-batch	51:	0.001
Loss	after	mini-batch	61:	0.001
Loss	after	mini-batch	71:	0.000
Loss	after	mini-batch	81:	0.001
Loss	after	mini-batch	91:	0.001
Loss	after	mini-batch	101:	0.001
Loss	after	mini-batch	111:	0.000
Loss	after	mini-batch	121:	0.000
Loss	after	mini-batch	131:	0.001
Loss	after	mini-batch	141:	0.001
Loss	after	mini-batch	151:	0.000
Loss	after	mini-batch	161:	0.001
Loss	after	mini-batch	171:	0.001
Loss	after	mini-batch	181:	0.000
Loss	after	mini-batch	191:	0.000
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.000
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.000
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.000
Loss	after	mini-batch	331:	0.000
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.000
Loss	after	mini-batch	361:	0.001

Loss	after	mini-batch	371:	0.001
Loss	${\tt after}$	mini-batch	381:	0.000
Loss	${\tt after}$	mini-batch	391:	0.000
Loss	${\tt after}$	mini-batch	401:	0.001
Loss	${\tt after}$	mini-batch	411:	0.001
Loss	${\tt after}$	mini-batch	421:	0.001
Loss	${\tt after}$	mini-batch	431:	0.000
Loss	${\tt after}$	mini-batch	441:	0.001
Loss	${\tt after}$	mini-batch	451:	0.002
Loss	${\tt after}$	mini-batch	461:	0.001
Loss	${\tt after}$	mini-batch	471:	0.001
Loss	${\tt after}$	mini-batch	481:	0.001
Loss	${\tt after}$	mini-batch	491:	0.000
Loss	${\tt after}$	mini-batch	501:	0.001
Loss	${\tt after}$	mini-batch	511:	0.000
Loss	${\tt after}$	mini-batch	521:	0.001
Loss	${\tt after}$	mini-batch	531:	0.001
Loss	${\tt after}$	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	${\tt after}$	mini-batch	591:	0.000
Loss	${\tt after}$	mini-batch	601:	0.000
Loss	${\tt after}$	mini-batch	611:	0.000
Loss	after	mini-batch	621:	0.000
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.000
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.000
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.000
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.000
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.000
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.000
Loss	after	mini-batch	831:	0.001
Loss	${\tt after}$	mini-batch	841:	0.001

Loss	after	${\tt mini-batch}$	851:	0.001
Loss	after	${\tt mini-batch}$	861:	0.000
Loss	after	mini-batch	871:	0.000
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.000
Loss	after	mini-batch	921:	0.000
Loss	after	mini-batch	931:	0.000
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.002
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.000
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.000
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.000
Loss	after	mini-batch	1051:	0.000
Loss	after	mini-batch	1061:	0.000
Loss	after	mini-batch	1071:	0.001
Loss	after	mini-batch	1081:	0.001
Loss	after	mini-batch	1091:	0.001
Loss	after	mini-batch	1101:	0.001
Loss	after	mini-batch	1111:	0.001
Loss	after	mini-batch	1121:	0.001
Loss	after	mini-batch	1131:	0.001
Loss	after	mini-batch	1141:	0.001
Loss	after	mini-batch	1151:	0.001
Loss	after	mini-batch	1161:	0.001
Loss	after	mini-batch	1171:	0.001
Loss	after	mini-batch	1181:	0.001
Loss	after	mini-batch	1191:	0.001
Loss	after	mini-batch		0.000
	after	mini-batch	1211:	0.001
	after	mini-batch	1221:	0.001
Loss	after	mini-batch	1231:	0.001
Loss	after	mini-batch	1241:	0.000
Loss	after	mini-batch	1251:	0.001
Loss	after	mini-batch	1261:	0.001
	after	mini-batch	1271:	0.000
	after	mini-batch	1281:	
	after	mini-batch	1291:	0.001
	after	mini-batch	1301:	
Loss	after	mini-batch	1311:	
Loss	_	mini-batch	1321:	
	001			

```
1331: 0.000
Loss after mini-batch
Loss after mini-batch
                       1341: 0.000
Loss after mini-batch
                       1351: 0.000
Loss after mini-batch
                       1361: 0.000
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.000
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.000
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.000
Loss after mini-batch
                       1431: 0.000
Loss after mini-batch
                       1441: 0.000
                       1451: 0.000
Loss after mini-batch
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.000
Loss after mini-batch
                       1481: 0.000
Loss after mini-batch
                       1491: 0.000
                       1501: 0.001
Loss after mini-batch
Loss after mini-batch
                       1511: 0.000
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.000
Loss after mini-batch
                       1571: 0.000
Loss after mini-batch
                       1581: 0.000
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.000
Loss after mini-batch
                       1631: 0.000
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.000
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.000
Loss after mini-batch
                       1701: 0.001
                       1711: 0.001
Loss after mini-batch
Loss after mini-batch
                       1721: 0.001
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.000
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                      1801: 0.001
```

```
1811: 0.000
Loss after mini-batch
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.000
Loss after mini-batch
                       1861: 0.000
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.000
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.000
Loss after mini-batch
                       1921: 0.001
                       1931: 0.001
Loss after mini-batch
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
                       1981: 0.000
Loss after mini-batch
Loss after mini-batch
                       1991: 0.000
Loss after mini-batch
                       2001: 0.000
Loss after mini-batch
                       2011: 0.000
Loss after mini-batch
                       2021: 0.000
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.000
                       2071: 0.000
Loss after mini-batch
Loss after mini-batch
                       2081: 0.000
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.000
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.002
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.000
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.000
Loss after mini-batch
                       2261: 0.000
Loss after mini-batch 2271: 0.001
Loss after mini-batch 2281: 0.001
```

```
2291: 0.001
Loss after mini-batch
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.000
Loss after mini-batch
                       2331: 0.001
                       2341: 0.000
Loss after mini-batch
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.000
Loss after mini-batch
                       2401: 0.001
                       2411: 0.001
Loss after mini-batch
Loss after mini-batch
                       2421: 0.000
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
                       2461: 0.000
Loss after mini-batch
Loss after mini-batch
                       2471: 0.000
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.000
Loss after mini-batch
                       2521: 0.000
Loss after mini-batch
                       2531: 0.000
Loss after mini-batch
                       2541: 0.000
Loss after mini-batch
                       2551: 0.000
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.000
Loss after mini-batch
                       2581: 0.000
Loss after mini-batch
                       2591: 0.000
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.000
Loss after mini-batch
                       2641: 0.000
Loss after mini-batch
                       2651: 0.000
Loss after mini-batch
                       2661: 0.001
                       2671: 0.000
Loss after mini-batch
Loss after mini-batch
                       2681: 0.000
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.000
Loss after mini-batch
                       2741: 0.000
Loss after mini-batch
                       2751: 0.000
Loss after mini-batch 2761: 0.001
```

Loss	after	mini-batch	2771:	0.001
Loss	after	mini-batch	2781:	0.001
Loss	after	mini-batch	2791:	0.000
Loss	after	mini-batch	2801:	0.001
Loss	after	mini-batch	2811:	0.000
Start	ting e	poch 39		
Loss	after	mini-batch	1:	0.000
Loss	after	mini-batch	11:	0.001
Loss	after	mini-batch	21:	0.001
Loss	after	mini-batch	31:	0.001
Loss	after	mini-batch	41:	0.000
Loss	after	mini-batch	51:	0.001
Loss	after	mini-batch	61:	0.001
Loss	after	mini-batch	71:	0.001
Loss	after	mini-batch	81:	0.002
Loss	after	mini-batch	91:	0.001
Loss	after	mini-batch	101:	0.001
Loss	after	mini-batch	111:	0.001
Loss	after	mini-batch	121:	0.002
Loss	after	mini-batch	131:	0.001
Loss	after	mini-batch	141:	0.000
Loss	after	mini-batch	151:	0.000
Loss	after	mini-batch	161:	0.000
Loss	after	mini-batch	171:	0.001
Loss	after	mini-batch	181:	0.001
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.000
Loss	after	mini-batch	211:	0.000
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.000
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.000
Loss	after	mini-batch	361:	0.000
Loss	after	mini-batch	371:	0.000
Loss	after	mini-batch	381:	0.000
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001

Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.000
Loss	after	mini-batch	441:	0.002
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.000
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	${\tt mini-batch}$	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	${\tt mini-batch}$	531:	0.001
Loss	after	${\tt mini-batch}$	541:	0.001
Loss	after	${\tt mini-batch}$	551:	0.001
Loss	after	${\tt mini-batch}$	561:	0.001
Loss	after	${\tt mini-batch}$	571:	0.001
Loss	after	${\tt mini-batch}$	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	${\tt mini-batch}$	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.000
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.000
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.000
Loss	after	mini-batch	801:	0.000
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.000
Loss	after	mini-batch	891:	0.001

Loss	${\tt after}$	mini-batch	901:	0.000
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	${\tt after}$	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.000
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.000
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.000
Loss	after	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.000
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.002
Loss	after	mini-batch	1071:	0.001
Loss	after	mini-batch	1081:	0.001
Loss	after	mini-batch	1091:	0.001
Loss	after	mini-batch	1101:	0.001
Loss	after	mini-batch	1111:	0.000
Loss	after	mini-batch	1121:	0.001
Loss	after	mini-batch	1131:	0.000
Loss	after	mini-batch	1141:	0.000
Loss	after	mini-batch	1151:	0.001
Loss	after	mini-batch	1161:	0.001
Loss	after	mini-batch	1171:	0.000
Loss	after	mini-batch	1181:	0.001
Loss	after	mini-batch	1191:	0.001
Loss	after	mini-batch	1201:	0.002
Loss	after	mini-batch	1211:	0.001
Loss	after	mini-batch	1221:	0.001
Loss	after	mini-batch	1231:	0.000
Loss	after	mini-batch	1241:	0.000
Loss	after	mini-batch	1251:	0.000
Loss	after	mini-batch	1261:	0.001
Loss	after	mini-batch	1271:	0.000
Loss	after	mini-batch	1281:	0.001
Loss	after	mini-batch	1291:	0.000
Loss	after	mini-batch	1301:	0.000
Loss	after	mini-batch	1311:	0.001
Loss	after	mini-batch	1321:	0.000
Loss	after	mini-batch	1331:	0.001
Loss	after	mini-batch	1341:	0.001
Loss	after	mini-batch	1351:	0.000
Loss	after	mini-batch	1361:	0.000
Loss	after	mini-batch	1371:	0.000
порр	OT OCT	mini battii	1011.	0.000

```
1381: 0.001
Loss after mini-batch
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.000
Loss after mini-batch
                       1491: 0.001
                       1501: 0.001
Loss after mini-batch
Loss after mini-batch
                       1511: 0.000
Loss after mini-batch
                       1521: 0.000
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.000
                       1551: 0.000
Loss after mini-batch
Loss after mini-batch
                       1561: 0.000
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.000
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.000
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.000
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.000
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.002
Loss after mini-batch
                       1741: 0.000
Loss after mini-batch
                       1751: 0.001
                       1761: 0.000
Loss after mini-batch
Loss after mini-batch
                       1771: 0.000
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.000
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.000
Loss after mini-batch
                      1851: 0.001
```

```
1861: 0.001
Loss after mini-batch
Loss after mini-batch
                       1871: 0.000
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.000
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.000
                       1981: 0.001
Loss after mini-batch
Loss after mini-batch
                       1991: 0.000
Loss after mini-batch
                       2001: 0.000
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.000
                       2031: 0.001
Loss after mini-batch
Loss after mini-batch
                       2041: 0.000
Loss after mini-batch
                       2051: 0.000
Loss after mini-batch
                       2061: 0.000
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.000
Loss after mini-batch
                       2091: 0.000
Loss after mini-batch
                       2101: 0.000
Loss after mini-batch
                       2111: 0.001
                       2121: 0.000
Loss after mini-batch
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.000
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.000
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
                       2261: 0.001
Loss after mini-batch
                       2271: 0.002
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
Loss after mini-batch
                       2291: 0.000
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch 2331: 0.000
```

```
Loss after mini-batch 2341: 0.001
Loss after mini-batch
                       2351: 0.000
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
                       2391: 0.001
Loss after mini-batch
Loss after mini-batch
                       2401: 0.000
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.000
Loss after mini-batch
                       2451: 0.001
                       2461: 0.000
Loss after mini-batch
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
                       2511: 0.001
Loss after mini-batch
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.002
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.000
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.002
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.000
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.002
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch 2811: 0.001
```

Start		poch 40		
Loss	after	mini-batch	1:	0.000
Loss	after	mini-batch	11:	0.001
Loss	after	mini-batch	21:	0.000
Loss	after	${\tt mini-batch}$	31:	0.002
Loss	after	${\tt mini-batch}$	41:	0.001
Loss	after	${\tt mini-batch}$	51:	0.001
Loss	after	${\tt mini-batch}$	61:	0.001
Loss	after	${\tt mini-batch}$	71:	0.001
Loss	after	${\tt mini-batch}$	81:	0.001
Loss	after	${\tt mini-batch}$	91:	0.001
Loss	after	${\tt mini-batch}$	101:	0.001
Loss	after	${\tt mini-batch}$	111:	0.001
Loss	after	${\tt mini-batch}$	121:	0.001
Loss	after	${\tt mini-batch}$	131:	0.000
Loss	after	${\tt mini-batch}$	141:	0.000
Loss	after	${\tt mini-batch}$	151:	0.000
Loss	after	mini-batch	161:	0.000
Loss	after	mini-batch	171:	0.001
Loss	after	mini-batch	181:	0.001
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.000
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.000
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.000
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch		0.001
	_			0.001
	after			
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch		0.001
Loss	after		421:	0.001
Loss		mini-batch	431:	0.000
Loss		mini-batch		0.001
		mini-batch		
Loss		mini-batch		
		·		

Loss	after	${\tt mini-batch}$	471:	0.001
Loss	after	${\tt mini-batch}$	481:	0.001
Loss	after	${\tt mini-batch}$	491:	0.000
Loss	after	${\tt mini-batch}$	501:	0.000
Loss	after	${\tt mini-batch}$	511:	0.001
Loss	after	${\tt mini-batch}$	521:	0.002
Loss	after	${\tt mini-batch}$	531:	0.001
Loss	after	${\tt mini-batch}$	541:	0.001
Loss	after	${\tt mini-batch}$	551:	0.001
Loss	after	${\tt mini-batch}$	561:	0.001
Loss	after	${\tt mini-batch}$	571:	0.001
Loss	after	${\tt mini-batch}$	581:	0.000
Loss	after	${\tt mini-batch}$	591:	0.001
Loss	after	${\tt mini-batch}$	601:	0.000
Loss	after	${\tt mini-batch}$	611:	0.001
Loss	after	${\tt mini-batch}$	621:	0.001
Loss	after	${\tt mini-batch}$	631:	0.001
Loss	after	${\tt mini-batch}$	641:	0.001
Loss	after	${\tt mini-batch}$	651:	0.001
Loss	after	${\tt mini-batch}$	661:	0.001
Loss	after	${\tt mini-batch}$	671:	0.001
Loss	after	${\tt mini-batch}$	681:	0.001
Loss	after	${\tt mini-batch}$	691:	0.001
Loss	after	${\tt mini-batch}$	701:	0.001
Loss	after	${\tt mini-batch}$	711:	0.001
Loss	after	${\tt mini-batch}$	721:	0.001
Loss	after	${\tt mini-batch}$	731:	0.001
Loss	after	${\tt mini-batch}$	741:	0.000
Loss	after	${\tt mini-batch}$	751:	0.001
Loss	after	${\tt mini-batch}$	761:	0.001
Loss	after	${\tt mini-batch}$	771:	0.001
Loss	after	${\tt mini-batch}$	781:	0.001
Loss	after	${\tt mini-batch}$	791:	0.001
Loss	after	${\tt mini-batch}$	801:	0.000
Loss	after	${\tt mini-batch}$	811:	0.000
Loss	after	${\tt mini-batch}$	821:	0.001
Loss	after	${\tt mini-batch}$	831:	0.001
Loss	after	${\tt mini-batch}$	841:	0.001
Loss	after	${\tt mini-batch}$	851:	0.001
Loss	after	${\tt mini-batch}$	861:	0.001
Loss	after	${\tt mini-batch}$	871:	0.000
Loss	after	${\tt mini-batch}$	881:	0.001
Loss	after	${\tt mini-batch}$	891:	0.001
Loss	after	${\tt mini-batch}$	901:	0.001
Loss	after	${\tt mini-batch}$	911:	0.000
Loss	after	${\tt mini-batch}$	921:	0.000
Loss	after	${\tt mini-batch}$	931:	0.001
Loss	after	${\tt mini-batch}$	941:	0.000

```
Loss after mini-batch
                        951: 0.001
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.000
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.000
Loss after mini-batch
                       1041: 0.000
                       1051: 0.000
Loss after mini-batch
Loss after mini-batch
                       1061: 0.001
                       1071: 0.001
Loss after mini-batch
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.000
Loss after mini-batch
                       1121: 0.000
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.000
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.000
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.000
Loss after mini-batch
                       1281: 0.000
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.000
Loss after mini-batch
                       1321: 0.000
                       1331: 0.001
Loss after mini-batch
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.000
Loss after mini-batch
                       1401: 0.000
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch 1421: 0.001
```

```
1431: 0.001
Loss after mini-batch
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.000
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.000
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.000
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
                       1551: 0.001
Loss after mini-batch
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.000
                       1601: 0.001
Loss after mini-batch
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.000
Loss after mini-batch
                       1631: 0.000
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.000
Loss after mini-batch
                       1721: 0.000
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.000
Loss after mini-batch
                       1801: 0.001
                       1811: 0.001
Loss after mini-batch
Loss after mini-batch
                       1821: 0.001
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.000
Loss after mini-batch
                      1901: 0.001
```

```
1911: 0.001
Loss after mini-batch
Loss after mini-batch
                       1921: 0.000
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.000
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.002
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.000
Loss after mini-batch
                       2021: 0.001
                       2031: 0.000
Loss after mini-batch
Loss after mini-batch
                       2041: 0.002
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.002
Loss after mini-batch
                       2071: 0.001
                       2081: 0.001
Loss after mini-batch
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.000
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.000
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.002
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
Loss after mini-batch
                       2341: 0.000
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch 2381: 0.001
```

```
Loss after mini-batch 2391: 0.000
Loss after mini-batch 2401: 0.001
Loss after mini-batch 2411: 0.002
Loss after mini-batch 2421: 0.002
Loss after mini-batch 2431: 0.001
Loss after mini-batch 2441: 0.001
Loss after mini-batch 2451: 0.001
Loss after mini-batch 2461: 0.001
Loss after mini-batch 2471: 0.001
Loss after mini-batch
                      2481: 0.001
                      2491: 0.001
Loss after mini-batch
Loss after mini-batch
                      2501: 0.001
Loss after mini-batch
                      2511: 0.001
Loss after mini-batch
                      2521: 0.000
Loss after mini-batch
                      2531: 0.002
Loss after mini-batch
                      2541: 0.001
Loss after mini-batch
                      2551: 0.000
Loss after mini-batch
                      2561: 0.001
Loss after mini-batch
                      2571: 0.000
Loss after mini-batch 2581: 0.001
Loss after mini-batch
                      2591: 0.001
Loss after mini-batch
                      2601: 0.001
Loss after mini-batch 2611: 0.001
Loss after mini-batch
                      2621: 0.001
Loss after mini-batch
                      2631: 0.000
Loss after mini-batch
                      2641: 0.001
Loss after mini-batch
                      2651: 0.001
Loss after mini-batch
                      2661: 0.001
Loss after mini-batch
                      2671: 0.000
Loss after mini-batch
                      2681: 0.000
Loss after mini-batch
                      2691: 0.001
Loss after mini-batch
                      2701: 0.000
Loss after mini-batch
                      2711: 0.000
Loss after mini-batch 2721: 0.001
Loss after mini-batch 2731: 0.000
Loss after mini-batch 2741: 0.000
Loss after mini-batch 2751: 0.001
Loss after mini-batch
                      2761: 0.001
Loss after mini-batch
                      2771: 0.001
Loss after mini-batch
                      2781: 0.001
Loss after mini-batch
                      2791: 0.001
Loss after mini-batch
                      2801: 0.000
Loss after mini-batch
                      2811: 0.000
Starting epoch 41
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.000
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                        31: 0.000
```

Loss	${\tt after}$	${\tt mini-batch}$	41:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	51:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	61:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	71:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	81:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	91:	0.001
Loss	after	${\tt mini-batch}$	101:	0.001
Loss	after	${\tt mini-batch}$	111:	0.001
Loss	after	mini-batch	121:	0.001
Loss	after	mini-batch	131:	0.002
Loss	after	mini-batch	141:	0.001
Loss	after	mini-batch	151:	0.001
Loss	after	mini-batch	161:	0.001
Loss	after	mini-batch	171:	0.001
Loss	after	mini-batch	181:	0.002
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.000
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.000
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.000
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.000
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.000
Loss	after	mini-batch	511:	0.000

Loss	after	${\tt mini-batch}$	521:	0.001
Loss	after	${\tt mini-batch}$	531:	0.002
Loss	after	${\tt mini-batch}$	541:	0.001
Loss	after	${\tt mini-batch}$	551:	0.000
Loss	after	${\tt mini-batch}$	561:	0.001
Loss	after	${\tt mini-batch}$	571:	0.001
Loss	after	${\tt mini-batch}$	581:	0.000
Loss	after	${\tt mini-batch}$	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.000
Loss	after	mini-batch	641:	0.000
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.000
Loss	after	mini-batch	671:	0.000
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.000
Loss	after	mini-batch	761:	0.002
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.000
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.000
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.000
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.000
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.000
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.000
Loss	after	mini-batch	971:	0.000
Loss	after	mini-batch	981:	0.000
Loss	after	mini-batch	991:	0.000

```
1001: 0.001
Loss after mini-batch
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.000
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
                       1121: 0.001
Loss after mini-batch
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
                       1171: 0.001
Loss after mini-batch
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.000
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.000
Loss after mini-batch
                       1231: 0.000
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.000
Loss after mini-batch
                       1341: 0.000
                       1351: 0.001
Loss after mini-batch
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
                       1381: 0.001
Loss after mini-batch
Loss after mini-batch
                       1391: 0.001
                       1401: 0.001
Loss after mini-batch
                       1411: 0.000
Loss after mini-batch
Loss after mini-batch
                       1421: 0.000
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.000
Loss after mini-batch
                       1451: 0.000
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch 1471: 0.001
```

```
1481: 0.000
Loss after mini-batch
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.000
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.000
Loss after mini-batch
                       1591: 0.001
                       1601: 0.001
Loss after mini-batch
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
                       1651: 0.001
Loss after mini-batch
Loss after mini-batch
                       1661: 0.000
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.000
Loss after mini-batch
                       1781: 0.000
Loss after mini-batch
                       1791: 0.000
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.000
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.000
Loss after mini-batch
                       1851: 0.000
                       1861: 0.001
Loss after mini-batch
Loss after mini-batch
                       1871: 0.001
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.002
Loss after mini-batch
                       1931: 0.000
Loss after mini-batch
                       1941: 0.000
Loss after mini-batch 1951: 0.001
```

```
1961: 0.000
Loss after mini-batch
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
                       2011: 0.001
Loss after mini-batch
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.000
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.000
                       2081: 0.001
Loss after mini-batch
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.000
Loss after mini-batch
                       2121: 0.000
                       2131: 0.001
Loss after mini-batch
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.000
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.000
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.000
Loss after mini-batch
                       2261: 0.000
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.000
Loss after mini-batch
                       2331: 0.002
Loss after mini-batch
                       2341: 0.000
Loss after mini-batch
                       2351: 0.001
                       2361: 0.000
Loss after mini-batch
Loss after mini-batch
                       2371: 0.001
                       2381: 0.001
Loss after mini-batch
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.000
Loss after mini-batch 2421: 0.001
Loss after mini-batch 2431: 0.001
```

```
Loss after mini-batch 2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.000
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.000
                       2521: 0.001
Loss after mini-batch
Loss after mini-batch
                       2531: 0.001
                       2541: 0.001
Loss after mini-batch
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.002
Loss after mini-batch
                       2571: 0.000
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.002
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.000
                       2651: 0.000
Loss after mini-batch
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
                       2721: 0.001
Loss after mini-batch
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.000
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.000
Loss after mini-batch
                       2771: 0.001
                       2781: 0.001
Loss after mini-batch
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 42
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.001
```

Loss	after	mini-batch	91:	0.001
Loss	after	mini-batch	101:	0.001
Loss	after	mini-batch	111:	0.001
Loss	after	mini-batch	121:	0.001
Loss	after	mini-batch	131:	0.001
Loss	after	mini-batch	141:	0.001
Loss	after	mini-batch	151:	0.001
Loss	after	mini-batch	161:	0.001
Loss	after	${\tt mini-batch}$	171:	0.001
Loss	after	${\tt mini-batch}$	181:	0.001
Loss	after	${\tt mini-batch}$	191:	0.001
Loss	after	${\tt mini-batch}$	201:	0.001
Loss	after	${\tt mini-batch}$	211:	0.001
Loss	after	${\tt mini-batch}$	221:	0.000
Loss	after	${\tt mini-batch}$	231:	0.001
Loss	after	${\tt mini-batch}$	241:	0.000
Loss	after	${\tt mini-batch}$	251:	0.001
Loss	after	${\tt mini-batch}$	261:	0.001
Loss	after	${\tt mini-batch}$	271:	0.001
Loss	after	${\tt mini-batch}$	281:	0.001
Loss	after	${\tt mini-batch}$	291:	0.001
Loss	after	${\tt mini-batch}$	301:	0.000
Loss	after	${\tt mini-batch}$	311:	0.000
Loss	after	${\tt mini-batch}$	321:	0.001
Loss	after	${\tt mini-batch}$	331:	0.001
Loss	after	${\tt mini-batch}$	341:	0.000
Loss	after	${\tt mini-batch}$	351:	0.000
Loss	after	${\tt mini-batch}$	361:	0.001
Loss	after	${\tt mini-batch}$	371:	0.001
Loss	after	${\tt mini-batch}$	381:	0.001
Loss	after	${\tt mini-batch}$	391:	0.001
Loss	after	${\tt mini-batch}$	401:	0.001
Loss	after	${\tt mini-batch}$	411:	0.001
Loss	after	${\tt mini-batch}$	421:	0.000
Loss	after	${\tt mini-batch}$	431:	0.001
Loss	after	${\tt mini-batch}$	441:	0.001
Loss	after	${\tt mini-batch}$	451:	0.000
Loss	after	${\tt mini-batch}$	461:	0.001
Loss	after	${\tt mini-batch}$	471:	0.000
Loss	after	${\tt mini-batch}$	481:	0.001
Loss	after	${\tt mini-batch}$	491:	0.001
Loss	after	${\tt mini-batch}$	501:	0.001
Loss	after	${\tt mini-batch}$	511:	0.001
Loss	after	${\tt mini-batch}$	521:	0.002
Loss	after	${\tt mini-batch}$	531:	0.001
Loss	after	${\tt mini-batch}$	541:	0.001
Loss	after	${\tt mini-batch}$	551:	0.000
Loss	after	${\tt mini-batch}$	561:	0.000

Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.000
Loss	after	mini-batch	611:	0.000
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.000
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	${\tt mini-batch}$	661:	0.001
Loss	after	${\tt mini-batch}$	671:	0.001
Loss	after	${\tt mini-batch}$	681:	0.001
Loss	after	${\tt mini-batch}$	691:	0.001
Loss	after	${\tt mini-batch}$	701:	0.000
Loss	after	${\tt mini-batch}$	711:	0.001
Loss	after	${\tt mini-batch}$	721:	0.000
Loss	after	${\tt mini-batch}$	731:	0.001
Loss	after	${\tt mini-batch}$	741:	0.001
Loss	after	${\tt mini-batch}$	751:	0.000
Loss	after	${\tt mini-batch}$	761:	0.000
Loss	after	${\tt mini-batch}$	771:	0.001
Loss	after	${\tt mini-batch}$	781:	0.001
Loss	after	${\tt mini-batch}$	791:	0.001
Loss	after	${\tt mini-batch}$	801:	0.000
Loss	after	${\tt mini-batch}$	811:	0.000
Loss	after	${\tt mini-batch}$	821:	0.001
Loss	after	${\tt mini-batch}$	831:	0.001
Loss	after	${\tt mini-batch}$	841:	0.001
Loss	after	${\tt mini-batch}$	851:	0.000
Loss	after	${\tt mini-batch}$	861:	0.001
Loss	after	${\tt mini-batch}$	871:	0.000
Loss	after	${\tt mini-batch}$	881:	0.000
Loss	after	${\tt mini-batch}$	891:	0.001
Loss	after	${\tt mini-batch}$	901:	0.001
Loss	after	${\tt mini-batch}$	911:	0.001
Loss	after	${\tt mini-batch}$	921:	0.001
Loss	after	${\tt mini-batch}$	931:	0.001
Loss	after	${\tt mini-batch}$	941:	0.001
Loss	after	${\tt mini-batch}$	951:	0.000
Loss	after	${\tt mini-batch}$	961:	0.000
Loss	after	${\tt mini-batch}$	971:	0.000
Loss	after	${\tt mini-batch}$	981:	0.001
Loss	after	${\tt mini-batch}$	991:	0.001
Loss	after	${\tt mini-batch}$	1001:	0.002
Loss	after	mini-batch	1011:	0.001
Loss	after	${\tt mini-batch}$	1021:	0.001
Loss	after	${\tt mini-batch}$	1031:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	1041:	0.001

```
1051: 0.000
Loss after mini-batch
Loss after mini-batch
                       1061: 0.000
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.000
Loss after mini-batch
                       1151: 0.000
Loss after mini-batch
                       1161: 0.000
                       1171: 0.000
Loss after mini-batch
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.002
Loss after mini-batch
                       1201: 0.002
Loss after mini-batch
                       1211: 0.000
                       1221: 0.000
Loss after mini-batch
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.000
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.000
Loss after mini-batch
                       1321: 0.000
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.000
Loss after mini-batch
                       1351: 0.000
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.000
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
                       1431: 0.000
Loss after mini-batch
Loss after mini-batch
                       1441: 0.001
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
Loss after mini-batch
                       1481: 0.000
Loss after mini-batch
                       1491: 0.001
                       1501: 0.001
Loss after mini-batch
Loss after mini-batch
                       1511: 0.000
Loss after mini-batch
                      1521: 0.001
```

```
1531: 0.001
Loss after mini-batch
Loss after mini-batch
                       1541: 0.002
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.000
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.000
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.000
Loss after mini-batch
                       1641: 0.001
                       1651: 0.001
Loss after mini-batch
Loss after mini-batch
                       1661: 0.000
Loss after mini-batch
                       1671: 0.000
Loss after mini-batch
                       1681: 0.000
Loss after mini-batch
                       1691: 0.001
                       1701: 0.001
Loss after mini-batch
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.002
Loss after mini-batch
                       1751: 0.000
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.000
Loss after mini-batch
                       1781: 0.000
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.000
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.000
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.000
Loss after mini-batch
                       1901: 0.001
                       1911: 0.001
Loss after mini-batch
Loss after mini-batch
                       1921: 0.001
                       1931: 0.001
Loss after mini-batch
                       1941: 0.000
Loss after mini-batch
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.000
Loss after mini-batch
                       2001: 0.000
```

```
Loss after mini-batch 2011: 0.000
Loss after mini-batch
                       2021: 0.000
Loss after mini-batch
                       2031: 0.000
Loss after mini-batch
                       2041: 0.000
Loss after mini-batch
                       2051: 0.000
                       2061: 0.001
Loss after mini-batch
Loss after mini-batch
                       2071: 0.000
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.000
Loss after mini-batch
                       2101: 0.000
                       2111: 0.001
Loss after mini-batch
Loss after mini-batch
                       2121: 0.001
                       2131: 0.000
Loss after mini-batch
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
                       2181: 0.001
Loss after mini-batch
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.000
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.000
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.000
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
Loss after mini-batch
                       2441: 0.002
Loss after mini-batch
                       2451: 0.000
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch 2471: 0.002
Loss after mini-batch 2481: 0.001
```

```
Loss after mini-batch 2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.000
                       2571: 0.001
Loss after mini-batch
Loss after mini-batch
                       2581: 0.001
                       2591: 0.001
Loss after mini-batch
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
                       2691: 0.000
Loss after mini-batch
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.000
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.000
Loss after mini-batch
                       2761: 0.000
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.002
Loss after mini-batch
                       2801: 0.000
Loss after mini-batch
                       2811: 0.000
Starting epoch 43
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.002
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.000
Loss after mini-batch
                         51: 0.000
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.001
                         91: 0.000
Loss after mini-batch
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.000
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.000
```

Loss	${\tt after}$	${\tt mini-batch}$	141:	0.001
Loss	after	${\tt mini-batch}$	151:	0.001
Loss	after	${\tt mini-batch}$	161:	0.001
Loss	after	${\tt mini-batch}$	171:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	181:	0.001
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.002
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.000
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.000
Loss	after	mini-batch	291:	0.000
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.000
Loss	after	mini-batch	331:	0.000
Loss	after	mini-batch	341:	0.000
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.000
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.000
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.002
Loss	after	mini-batch	481:	0.000
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.000
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.000
Loss	after	mini-batch	531:	0.000
Loss	after	mini-batch	541:	0.000
Loss	after	mini-batch	551:	0.000
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.000
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001

Loss	after	${\tt mini-batch}$	621:	0.001
Loss	after	${\tt mini-batch}$	631:	0.002
Loss	after	${\tt mini-batch}$	641:	0.001
Loss	after	${\tt mini-batch}$	651:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	661:	0.001
Loss	after	mini-batch	671:	0.000
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.000
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.000
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.000
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.002
Loss	after	mini-batch	991:	0.001
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.001
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.000
Loss	after	mini-batch	1081:	0.001
Loss	after	mini-batch	1091:	0.000

```
1101: 0.001
Loss after mini-batch
Loss after mini-batch
                       1111: 0.001
Loss after mini-batch
                       1121: 0.001
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.000
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
                       1221: 0.001
Loss after mini-batch
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.000
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
                       1271: 0.001
Loss after mini-batch
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.000
Loss after mini-batch
                       1311: 0.000
Loss after mini-batch
                       1321: 0.000
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.000
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.000
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.000
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.000
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.000
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.000
                       1481: 0.001
Loss after mini-batch
Loss after mini-batch
                       1491: 0.001
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
Loss after mini-batch
                       1521: 0.000
Loss after mini-batch
                       1531: 0.000
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                      1571: 0.001
```

```
1581: 0.001
Loss after mini-batch
Loss after mini-batch
                       1591: 0.000
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.000
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.000
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.000
                       1701: 0.001
Loss after mini-batch
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
                       1751: 0.002
Loss after mini-batch
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.001
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.000
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.000
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.000
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
                       1931: 0.000
Loss after mini-batch
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
                       1961: 0.001
Loss after mini-batch
Loss after mini-batch
                       1971: 0.001
                       1981: 0.001
Loss after mini-batch
                       1991: 0.000
Loss after mini-batch
Loss after mini-batch
                       2001: 0.000
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch 2051: 0.000
```

```
Loss after mini-batch 2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
                       2111: 0.001
Loss after mini-batch
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.000
Loss after mini-batch
                       2151: 0.000
                       2161: 0.001
Loss after mini-batch
Loss after mini-batch
                       2171: 0.001
                       2181: 0.000
Loss after mini-batch
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
                       2231: 0.001
Loss after mini-batch
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.000
Loss after mini-batch
                       2261: 0.000
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.000
Loss after mini-batch
                       2361: 0.000
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.000
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.000
Loss after mini-batch 2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
                       2481: 0.001
Loss after mini-batch
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.000
Loss after mini-batch 2531: 0.001
```

```
Loss after mini-batch 2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.000
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.000
Loss after mini-batch
                       2611: 0.001
                       2621: 0.001
Loss after mini-batch
Loss after mini-batch
                       2631: 0.001
                       2641: 0.001
Loss after mini-batch
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.000
Loss after mini-batch
                       2691: 0.000
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.000
Loss after mini-batch
                       2721: 0.000
Loss after mini-batch 2731: 0.000
Loss after mini-batch
                       2741: 0.001
                       2751: 0.000
Loss after mini-batch
Loss after mini-batch 2761: 0.000
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.000
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 44
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.002
                         51: 0.001
Loss after mini-batch
Loss after mini-batch
                         61: 0.000
Loss after mini-batch
                         71: 0.000
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.000
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.000
Loss after mini-batch
                        171: 0.001
Loss after mini-batch
                        181: 0.000
```

Loss	after	mini-batch	191:	0.000
Loss	after	${\tt mini-batch}$	201:	0.001
Loss	after	${\tt mini-batch}$	211:	0.000
Loss	after	${\tt mini-batch}$	221:	0.001
Loss	after	${\tt mini-batch}$	231:	0.000
Loss	after	${\tt mini-batch}$	241:	0.001
Loss	after	${\tt mini-batch}$	251:	0.000
Loss	after	${\tt mini-batch}$	261:	0.001
Loss	after	${\tt mini-batch}$	271:	0.001
Loss	after	${\tt mini-batch}$	281:	0.001
Loss	after	${\tt mini-batch}$	291:	0.000
Loss	after	${\tt mini-batch}$	301:	0.001
Loss	after	${\tt mini-batch}$	311:	0.001
Loss	after	${\tt mini-batch}$	321:	0.001
Loss	after	${\tt mini-batch}$	331:	0.000
Loss	after	${\tt mini-batch}$	341:	0.000
Loss	after	${\tt mini-batch}$	351:	0.000
Loss	after	${\tt mini-batch}$	361:	0.000
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.000
Loss	after	mini-batch	391:	0.000
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.000
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.000
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.000
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.000
Loss	after	mini-batch	561:	0.002
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.000
Loss	after	mini-batch	601:	0.000
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.000
Loss	after	mini-batch	651:	
Loss	after	mini-batch	661:	0.001

Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.000
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.000
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.000
Loss	after	mini-batch	771:	0.000
Loss	after	mini-batch	781:	0.000
Loss	after	mini-batch	791:	0.000
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.001
Loss	after	mini-batch	821:	0.000
Loss	after	mini-batch	831:	0.000
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.000
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.001
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.000
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.000
Loss	after	mini-batch	991:	0.000
Loss	after	mini-batch	1001:	0.000
Loss	after	mini-batch	1011:	0.000
Loss	after	mini-batch	1021:	0.000
Loss	after	mini-batch	1031:	0.000
Loss	after	mini-batch	1041:	0.000
Loss	after	mini-batch	1051:	0.000
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.001
Loss	after	mini-batch	1081:	0.001
Loss	after	mini-batch	1091:	0.000
Loss	after	mini-batch	1101:	0.001
Loss	after	mini-batch	1111:	0.001
Loss	after	mini-batch	1121:	0.001
Loss	after	mini-batch	1131:	0.002
Loss	after	mini-batch	1141:	0.000
				2.300

```
1151: 0.001
Loss after mini-batch
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.000
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.000
Loss after mini-batch
                       1241: 0.000
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
                       1271: 0.001
Loss after mini-batch
Loss after mini-batch
                       1281: 0.000
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
                       1321: 0.000
Loss after mini-batch
Loss after mini-batch
                       1331: 0.000
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.002
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.000
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.000
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.000
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
                       1531: 0.000
Loss after mini-batch
Loss after mini-batch
                       1541: 0.000
                       1551: 0.000
Loss after mini-batch
                       1561: 0.000
Loss after mini-batch
Loss after mini-batch
                       1571: 0.000
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
                       1601: 0.001
Loss after mini-batch
Loss after mini-batch
                       1611: 0.000
Loss after mini-batch
                       1621: 0.002
```

```
1631: 0.001
Loss after mini-batch
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.000
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.000
Loss after mini-batch
                       1681: 0.000
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.000
Loss after mini-batch
                       1741: 0.000
                       1751: 0.001
Loss after mini-batch
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
                       1771: 0.000
Loss after mini-batch
                       1781: 0.001
Loss after mini-batch
                       1791: 0.000
                       1801: 0.000
Loss after mini-batch
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.000
Loss after mini-batch
                       1861: 0.002
Loss after mini-batch
                       1871: 0.000
Loss after mini-batch
                       1881: 0.000
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.000
Loss after mini-batch
                       1961: 0.000
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.000
Loss after mini-batch
                       1991: 0.000
Loss after mini-batch
                       2001: 0.000
                       2011: 0.001
Loss after mini-batch
Loss after mini-batch
                       2021: 0.001
                       2031: 0.002
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch 2101: 0.000
```

```
Loss after mini-batch 2111: 0.001
Loss after mini-batch 2121: 0.001
Loss after mini-batch
                      2131: 0.002
Loss after mini-batch
                      2141: 0.001
Loss after mini-batch 2151: 0.000
                      2161: 0.001
Loss after mini-batch
Loss after mini-batch
                      2171: 0.000
Loss after mini-batch 2181: 0.000
Loss after mini-batch 2191: 0.001
Loss after mini-batch
                      2201: 0.001
Loss after mini-batch
                      2211: 0.001
Loss after mini-batch
                      2221: 0.002
                       2231: 0.001
Loss after mini-batch
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                      2261: 0.002
Loss after mini-batch
                      2271: 0.002
                       2281: 0.001
Loss after mini-batch
Loss after mini-batch
                      2291: 0.001
Loss after mini-batch
                      2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                      2321: 0.001
Loss after mini-batch
                      2331: 0.001
Loss after mini-batch
                      2341: 0.001
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.000
Loss after mini-batch
                       2381: 0.000
Loss after mini-batch
                       2391: 0.000
Loss after mini-batch
                      2401: 0.001
Loss after mini-batch
                      2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                      2431: 0.001
Loss after mini-batch
                      2441: 0.002
Loss after mini-batch
                      2451: 0.001
Loss after mini-batch
                      2461: 0.001
Loss after mini-batch
                      2471: 0.001
Loss after mini-batch
                      2481: 0.001
Loss after mini-batch
                      2491: 0.001
Loss after mini-batch
                      2501: 0.001
                      2511: 0.001
Loss after mini-batch
Loss after mini-batch
                      2521: 0.001
                       2531: 0.001
Loss after mini-batch
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.000
Loss after mini-batch
                      2571: 0.000
Loss after mini-batch 2581: 0.001
```

```
Loss after mini-batch 2591: 0.001
Loss after mini-batch 2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch 2631: 0.001
                       2641: 0.001
Loss after mini-batch
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch 2671: 0.001
Loss after mini-batch
                       2681: 0.000
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.002
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch 2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch 2771: 0.000
Loss after mini-batch
                       2781: 0.000
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch 2811: 0.000
Starting epoch 45
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.000
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.000
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.000
Loss after mini-batch
                         81: 0.000
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.000
Loss after mini-batch
                        111: 0.000
Loss after mini-batch
                        121: 0.000
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.001
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.000
Loss after mini-batch
                        171: 0.000
Loss after mini-batch
                        181: 0.001
Loss after mini-batch
                        191: 0.001
Loss after mini-batch
                        201: 0.000
Loss after mini-batch
                        211: 0.000
Loss after mini-batch
                        221: 0.001
Loss after mini-batch
                        231: 0.000
```

Loss	after	mini-batch	241:	0.000
Loss	after	mini-batch	251:	0.000
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
Loss	after	mini-batch	301:	0.002
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.001
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.000
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.000
Loss	after	mini-batch	491:	0.002
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.000
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.000
Loss	after	mini-batch	581:	
	after	mini-batch		0.001
	after	mini-batch		0.001
	after		611:	
Loss	after	mini-batch	621:	
Loss	after	mini-batch	631:	
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.000
	after	mini-batch		
	after	mini-batch	661:	0.001
	after	mini-batch		
			681:	
_	after	mini-batch	691:	
Loss	after	mini-batch	701:	
Loss	after	mini-batch	711:	0.001

Loss	after	${\tt mini-batch}$	721:	0.000
Loss	after	${\tt mini-batch}$	731:	0.001
Loss	after	${\tt mini-batch}$	741:	0.000
Loss	after	${\tt mini-batch}$	751:	0.001
Loss	after	${\tt mini-batch}$	761:	0.001
Loss	after	${\tt mini-batch}$	771:	0.001
Loss	after	${\tt mini-batch}$	781:	0.001
Loss	after	${\tt mini-batch}$	791:	0.001
Loss	after	${\tt mini-batch}$	801:	0.001
Loss	after	${\tt mini-batch}$	811:	0.001
Loss	after	${\tt mini-batch}$	821:	0.000
Loss	after	${\tt mini-batch}$	831:	0.001
Loss	after	${\tt mini-batch}$	841:	0.001
Loss	after	${\tt mini-batch}$	851:	0.001
Loss	after	${\tt mini-batch}$	861:	0.001
Loss	after	${\tt mini-batch}$	871:	0.000
Loss	after	${\tt mini-batch}$	881:	0.001
Loss	after	${\tt mini-batch}$	891:	0.000
Loss	after	${\tt mini-batch}$	901:	0.001
Loss	after	${\tt mini-batch}$	911:	0.000
Loss	after	${\tt mini-batch}$	921:	0.001
Loss	after	${\tt mini-batch}$	931:	0.000
Loss	after	${\tt mini-batch}$	941:	0.001
Loss	after	${\tt mini-batch}$	951:	0.001
Loss	after	${\tt mini-batch}$	961:	0.000
Loss	after	${\tt mini-batch}$	971:	0.001
Loss	after	${\tt mini-batch}$	981:	0.001
Loss	after	${\tt mini-batch}$	991:	0.001
Loss	after	${\tt mini-batch}$	1001:	0.000
Loss	after	${\tt mini-batch}$	1011:	0.001
Loss	after	${\tt mini-batch}$	1021:	0.000
Loss	after	${\tt mini-batch}$	1031:	0.001
Loss	after	${\tt mini-batch}$	1041:	0.001
Loss	after	${\tt mini-batch}$	1051:	0.000
Loss	after	${\tt mini-batch}$	1061:	0.000
Loss	after	${\tt mini-batch}$	1071:	0.000
Loss	after	${\tt mini-batch}$	1081:	0.001
Loss	after	${\tt mini-batch}$	1091:	0.001
Loss	after	${\tt mini-batch}$	1101:	0.001
Loss	after	${\tt mini-batch}$	1111:	0.001
Loss	after	${\tt mini-batch}$	1121:	0.001
Loss	after	${\tt mini-batch}$	1131:	0.001
Loss	after	${\tt mini-batch}$	1141:	0.001
Loss	after	${\tt mini-batch}$	1151:	0.001
Loss	after	${\tt mini-batch}$	1161:	0.001
Loss	after	${\tt mini-batch}$	1171:	0.001
Loss	after	${\tt mini-batch}$	1181:	0.001
Loss	after	${\tt mini-batch}$	1191:	0.001

```
1201: 0.001
Loss after mini-batch
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.000
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.002
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
                       1321: 0.001
Loss after mini-batch
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.000
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.000
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
                       1461: 0.000
Loss after mini-batch
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.000
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.000
                       1581: 0.001
Loss after mini-batch
Loss after mini-batch
                       1591: 0.001
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
Loss after mini-batch
                       1621: 0.000
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.002
Loss after mini-batch
                       1651: 0.000
Loss after mini-batch
                       1661: 0.000
Loss after mini-batch
                      1671: 0.000
```

```
1681: 0.001
Loss after mini-batch
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.000
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.000
Loss after mini-batch
                       1771: 0.000
Loss after mini-batch
                       1781: 0.000
Loss after mini-batch
                       1791: 0.001
                       1801: 0.000
Loss after mini-batch
Loss after mini-batch
                       1811: 0.000
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.000
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.000
Loss after mini-batch
                       1901: 0.000
Loss after mini-batch
                       1911: 0.000
Loss after mini-batch
                       1921: 0.000
Loss after mini-batch
                       1931: 0.000
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.000
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.000
Loss after mini-batch
                       2041: 0.000
Loss after mini-batch
                       2051: 0.001
                       2061: 0.000
Loss after mini-batch
Loss after mini-batch
                       2071: 0.001
                       2081: 0.001
Loss after mini-batch
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.000
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch 2151: 0.001
```

```
Loss after mini-batch 2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.000
Loss after mini-batch
                       2201: 0.000
                       2211: 0.001
Loss after mini-batch
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch 2231: 0.000
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.000
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
                       2281: 0.000
Loss after mini-batch
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.000
Loss after mini-batch
                       2311: 0.000
Loss after mini-batch
                       2321: 0.000
                       2331: 0.001
Loss after mini-batch
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.000
Loss after mini-batch
                       2361: 0.000
Loss after mini-batch
                       2371: 0.000
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.000
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.000
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.000
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.000
                       2561: 0.000
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
Loss after mini-batch
                       2591: 0.000
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.000
Loss after mini-batch 2631: 0.001
```

```
Loss after mini-batch 2641: 0.000
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.002
Loss after mini-batch
                       2691: 0.002
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch 2711: 0.001
Loss after mini-batch 2721: 0.001
Loss after mini-batch
                       2731: 0.001
                       2741: 0.001
Loss after mini-batch
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.000
Loss after mini-batch
                       2791: 0.000
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 46
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.001
Loss after mini-batch
                         51: 0.000
Loss after mini-batch
                         61: 0.000
Loss after mini-batch
                         71: 0.001
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
Loss after mini-batch
                        111: 0.001
Loss after mini-batch
                        121: 0.001
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.001
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.000
Loss after mini-batch
                        171: 0.001
Loss after mini-batch
                        181: 0.001
Loss after mini-batch
                        191: 0.001
Loss after mini-batch
                        201: 0.001
Loss after mini-batch
                        211: 0.000
Loss after mini-batch
                        221: 0.001
Loss after mini-batch
                        231: 0.001
Loss after mini-batch
                        241: 0.001
Loss after mini-batch
                        251: 0.001
Loss after mini-batch
                        261: 0.000
Loss after mini-batch
                        271: 0.000
Loss after mini-batch
                        281: 0.001
```

Loss	after	${\tt mini-batch}$	291:	0.001
Loss	after	${\tt mini-batch}$	301:	0.001
Loss	after	${\tt mini-batch}$	311:	0.001
Loss	after	${\tt mini-batch}$	321:	0.001
Loss	after	${\tt mini-batch}$	331:	0.001
Loss	after	mini-batch	341:	0.000
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.000
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.001
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.000
Loss	after	mini-batch	411:	0.000
Loss	after	mini-batch	421:	0.000
Loss	after	mini-batch	431:	0.000
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.000
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.000
Loss	after	mini-batch	551:	0.000
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.000
Loss	after	mini-batch	611:	0.000
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.002
Loss	after	mini-batch	661:	0.000
Loss	after	mini-batch	671:	0.000
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.000
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.001
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001

Loss	after	${\tt mini-batch}$	771:	0.000
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	${\tt after}$	mini-batch	811:	0.000
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.000
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.001
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.000
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.000
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.001
Loss	after	mini-batch	1021:	0.000
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.000
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.001
Loss	after	mini-batch	1081:	0.001
Loss	after	mini-batch	1091:	0.001
Loss	after	mini-batch	1101:	0.000
Loss	after	mini-batch	1111:	0.001
Loss	after	mini-batch	1121:	0.000
Loss	after	mini-batch	1131:	0.000
Loss	after	mini-batch	1141:	0.001
Loss	after	mini-batch	1151:	0.001
Loss	after	mini-batch	1161:	0.001
Loss	after	mini-batch	1171:	0.001
Loss	after	mini-batch	1181:	0.001
Loss	after	mini-batch	1191:	0.000
Loss	after	mini-batch	1201:	0.001
Loss	after	mini-batch	1211:	0.000
Loss	after	mini-batch	1221:	0.001
Loss	after	mini-batch	1231:	0.001
Loss	after	mini-batch	1241:	0.001
2000	ar 501	mini baccii	1411.	5.501

```
1251: 0.001
Loss after mini-batch
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.000
Loss after mini-batch
                       1351: 0.000
Loss after mini-batch
                       1361: 0.000
                       1371: 0.001
Loss after mini-batch
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
                       1421: 0.001
Loss after mini-batch
Loss after mini-batch
                       1431: 0.000
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.000
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.000
Loss after mini-batch
                       1511: 0.000
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.000
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.000
Loss after mini-batch
                       1571: 0.000
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.000
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
                       1631: 0.002
Loss after mini-batch
Loss after mini-batch
                       1641: 0.001
                       1651: 0.000
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
Loss after mini-batch
                       1671: 0.000
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.000
Loss after mini-batch
                       1701: 0.000
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
                      1721: 0.001
```

```
1731: 0.001
Loss after mini-batch
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.000
Loss after mini-batch
                       1761: 0.000
Loss after mini-batch
                       1771: 0.000
Loss after mini-batch
                       1781: 0.000
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.001
Loss after mini-batch
                       1811: 0.000
Loss after mini-batch
                       1821: 0.000
Loss after mini-batch
                       1831: 0.003
Loss after mini-batch
                       1841: 0.001
                       1851: 0.001
Loss after mini-batch
Loss after mini-batch
                       1861: 0.002
Loss after mini-batch
                       1871: 0.001
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
                       1901: 0.001
Loss after mini-batch
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.000
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.000
                       1991: 0.000
Loss after mini-batch
Loss after mini-batch
                       2001: 0.000
Loss after mini-batch
                       2011: 0.000
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.000
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.000
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.000
Loss after mini-batch
                       2081: 0.000
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.000
Loss after mini-batch
                       2111: 0.000
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.001
Loss after mini-batch 2201: 0.000
```

```
Loss after mini-batch 2211: 0.002
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.000
Loss after mini-batch
                       2251: 0.000
                       2261: 0.001
Loss after mini-batch
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.000
Loss after mini-batch
                       2301: 0.001
Loss after mini-batch
                       2311: 0.000
Loss after mini-batch
                       2321: 0.001
                       2331: 0.000
Loss after mini-batch
Loss after mini-batch
                       2341: 0.000
Loss after mini-batch
                       2351: 0.001
Loss after mini-batch
                       2361: 0.000
Loss after mini-batch
                       2371: 0.001
                       2381: 0.001
Loss after mini-batch
Loss after mini-batch
                       2391: 0.000
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.000
Loss after mini-batch
                       2421: 0.001
Loss after mini-batch
                       2431: 0.001
Loss after mini-batch
                       2441: 0.000
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.000
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.000
Loss after mini-batch
                       2511: 0.001
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.000
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
                       2591: 0.001
Loss after mini-batch
Loss after mini-batch
                       2601: 0.001
                       2611: 0.000
Loss after mini-batch
Loss after mini-batch
                       2621: 0.001
                       2631: 0.001
Loss after mini-batch
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.000
Loss after mini-batch
                       2661: 0.000
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.000
```

```
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.000
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch 2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.002
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.000
Starting epoch 47
Loss after mini-batch
                          1: 0.000
Loss after mini-batch
                         11: 0.001
Loss after mini-batch
                         21: 0.001
Loss after mini-batch
                         31: 0.001
Loss after mini-batch
                         41: 0.000
Loss after mini-batch
                         51: 0.001
Loss after mini-batch
                         61: 0.001
Loss after mini-batch
                         71: 0.000
Loss after mini-batch
                         81: 0.001
Loss after mini-batch
                         91: 0.001
Loss after mini-batch
                        101: 0.001
                        111: 0.001
Loss after mini-batch
Loss after mini-batch
                        121: 0.000
Loss after mini-batch
                        131: 0.001
Loss after mini-batch
                        141: 0.000
Loss after mini-batch
                        151: 0.001
Loss after mini-batch
                        161: 0.001
Loss after mini-batch
                        171: 0.001
Loss after mini-batch
                        181: 0.001
Loss after mini-batch
                        191: 0.000
Loss after mini-batch
                        201: 0.000
Loss after mini-batch
                        211: 0.000
Loss after mini-batch
                        221: 0.001
Loss after mini-batch
                        231: 0.001
Loss after mini-batch
                        241: 0.001
Loss after mini-batch
                        251: 0.001
Loss after mini-batch
                        261: 0.001
Loss after mini-batch
                        271: 0.001
Loss after mini-batch
                        281: 0.001
Loss after mini-batch
                        291: 0.001
Loss after mini-batch
                        301: 0.001
Loss after mini-batch
                        311: 0.001
Loss after mini-batch
                        321: 0.000
Loss after mini-batch
                        331: 0.001
```

Loss	after	${\tt mini-batch}$	341:	0.000
Loss	after	${\tt mini-batch}$	351:	0.001
Loss	after	${\tt mini-batch}$	361:	0.001
Loss	after	${\tt mini-batch}$	371:	0.001
Loss	after	${\tt mini-batch}$	381:	0.000
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.001
Loss	after	mini-batch	411:	0.001
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.000
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.000
Loss	after	mini-batch	461:	0.000
Loss	after	mini-batch	471:	0.000
Loss	after	mini-batch	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.001
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.000
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.000
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.000
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.000
Loss	after	mini-batch	731:	0.000
Loss	after	mini-batch	741:	0.000
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.000
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.000
Loss	after	mini-batch	811:	0.001

Loss	after	${\tt mini-batch}$	821:	0.000
Loss	${\tt after}$	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	${\tt after}$	mini-batch	861:	0.001
Loss	after	mini-batch	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.000
Loss	after	mini-batch	901:	0.001
Loss	after	mini-batch	911:	0.000
Loss	after	mini-batch	921:	0.000
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.001
Loss	after	mini-batch	961:	0.001
Loss	after	mini-batch	971:	0.001
Loss	after	mini-batch	981:	0.001
Loss	after	mini-batch	991:	0.000
Loss	after	mini-batch	1001:	0.001
Loss	after	mini-batch	1011:	0.000
Loss	after	mini-batch	1021:	0.000
Loss	after	mini-batch	1031:	0.001
Loss	after	mini-batch	1041:	0.001
Loss	after	mini-batch	1051:	0.001
Loss	after	mini-batch	1061:	0.001
Loss	after	mini-batch	1071:	0.000
Loss	after	mini-batch	1081:	0.000
Loss	after	mini-batch	1091:	0.001
Loss	after	mini-batch	1101:	0.001
Loss	after	mini-batch	1111:	0.001
Loss	after	mini-batch	1121:	0.001
Loss	after	mini-batch	1131:	0.001
Loss	after	mini-batch	1141:	0.001
Loss	after	mini-batch	1151:	0.001
Loss	after	mini-batch	1161:	0.001
Loss	after	mini-batch	1171:	0.001
Loss	after	mini-batch	1181:	0.001
Loss	after	mini-batch	1191:	0.001
Loss	after	mini-batch	1201:	0.001
Loss	after	mini-batch	1211:	0.001
Loss	after	mini-batch	1221:	0.001
Loss	after	mini-batch	1231:	0.001
Loss	after	mini-batch	1241:	0.002
Loss	after	mini-batch	1251:	0.002
Loss	after	mini-batch	1261:	0.001
Loss	after	mini-batch	1271:	0.001
Loss	after	mini-batch	1281:	0.001
Loss	after	mini-batch	1291:	0.001
порр	OT OCT	mini battii	1201.	0.001

```
1301: 0.001
Loss after mini-batch
Loss after mini-batch
                       1311: 0.000
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.001
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.000
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.000
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.000
                       1421: 0.001
Loss after mini-batch
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.000
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.001
                       1471: 0.001
Loss after mini-batch
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.000
Loss after mini-batch
                       1551: 0.000
Loss after mini-batch
                       1561: 0.000
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.001
Loss after mini-batch
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Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
                       1651: 0.001
Loss after mini-batch
Loss after mini-batch
                       1661: 0.001
Loss after mini-batch
                       1671: 0.001
                       1681: 0.001
Loss after mini-batch
Loss after mini-batch
                       1691: 0.001
                       1701: 0.000
Loss after mini-batch
                       1711: 0.001
Loss after mini-batch
Loss after mini-batch
                       1721: 0.001
Loss after mini-batch
                       1731: 0.001
Loss after mini-batch
                       1741: 0.001
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.000
Loss after mini-batch
                      1771: 0.001
```

```
1781: 0.000
Loss after mini-batch
Loss after mini-batch
                       1791: 0.000
Loss after mini-batch
                       1801: 0.000
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.000
Loss after mini-batch
                       1861: 0.001
Loss after mini-batch
                       1871: 0.000
Loss after mini-batch
                       1881: 0.001
Loss after mini-batch
                       1891: 0.001
                       1901: 0.001
Loss after mini-batch
Loss after mini-batch
                       1911: 0.000
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.000
Loss after mini-batch
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Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.000
Loss after mini-batch
                       2001: 0.001
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.000
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.001
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.000
Loss after mini-batch
                       2071: 0.000
Loss after mini-batch
                       2081: 0.000
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.000
Loss after mini-batch
                       2121: 0.002
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.002
Loss after mini-batch 2171: 0.001
Loss after mini-batch
                       2181: 0.001
                       2191: 0.001
Loss after mini-batch
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.000
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.000
Loss after mini-batch 2241: 0.000
Loss after mini-batch 2251: 0.001
```

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Loss after mini-batch 2261: 0.001
Loss after mini-batch
                       2271: 0.001
Loss after mini-batch
                       2281: 0.001
Loss after mini-batch
                       2291: 0.001
Loss after mini-batch
                       2301: 0.000
                       2311: 0.001
Loss after mini-batch
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.000
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.000
Loss after mini-batch
                       2361: 0.000
Loss after mini-batch
                       2371: 0.001
                       2381: 0.000
Loss after mini-batch
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.000
                       2431: 0.001
Loss after mini-batch
Loss after mini-batch
                       2441: 0.000
Loss after mini-batch
                       2451: 0.000
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
Loss after mini-batch
                       2481: 0.001
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.000
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.000
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.001
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
                       2641: 0.001
Loss after mini-batch
Loss after mini-batch
                       2651: 0.001
                       2661: 0.001
Loss after mini-batch
                       2671: 0.000
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.000
Loss after mini-batch
                       2711: 0.002
Loss after mini-batch
                       2721: 0.001
Loss after mini-batch 2731: 0.001
```

Loss	after	mini-batch	2741:	0.001
Loss	after	mini-batch	2751:	0.001
Loss	after	mini-batch	2761:	0.001
Loss	after	mini-batch	2771:	0.001
Loss	after	mini-batch	2781:	0.002
Loss	after	mini-batch	2791:	0.001
Loss	after	mini-batch	2801:	0.000
Loss	after	mini-batch	2811:	0.001
Start	ting e	ooch 48		
Loss	after	mini-batch	1:	0.000
Loss	after	mini-batch	11:	0.001
Loss	after	mini-batch	21:	0.001
Loss	after	mini-batch	31:	0.001
Loss	after	mini-batch	41:	0.001
Loss	after	mini-batch	51:	0.001
Loss	after	mini-batch	61:	0.001
Loss	after	mini-batch	71:	0.001
Loss	after	mini-batch	81:	0.000
Loss	after	mini-batch	91:	0.002
Loss	after	mini-batch	101:	0.001
Loss	after	mini-batch	111:	0.001
Loss	after	mini-batch	121:	0.001
Loss	after	mini-batch	131:	0.000
Loss	after	mini-batch	141:	0.001
Loss	after	mini-batch	151:	0.000
Loss	after	mini-batch	161:	0.001
Loss	after	mini-batch	171:	0.000
Loss	after	mini-batch	181:	0.001
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.001
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.001
_	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.001
_	after	mini-batch	301:	0.002
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.000
Loss	after	mini-batch	331:	0.000
Loss	after	mini-batch	341:	0.000
Loss	after	mini-batch	351:	0.001
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.000

Loss	after	${\tt mini-batch}$	391:	0.001
Loss	after	${\tt mini-batch}$	401:	0.001
Loss	after	${\tt mini-batch}$	411:	0.000
Loss	after	${\tt mini-batch}$	421:	0.001
Loss	after	${\tt mini-batch}$	431:	0.000
Loss	after	${\tt mini-batch}$	441:	0.001
Loss	after	${\tt mini-batch}$	451:	0.001
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.000
Loss	after	${\tt mini-batch}$	481:	0.001
Loss	after	mini-batch	491:	0.001
Loss	after	mini-batch	501:	0.001
Loss	after	mini-batch	511:	0.001
Loss	after	mini-batch	521:	0.001
Loss	after	mini-batch	531:	0.000
Loss	after	mini-batch	541:	0.001
Loss	after	mini-batch	551:	0.000
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.001
Loss	after	mini-batch	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.000
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.001
Loss	after	${\tt mini-batch}$	671:	0.001
Loss	after	${\tt mini-batch}$	681:	0.000
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.000
Loss	after	mini-batch	711:	0.001
Loss	after	mini-batch	721:	0.002
Loss	after	mini-batch	731:	0.000
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.001
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.000
Loss	after	mini-batch	781:	0.001
Loss	after	mini-batch	791:	0.001
Loss	after	mini-batch	801:	0.001
Loss	after	mini-batch	811:	0.000
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.000
Loss	after	mini-batch	861:	0.001

```
Loss after mini-batch
                        871: 0.001
Loss after mini-batch
                        881: 0.001
Loss after mini-batch
                        891: 0.000
Loss after mini-batch
                        901: 0.001
Loss after mini-batch
                        911: 0.001
Loss after mini-batch
                        921: 0.001
Loss after mini-batch
                        931: 0.001
Loss after mini-batch
                        941: 0.001
Loss after mini-batch
                        951: 0.001
Loss after mini-batch
                        961: 0.000
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.001
                        991: 0.001
Loss after mini-batch
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.001
Loss after mini-batch
                       1031: 0.000
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
                       1071: 0.001
Loss after mini-batch
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.000
Loss after mini-batch
                       1121: 0.000
Loss after mini-batch
                       1131: 0.000
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.001
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.000
Loss after mini-batch
                       1201: 0.000
Loss after mini-batch
                       1211: 0.000
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.000
Loss after mini-batch
                       1241: 0.000
                       1251: 0.000
Loss after mini-batch
Loss after mini-batch
                       1261: 0.000
                       1271: 0.000
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
Loss after mini-batch
                       1291: 0.001
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.001
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch 1341: 0.001
```

```
1351: 0.000
Loss after mini-batch
Loss after mini-batch
                       1361: 0.001
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
                       1391: 0.002
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.000
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.000
Loss after mini-batch
                       1451: 0.001
Loss after mini-batch
                       1461: 0.000
                       1471: 0.001
Loss after mini-batch
Loss after mini-batch
                       1481: 0.000
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.000
                       1521: 0.001
Loss after mini-batch
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.001
Loss after mini-batch
                       1581: 0.000
Loss after mini-batch
                       1591: 0.001
Loss after mini-batch
                       1601: 0.000
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.001
Loss after mini-batch
                       1661: 0.000
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.001
Loss after mini-batch
                       1701: 0.001
Loss after mini-batch
                       1711: 0.002
Loss after mini-batch
                       1721: 0.001
                       1731: 0.001
Loss after mini-batch
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                       1741: 0.001
                       1751: 0.000
Loss after mini-batch
                       1761: 0.001
Loss after mini-batch
Loss after mini-batch
                       1771: 0.000
Loss after mini-batch
                       1781: 0.002
Loss after mini-batch
                       1791: 0.001
Loss after mini-batch
                       1801: 0.000
Loss after mini-batch
                       1811: 0.001
Loss after mini-batch
                      1821: 0.001
```

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1831: 0.001
Loss after mini-batch
Loss after mini-batch
                       1841: 0.001
Loss after mini-batch
                       1851: 0.001
Loss after mini-batch
                       1861: 0.000
Loss after mini-batch
                       1871: 0.000
Loss after mini-batch
                       1881: 0.000
Loss after mini-batch
                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
                       1951: 0.001
Loss after mini-batch
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
                       2001: 0.001
Loss after mini-batch
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.000
Loss after mini-batch
                       2051: 0.001
Loss after mini-batch
                       2061: 0.000
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
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Loss after mini-batch
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Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
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Loss after mini-batch
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Loss after mini-batch
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Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
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Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
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Loss after mini-batch
                       2191: 0.001
Loss after mini-batch
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Loss after mini-batch
                       2211: 0.000
Loss after mini-batch
                       2221: 0.001
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
Loss after mini-batch
                       2261: 0.001
Loss after mini-batch
                       2271: 0.000
Loss after mini-batch
                       2281: 0.000
Loss after mini-batch
                       2291: 0.000
Loss after mini-batch 2301: 0.000
```

```
2311: 0.001
Loss after mini-batch
Loss after mini-batch
                       2321: 0.001
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch
                       2351: 0.001
                       2361: 0.001
Loss after mini-batch
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
                       2411: 0.000
Loss after mini-batch
Loss after mini-batch
                       2421: 0.001
                       2431: 0.001
Loss after mini-batch
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.001
                       2481: 0.000
Loss after mini-batch
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.000
Loss after mini-batch
                       2511: 0.000
Loss after mini-batch
                       2521: 0.000
Loss after mini-batch
                       2531: 0.000
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.000
Loss after mini-batch
                       2581: 0.001
Loss after mini-batch
                       2591: 0.001
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.001
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.002
Loss after mini-batch
                       2661: 0.001
Loss after mini-batch
                       2671: 0.000
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.000
Loss after mini-batch
                       2701: 0.001
                       2711: 0.001
Loss after mini-batch
                       2721: 0.002
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
Loss after mini-batch
                       2741: 0.000
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch 2781: 0.001
```

Loss	after	mini-batch	2791:	0.001
Loss	after	mini-batch	2801:	0.001
Loss	after	mini-batch	2811:	0.001
Start	ing ep	ooch 49		
Loss	after	mini-batch	1:	0.000
Loss	after	mini-batch	11:	0.001
Loss	after	mini-batch	21:	0.001
Loss	after	mini-batch	31:	0.000
Loss	after	mini-batch	41:	0.001
Loss	${\tt after}$	mini-batch	51:	0.000
Loss	after	mini-batch	61:	0.000
Loss	${\tt after}$	mini-batch	71:	0.001
Loss	${\tt after}$	mini-batch	81:	0.001
Loss	${\tt after}$	mini-batch	91:	0.001
Loss	${\tt after}$	mini-batch	101:	0.001
Loss	${\tt after}$	mini-batch	111:	0.001
Loss	after	mini-batch	121:	0.001
Loss	after	mini-batch	131:	0.001
Loss	${\tt after}$	mini-batch	141:	0.001
Loss	${\tt after}$	mini-batch	151:	0.000
Loss	${\tt after}$	mini-batch	161:	0.001
Loss	${\tt after}$	mini-batch	171:	0.000
Loss	${\tt after}$	mini-batch	181:	0.001
Loss	${\tt after}$	mini-batch	191:	0.001
Loss	${\tt after}$	mini-batch	201:	0.001
Loss	${\tt after}$	mini-batch	211:	0.001
Loss	${\tt after}$	mini-batch	221:	0.001
Loss	${\tt after}$	mini-batch	231:	0.001
Loss	${\tt after}$	mini-batch	241:	0.001
Loss	${\tt after}$	mini-batch	251:	0.001
Loss	${\tt after}$	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	${\tt after}$	mini-batch	291:	0.001
Loss	${\tt after}$	mini-batch	301:	0.000
Loss	${\tt after}$	mini-batch	311:	0.001
Loss	${\tt after}$	mini-batch	321:	0.001
Loss	${\tt after}$	mini-batch	331:	0.001
Loss	${\tt after}$	mini-batch	341:	0.000
Loss	${\tt after}$	mini-batch	351:	0.000
Loss	${\tt after}$	mini-batch	361:	0.000
Loss	${\tt after}$	mini-batch	371:	0.000
Loss	${\tt after}$	mini-batch	381:	0.001
Loss	after	${\tt mini-batch}$	391:	0.001
Loss	after	${\tt mini-batch}$	401:	0.001
Loss	after	${\tt mini-batch}$	411:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	421:	0.001
Loss	after	mini-batch	431:	0.000

Loss	after	${\tt mini-batch}$	441:	0.001
Loss	after	${\tt mini-batch}$	451:	0.000
Loss	after	${\tt mini-batch}$	461:	0.001
Loss	after	${\tt mini-batch}$	471:	0.000
Loss	after	${\tt mini-batch}$	481:	0.000
Loss	after	${\tt mini-batch}$	491:	0.001
Loss	after	${\tt mini-batch}$	501:	0.000
Loss	after	${\tt mini-batch}$	511:	0.001
Loss	after	${\tt mini-batch}$	521:	0.001
Loss	after	${\tt mini-batch}$	531:	0.000
Loss	after	${\tt mini-batch}$	541:	0.001
Loss	after	${\tt mini-batch}$	551:	0.001
Loss	after	${\tt mini-batch}$	561:	0.001
Loss	after	${\tt mini-batch}$	571:	0.000
Loss	after	${\tt mini-batch}$	581:	0.000
Loss	after	${\tt mini-batch}$	591:	0.001
Loss	after	${\tt mini-batch}$	601:	0.002
Loss	after	${\tt mini-batch}$	611:	0.001
Loss	after	${\tt mini-batch}$	621:	0.001
Loss	after	${\tt mini-batch}$	631:	0.001
Loss	after	${\tt mini-batch}$	641:	0.001
Loss	after	${\tt mini-batch}$	651:	0.000
Loss	after	${\tt mini-batch}$	661:	0.001
Loss	after	${\tt mini-batch}$	671:	0.001
Loss	after	${\tt mini-batch}$	681:	0.001
Loss	after	${\tt mini-batch}$	691:	0.001
Loss	after	${\tt mini-batch}$	701:	0.001
Loss	after	${\tt mini-batch}$	711:	0.001
Loss	after	${\tt mini-batch}$	721:	0.001
Loss	after	${\tt mini-batch}$	731:	0.001
Loss	after	${\tt mini-batch}$	741:	0.002
Loss	after	${\tt mini-batch}$	751:	0.001
Loss	after	${\tt mini-batch}$	761:	0.001
Loss	after	${\tt mini-batch}$	771:	0.001
Loss	after	${\tt mini-batch}$	781:	0.001
Loss	after	${\tt mini-batch}$	791:	0.001
Loss	after	${\tt mini-batch}$	801:	0.001
Loss	after	${\tt mini-batch}$	811:	0.001
Loss	after	${\tt mini-batch}$	821:	0.001
Loss	after	${\tt mini-batch}$	831:	0.001
Loss	after	${\tt mini-batch}$	841:	0.000
Loss	after	${\tt mini-batch}$	851:	0.000
Loss	after	${\tt mini-batch}$	861:	0.000
Loss	after	${\tt mini-batch}$	871:	0.001
Loss	after	${\tt mini-batch}$	881:	0.000
Loss	after	${\tt mini-batch}$	891:	0.000
Loss	after	${\tt mini-batch}$	901:	0.000
Loss	after	${\tt mini-batch}$	911:	0.001

```
Loss after mini-batch
                        921: 0.000
Loss after mini-batch
                        931: 0.001
Loss after mini-batch
                        941: 0.001
Loss after mini-batch
                        951: 0.001
Loss after mini-batch
                        961: 0.001
Loss after mini-batch
                        971: 0.002
Loss after mini-batch
                        981: 0.001
Loss after mini-batch
                        991: 0.000
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
                       1021: 0.001
Loss after mini-batch
Loss after mini-batch
                       1031: 0.001
                       1041: 0.001
Loss after mini-batch
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.000
Loss after mini-batch
                       1071: 0.001
Loss after mini-batch
                       1081: 0.001
Loss after mini-batch
                       1091: 0.001
Loss after mini-batch
                       1101: 0.001
Loss after mini-batch
                       1111: 0.000
Loss after mini-batch
                       1121: 0.000
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.000
Loss after mini-batch
                       1161: 0.002
Loss after mini-batch
                       1171: 0.002
                       1181: 0.001
Loss after mini-batch
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.000
Loss after mini-batch
                       1271: 0.000
Loss after mini-batch
                       1281: 0.000
Loss after mini-batch
                       1291: 0.001
                       1301: 0.000
Loss after mini-batch
Loss after mini-batch
                       1311: 0.001
                       1321: 0.001
Loss after mini-batch
                       1331: 0.000
Loss after mini-batch
Loss after mini-batch
                       1341: 0.002
Loss after mini-batch
                       1351: 0.001
Loss after mini-batch
                       1361: 0.000
Loss after mini-batch
                       1371: 0.001
Loss after mini-batch
                       1381: 0.000
Loss after mini-batch 1391: 0.000
```

```
1401: 0.000
Loss after mini-batch
Loss after mini-batch
                       1411: 0.001
Loss after mini-batch
                       1421: 0.001
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch
                       1441: 0.001
Loss after mini-batch
                       1451: 0.000
Loss after mini-batch
                       1461: 0.001
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.001
Loss after mini-batch
                       1491: 0.001
Loss after mini-batch
                       1501: 0.001
Loss after mini-batch
                       1511: 0.001
                       1521: 0.001
Loss after mini-batch
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
                       1541: 0.001
Loss after mini-batch
                       1551: 0.000
Loss after mini-batch
                       1561: 0.001
Loss after mini-batch
                       1571: 0.000
Loss after mini-batch
                       1581: 0.001
Loss after mini-batch
                       1591: 0.000
Loss after mini-batch
                       1601: 0.000
Loss after mini-batch
                       1611: 0.001
Loss after mini-batch
                       1621: 0.001
Loss after mini-batch
                       1631: 0.001
Loss after mini-batch
                       1641: 0.001
Loss after mini-batch
                       1651: 0.000
                       1661: 0.001
Loss after mini-batch
Loss after mini-batch
                       1671: 0.001
Loss after mini-batch
                       1681: 0.001
Loss after mini-batch
                       1691: 0.000
Loss after mini-batch
                       1701: 0.000
Loss after mini-batch
                       1711: 0.000
Loss after mini-batch
                       1721: 0.000
Loss after mini-batch
                       1731: 0.000
Loss after mini-batch
                       1741: 0.000
Loss after mini-batch
                       1751: 0.001
Loss after mini-batch
                       1761: 0.000
Loss after mini-batch
                       1771: 0.001
                       1781: 0.001
Loss after mini-batch
Loss after mini-batch
                       1791: 0.001
                       1801: 0.000
Loss after mini-batch
                       1811: 0.000
Loss after mini-batch
Loss after mini-batch
                       1821: 0.001
Loss after mini-batch
                       1831: 0.001
Loss after mini-batch
                       1841: 0.000
Loss after mini-batch
                       1851: 0.000
Loss after mini-batch
                       1861: 0.000
Loss after mini-batch
                       1871: 0.001
```

```
1881: 0.000
Loss after mini-batch
Loss after mini-batch
                       1891: 0.000
Loss after mini-batch
                       1901: 0.000
Loss after mini-batch
                       1911: 0.000
Loss after mini-batch
                       1921: 0.001
Loss after mini-batch
                       1931: 0.001
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.001
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.001
                       2001: 0.001
Loss after mini-batch
Loss after mini-batch
                       2011: 0.000
Loss after mini-batch
                       2021: 0.002
Loss after mini-batch
                       2031: 0.002
Loss after mini-batch
                       2041: 0.001
                       2051: 0.001
Loss after mini-batch
Loss after mini-batch
                       2061: 0.000
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.000
Loss after mini-batch
                       2091: 0.001
Loss after mini-batch
                       2101: 0.001
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.000
Loss after mini-batch
                       2131: 0.000
Loss after mini-batch
                       2141: 0.001
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.001
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.000
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.001
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
Loss after mini-batch
                       2261: 0.000
Loss after mini-batch
                       2271: 0.000
                       2281: 0.001
Loss after mini-batch
Loss after mini-batch
                       2291: 0.001
                       2301: 0.001
Loss after mini-batch
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.000
Loss after mini-batch
                       2331: 0.001
Loss after mini-batch
                       2341: 0.001
Loss after mini-batch 2351: 0.001
```

```
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.000
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch
                       2401: 0.001
Loss after mini-batch
                       2411: 0.001
Loss after mini-batch
                       2421: 0.000
Loss after mini-batch 2431: 0.000
Loss after mini-batch
                       2441: 0.001
Loss after mini-batch
                       2451: 0.001
Loss after mini-batch
                       2461: 0.001
Loss after mini-batch
                       2471: 0.000
Loss after mini-batch
                       2481: 0.000
Loss after mini-batch
                       2491: 0.001
Loss after mini-batch
                       2501: 0.001
Loss after mini-batch
                       2511: 0.000
Loss after mini-batch
                       2521: 0.001
Loss after mini-batch
                       2531: 0.001
Loss after mini-batch
                       2541: 0.001
Loss after mini-batch
                       2551: 0.001
Loss after mini-batch
                       2561: 0.001
Loss after mini-batch
                       2571: 0.000
Loss after mini-batch
                       2581: 0.000
Loss after mini-batch
                       2591: 0.000
Loss after mini-batch
                       2601: 0.001
Loss after mini-batch
                       2611: 0.001
Loss after mini-batch
                       2621: 0.000
Loss after mini-batch
                       2631: 0.001
Loss after mini-batch
                       2641: 0.001
Loss after mini-batch
                       2651: 0.001
Loss after mini-batch
                       2661: 0.002
Loss after mini-batch
                       2671: 0.001
Loss after mini-batch
                       2681: 0.001
Loss after mini-batch
                       2691: 0.001
Loss after mini-batch
                       2701: 0.001
Loss after mini-batch
                       2711: 0.001
Loss after mini-batch
                       2721: 0.000
Loss after mini-batch
                       2731: 0.001
Loss after mini-batch
                       2741: 0.001
Loss after mini-batch
                       2751: 0.001
Loss after mini-batch
                       2761: 0.001
Loss after mini-batch
                       2771: 0.001
Loss after mini-batch
                       2781: 0.001
Loss after mini-batch
                       2791: 0.001
Loss after mini-batch
                       2801: 0.001
Loss after mini-batch
                       2811: 0.001
Starting epoch 50
Loss after mini-batch
                          1: 0.000
```

Loss	${\tt after}$	${\tt mini-batch}$	11:	0.000
Loss	${\tt after}$	${\tt mini-batch}$	21:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	31:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	41:	0.001
Loss	${\tt after}$	${\tt mini-batch}$	51:	0.001
Loss	after	${\tt mini-batch}$	61:	0.001
Loss	after	${\tt mini-batch}$	71:	0.001
Loss	after	${\tt mini-batch}$	81:	0.000
Loss	after	mini-batch	91:	0.001
Loss	after	mini-batch	101:	0.001
Loss	after	mini-batch	111:	0.000
Loss	after	mini-batch	121:	0.000
Loss	after	mini-batch	131:	0.000
Loss	after	mini-batch	141:	0.000
Loss	after	mini-batch	151:	0.000
Loss	after	mini-batch	161:	0.000
Loss	after	mini-batch	171:	0.001
Loss	after	mini-batch	181:	0.000
Loss	after	mini-batch	191:	0.001
Loss	after	mini-batch	201:	0.000
Loss	after	mini-batch	211:	0.001
Loss	after	mini-batch	221:	0.001
Loss	after	mini-batch	231:	0.001
Loss	after	mini-batch	241:	0.001
Loss	after	mini-batch	251:	0.001
Loss	after	mini-batch	261:	0.001
Loss	after	mini-batch	271:	0.001
Loss	after	mini-batch	281:	0.001
Loss	after	mini-batch	291:	0.000
Loss	after	mini-batch	301:	0.001
Loss	after	mini-batch	311:	0.001
Loss	after	mini-batch	321:	0.001
Loss	after	mini-batch	331:	0.001
Loss	after	mini-batch	341:	0.001
Loss	after	mini-batch	351:	0.000
Loss	after	mini-batch	361:	0.001
Loss	after	mini-batch	371:	0.001
Loss	after	mini-batch	381:	0.000
Loss	after	mini-batch	391:	0.001
Loss	after	mini-batch	401:	0.000
Loss	after	mini-batch	411:	0.000
Loss	after	mini-batch	421:	0.001
Loss	after	mini-batch	431:	0.002
Loss	after	mini-batch	441:	0.001
Loss	after	mini-batch	451:	0.000
Loss	after	mini-batch	461:	0.001
Loss	after	mini-batch	471:	0.001
Loss	after	mini-batch	481:	0.001
	001		-01.	

Loss	after	${\tt mini-batch}$	491:	0.001
Loss	after	${\tt mini-batch}$	501:	0.001
Loss	after	${\tt mini-batch}$	511:	0.001
Loss	after	${\tt mini-batch}$	521:	0.001
Loss	after	${\tt mini-batch}$	531:	0.001
Loss	after	${\tt mini-batch}$	541:	0.001
Loss	after	${\tt mini-batch}$	551:	0.001
Loss	after	mini-batch	561:	0.001
Loss	after	mini-batch	571:	0.000
Loss	after	${\tt mini-batch}$	581:	0.001
Loss	after	mini-batch	591:	0.001
Loss	after	mini-batch	601:	0.001
Loss	after	mini-batch	611:	0.001
Loss	after	mini-batch	621:	0.001
Loss	after	mini-batch	631:	0.001
Loss	after	mini-batch	641:	0.001
Loss	after	mini-batch	651:	0.001
Loss	after	mini-batch	661:	0.000
Loss	after	mini-batch	671:	0.001
Loss	after	mini-batch	681:	0.001
Loss	after	mini-batch	691:	0.001
Loss	after	mini-batch	701:	0.001
Loss	after	mini-batch	711:	0.000
Loss	after	mini-batch	721:	0.000
Loss	after	mini-batch	731:	0.001
Loss	after	mini-batch	741:	0.001
Loss	after	mini-batch	751:	0.000
Loss	after	mini-batch	761:	0.001
Loss	after	mini-batch	771:	0.001
Loss	after	mini-batch	781:	0.000
Loss	after	mini-batch	791:	0.000
Loss	after	mini-batch	801:	0.000
Loss	after	mini-batch	811:	0.000
Loss	after	mini-batch	821:	0.001
Loss	after	mini-batch	831:	0.001
Loss	after	mini-batch	841:	0.001
Loss	after	mini-batch	851:	0.001
Loss	after	mini-batch	861:	0.001
Loss	after	${\tt mini-batch}$	871:	0.001
Loss	after	mini-batch	881:	0.001
Loss	after	mini-batch	891:	0.000
Loss	after	mini-batch	901:	0.000
Loss	after	mini-batch	911:	0.001
Loss	after	mini-batch	921:	0.000
Loss	after	mini-batch	931:	0.001
Loss	after	mini-batch	941:	0.001
Loss	after	mini-batch	951:	0.001
Loss	after	${\tt mini-batch}$	961:	0.001

```
Loss after mini-batch
                        971: 0.001
Loss after mini-batch
                        981: 0.000
Loss after mini-batch
                        991: 0.001
Loss after mini-batch
                       1001: 0.001
Loss after mini-batch
                       1011: 0.001
Loss after mini-batch
                       1021: 0.002
Loss after mini-batch
                       1031: 0.001
Loss after mini-batch
                       1041: 0.001
Loss after mini-batch
                       1051: 0.001
Loss after mini-batch
                       1061: 0.001
                       1071: 0.001
Loss after mini-batch
Loss after mini-batch
                       1081: 0.001
                       1091: 0.001
Loss after mini-batch
Loss after mini-batch
                       1101: 0.000
Loss after mini-batch
                       1111: 0.000
Loss after mini-batch
                       1121: 0.000
Loss after mini-batch
                       1131: 0.001
Loss after mini-batch
                       1141: 0.001
Loss after mini-batch
                       1151: 0.001
Loss after mini-batch
                       1161: 0.000
Loss after mini-batch
                       1171: 0.001
Loss after mini-batch
                       1181: 0.001
Loss after mini-batch
                       1191: 0.001
Loss after mini-batch
                       1201: 0.001
Loss after mini-batch
                       1211: 0.001
Loss after mini-batch
                       1221: 0.001
Loss after mini-batch
                       1231: 0.001
Loss after mini-batch
                       1241: 0.001
Loss after mini-batch
                       1251: 0.001
Loss after mini-batch
                       1261: 0.001
Loss after mini-batch
                       1271: 0.001
Loss after mini-batch
                       1281: 0.001
Loss after mini-batch
                       1291: 0.000
Loss after mini-batch
                       1301: 0.001
Loss after mini-batch
                       1311: 0.000
Loss after mini-batch
                       1321: 0.001
Loss after mini-batch
                       1331: 0.001
Loss after mini-batch
                       1341: 0.000
                       1351: 0.001
Loss after mini-batch
Loss after mini-batch
                       1361: 0.001
                       1371: 0.000
Loss after mini-batch
                       1381: 0.001
Loss after mini-batch
Loss after mini-batch
                       1391: 0.001
Loss after mini-batch
                       1401: 0.001
Loss after mini-batch
                       1411: 0.000
Loss after mini-batch
                       1421: 0.002
Loss after mini-batch
                       1431: 0.001
Loss after mini-batch 1441: 0.001
```

```
1451: 0.001
Loss after mini-batch
Loss after mini-batch
                       1461: 0.000
Loss after mini-batch
                       1471: 0.001
Loss after mini-batch
                       1481: 0.000
Loss after mini-batch
                       1491: 0.000
Loss after mini-batch
                       1501: 0.000
Loss after mini-batch
                       1511: 0.001
Loss after mini-batch
                       1521: 0.001
Loss after mini-batch
                       1531: 0.001
Loss after mini-batch
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Loss after mini-batch
                       1551: 0.001
Loss after mini-batch
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                       1571: 0.001
Loss after mini-batch
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Loss after mini-batch
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                       1881: 0.000
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                       1891: 0.001
Loss after mini-batch
                       1901: 0.001
Loss after mini-batch
                       1911: 0.001
Loss after mini-batch
                      1921: 0.001
```

```
1931: 0.001
Loss after mini-batch
Loss after mini-batch
                       1941: 0.001
Loss after mini-batch
                       1951: 0.001
Loss after mini-batch
                       1961: 0.000
Loss after mini-batch
                       1971: 0.001
Loss after mini-batch
                       1981: 0.001
Loss after mini-batch
                       1991: 0.000
Loss after mini-batch
                       2001: 0.000
Loss after mini-batch
                       2011: 0.001
Loss after mini-batch
                       2021: 0.001
Loss after mini-batch
                       2031: 0.001
Loss after mini-batch
                       2041: 0.000
                       2051: 0.001
Loss after mini-batch
Loss after mini-batch
                       2061: 0.001
Loss after mini-batch
                       2071: 0.001
Loss after mini-batch
                       2081: 0.001
Loss after mini-batch
                       2091: 0.000
                       2101: 0.001
Loss after mini-batch
Loss after mini-batch
                       2111: 0.001
Loss after mini-batch
                       2121: 0.001
Loss after mini-batch
                       2131: 0.001
Loss after mini-batch
                       2141: 0.000
Loss after mini-batch
                       2151: 0.001
Loss after mini-batch
                       2161: 0.001
Loss after mini-batch
                       2171: 0.000
Loss after mini-batch
                       2181: 0.001
Loss after mini-batch
                       2191: 0.000
Loss after mini-batch
                       2201: 0.001
Loss after mini-batch
                       2211: 0.001
Loss after mini-batch
                       2221: 0.000
Loss after mini-batch
                       2231: 0.001
Loss after mini-batch
                       2241: 0.001
Loss after mini-batch
                       2251: 0.001
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                       2261: 0.001
Loss after mini-batch
                       2271: 0.001
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                       2291: 0.001
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                       2301: 0.001
Loss after mini-batch
                       2311: 0.001
Loss after mini-batch
                       2321: 0.000
                       2331: 0.000
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                       2341: 0.001
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Loss after mini-batch
                       2351: 0.000
Loss after mini-batch
                       2361: 0.001
Loss after mini-batch
                       2371: 0.001
Loss after mini-batch
                       2381: 0.001
Loss after mini-batch
                       2391: 0.001
Loss after mini-batch 2401: 0.001
```

Loss after mini-batch 2411: 0.001 Loss after mini-batch 2421: 0.001 Loss after mini-batch 2431: 0.000 Loss after mini-batch 2441: 0.001 Loss after mini-batch 2451: 0.000 Loss after mini-batch 2461: 0.000 Loss after mini-batch 2471: 0.000 Loss after mini-batch 2481: 0.001 Loss after mini-batch 2491: 0.000 Loss after mini-batch 2501: 0.001 Loss after mini-batch 2511: 0.000 Loss after mini-batch 2521: 0.001 Loss after mini-batch 2531: 0.001 Loss after mini-batch 2541: 0.001 Loss after mini-batch 2551: 0.000 Loss after mini-batch 2561: 0.001 Loss after mini-batch 2571: 0.000 Loss after mini-batch 2581: 0.000 Loss after mini-batch 2591: 0.001 Loss after mini-batch 2601: 0.001 Loss after mini-batch 2611: 0.001 Loss after mini-batch 2621: 0.001 Loss after mini-batch 2631: 0.001 Loss after mini-batch 2641: 0.001 Loss after mini-batch 2651: 0.001 Loss after mini-batch 2661: 0.001 Loss after mini-batch 2671: 0.000 Loss after mini-batch 2681: 0.001 Loss after mini-batch 2691: 0.000 Loss after mini-batch 2701: 0.001 Loss after mini-batch 2711: 0.001 Loss after mini-batch 2721: 0.001 Loss after mini-batch 2731: 0.001 Loss after mini-batch 2741: 0.001 Loss after mini-batch 2751: 0.001 Loss after mini-batch 2761: 0.001 Loss after mini-batch 2771: 0.001 Loss after mini-batch 2781: 0.001 Loss after mini-batch 2791: 0.000 Loss after mini-batch 2801: 0.001 Loss after mini-batch 2811: 0.001 Training process has finished.

Calculate error for test

Result: 3.811153447359363e-05 Result: 9.125097411374439e-15 Result: 6.473551775648633e-07 Calculate error for train

```
Result: 3.642748418361822e-05
     Result: 8.808458600586814e-15
     Result: 6.2277136268572e-07
[14]: def splitErrorList(errorList):
          maxEnergyError = []
          totalEnergyError = []
          avgEnergyError = []
          for element in errorList:
              maxEnergyError.append(element[0])
              totalEnergyError.append(element[1])
              avgEnergyError.append(element[2])
          return maxEnergyError, totalEnergyError, avgEnergyError
[15]: print(model1LayerMSE)
      print(model1LayerPercentError)
      print('\n')
      print(trainMSE)
      print(trainPercent)
      maxEnergyMSE, totalEnergyMSE, avgEnergyMSE = splitErrorList(model1LayerMSE)
      maxEnergyPercent, totalEnergyPercent, avgEnergyPercent =_
       →splitErrorList(model1LayerPercentError)
      trainMaxMSE, trainTotalMSE, trainAvgMSE = splitErrorList(trainMSE)
      trainMaxPercent, trainTotalPercent, trainAvgPercent =
       →splitErrorList(trainPercent)
      print(trainMaxMSE)
      print(maxEnergyMSE)
     [[5.6978141831636326e-06, 1.826553267105639e-15, 1.328771315295793e-07],
     [1.8739067296662588e-05, 2.733749983124259e-15, 2.9702573796996083e-07],
     [8.479282063237006e-06, 2.7615405287048097e-15, 1.619183970067513e-07],
     [1.0995086988557976e-05, 9.972341754381332e-16, 1.719939080727756e-07],
     [2.8987754719841756e-05, 1.737798069415805e-14, 6.226525531170417e-07],
     [3.811153447359363e-05, 9.125097411374439e-15, 6.473551775648633e-07]]
     [[9.003389914677687, 13.435528497275815, 8.41432986321646], [8.229353694367378,
     14.313656050329719, 8.255411196914693], [6.871202907559728, 14.982273992363268,
     6.968154810180534], [12.829914110043587, 26.607821593869424,
     13.389491215689986], [12.290295881148435, 27.775826795091845,
     13.318004522922582], [10.244809549320886, 20.453482240665874,
     10.028581486654229]]
     [[5.751722253465613e-06, 1.780939927964189e-15, 1.3323290120690164e-07],
```

```
[1.828420918622595e-05, 2.6569664252781055e-15, 2.891211371696739e-07], [8.695034595673081e-06, 2.8894699096341713e-15, 1.6507651750966625e-07], [1.0599116096144169e-05, 9.641282600677242e-16, 1.704618137662063e-07], [2.83641189786924e-05, 1.6860413089303032e-14, 6.108775835135749e-07], [3.642748418361822e-05, 8.808458600586814e-15, 6.2277136268572e-07]] [[9.015938568583993, 13.394521918192227, 8.431306938419633], [8.332530474486012, 14.484349383642732, 8.34720319605813], [6.823004087913909, 14.82851827294791, 6.9169207286747305], [13.02273840798426, 26.95252326352471, 13.595258209252734], [12.450156375686381, 27.939170256440573, 13.487716244304735], [10.301865789157581, 20.60843686266765, 10.102637494557515]] [5.751722253465613e-06, 1.828420918622595e-05, 8.695034595673081e-06, 1.0599116096144169e-05, 2.83641189786924e-05, 3.642748418361822e-05] [5.6978141831636326e-06, 1.8739067296662588e-05, 8.479282063237006e-06, 1.0995086988557976e-05, 2.8987754719841756e-05, 3.811153447359363e-05]
```

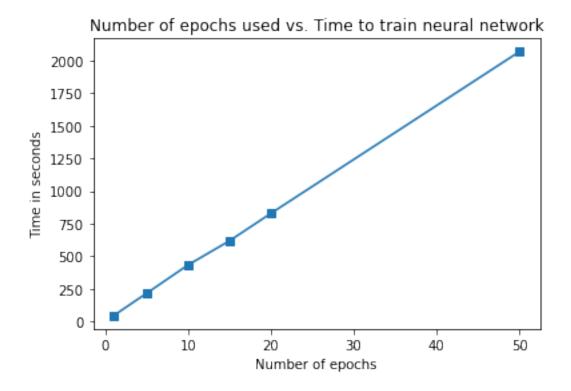
4 Now plot errors and running time

```
[16]: %matplotlib inline
    import matplotlib.pyplot as plt

#Time spent plot
    fig = plt.figure()
    ax1 = fig.add_subplot(1,1,1)

plt.plot(epochList, timeList, marker='s')
    plt.title("Number of epochs used vs. Time to train neural network")
    plt.xlabel("Number of epochs")
    plt.ylabel("Time in seconds")

#plt.legend(loc='upper left');
    plt.show()
```



```
[17]: for epochElement, timeElement in zip(epochList, timeList):
    minuteValue = timeElement / 60

    print("Number of epochs:", epochElement)
    print("Time spent:", minuteValue, "minutes", '\n')
```

Number of epochs: 1

Time spent: 0.7480666995048523 minutes

Number of epochs: 5

Time spent: 3.6164168039957683 minutes

Number of epochs: 10

Time spent: 7.232774639129639 minutes

Number of epochs: 15

Time spent: 10.31501669883728 minutes

Number of epochs: 20

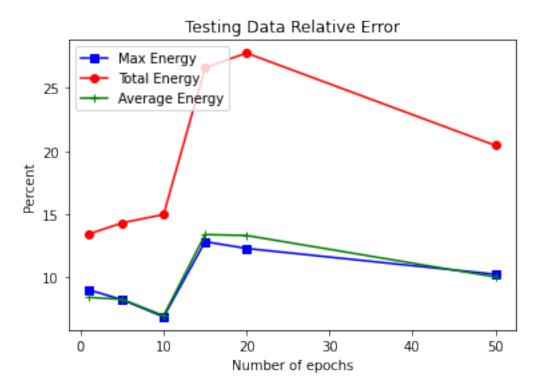
Time spent: 13.82526669104894 minutes

Number of epochs: 50

Time spent: 34.48906991481781 minutes

```
[18]: #Percent Error plot
    fig = plt.figure()
    ax1 = fig.add_subplot(1,1,1)

plt.plot(epochList, maxEnergyPercent, c='b', marker="s", label='Max Energy')
    plt.plot(epochList, totalEnergyPercent, c='r', marker="o", label='Total Energy')
    plt.plot(epochList, avgEnergyPercent, c='g', marker='+', label='Average Energy')
    plt.title("Testing Data Relative Error")
    plt.xlabel("Number of epochs")
    plt.ylabel("Percent")
    plt.legend(loc='upper left');
    plt.show()
```

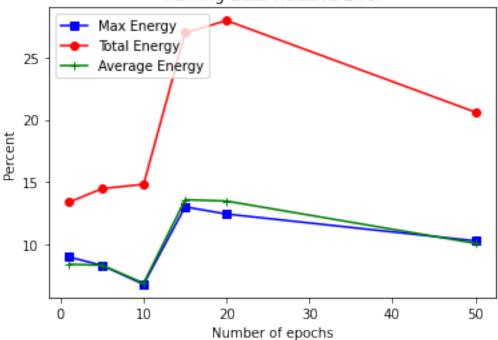


```
[19]: #Percent Error plot for training data
fig = plt.figure()
ax1 = fig.add_subplot(1,1,1)

plt.plot(epochList, trainMaxPercent, c='b', marker="s", label='Max Energy')
plt.plot(epochList, trainTotalPercent, c='r', marker="o", label='Total Energy')
plt.plot(epochList, trainAvgPercent, c='g', marker='+', label='Average Energy')
plt.title("Training Data Relative Error")
```

```
plt.xlabel("Number of epochs")
plt.ylabel("Percent")
plt.legend(loc='upper left');
plt.show()
```





```
[20]: #Compare errors of train and test using just the max energy % error

fig = plt.figure()
#ax1 = fig.add_subplot(1,1,1)

plt.plot(epochList, trainMaxPercent, c='b', marker="s", label='Training Data')
plt.plot(epochList, maxEnergyPercent, c='r', marker="s", label='Testing Data')

plt.title("Testing vs. Training Data Error")
plt.xlabel("Number of epochs")
plt.ylabel("Max Energy Percent Error")
plt.legend(loc='upper left')
plt.show()
```



```
[21]: for epoch, maxError, totalError, avgError in zip(epochList, maxEnergyPercent, usetotalEnergyPercent, avgEnergyPercent):

print("Number of epochs:", epoch)
print("Max energy percent error:", maxError)
print("Total energy percent error:", totalError)
print("Average energy percent error:", avgError, '\n')
```

Number of epochs: 1

Max energy percent error: 9.003389914677687 Total energy percent error: 13.435528497275815 Average energy percent error: 8.41432986321646

Number of epochs: 5

Max energy percent error: 8.229353694367378 Total energy percent error: 14.313656050329719 Average energy percent error: 8.255411196914693

Number of epochs: 10

Max energy percent error: 6.871202907559728 Total energy percent error: 14.982273992363268 Average energy percent error: 6.968154810180534

Number of epochs: 15

Max energy percent error: 12.829914110043587

```
Total energy percent error: 26.607821593869424
     Average energy percent error: 13.389491215689986
     Number of epochs: 20
     Max energy percent error: 12.290295881148435
     Total energy percent error: 27.775826795091845
     Average energy percent error: 13.318004522922582
     Number of epochs: 50
     Max energy percent error: 10.244809549320886
     Total energy percent error: 20.453482240665874
     Average energy percent error: 10.028581486654229
[22]: fig = plt.figure(figsize = (12, 4))
      plt.subplot(1, 3, 1)
      plt.plot(epochList, maxEnergyMSE, marker = 's')
      plt.title("Max Energy Absolute Test Error", pad = 20)
      plt.xlabel('Number of Epochs')
      plt.ylabel('Max Energy Error (MeV)')
      plt.subplot(1, 3, 2)
      plt.plot(epochList, totalEnergyMSE, marker = 's')
      plt.title("Total Energy Absolute Test Error", pad = 20)
      plt.xlabel('Number of Epochs')
      plt.ylabel('Total Energy Error (MeV)')
      plt.subplot(1, 3, 3)
```

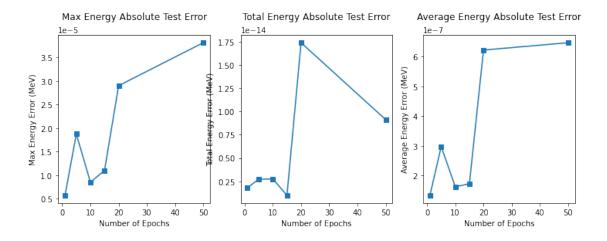
[22]: Text(0, 0.5, 'Average Energy Error (MeV)')

plt.ylabel('Average Energy Error (MeV)')

plt.xlabel('Number of Epochs')

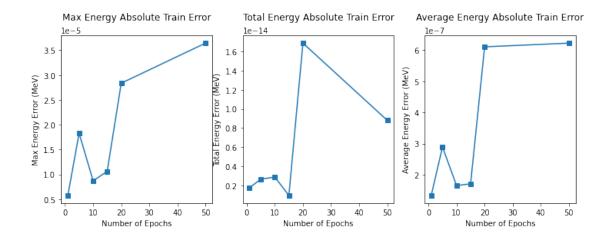
plt.plot(epochList, avgEnergyMSE, marker = 's')

plt.title("Average Energy Absolute Test Error", pad = 20)



```
[23]: fig = plt.figure(figsize = (12, 4))
      plt.subplot(1, 3, 1)
      plt.plot(epochList, trainMaxMSE, marker='s')
      plt.title("Max Energy Absolute Train Error", pad = 20)
      plt.xlabel('Number of Epochs')
      plt.ylabel('Max Energy Error (MeV)')
      plt.subplot(1, 3, 2)
      plt.plot(epochList, trainTotalMSE, marker='s')
      plt.title("Total Energy Absolute Train Error", pad = 20)
      plt.xlabel('Number of Epochs')
      plt.ylabel('Total Energy Error (MeV)')
      plt.subplot(1, 3, 3)
      plt.plot(epochList, trainAvgMSE, marker='s')
      plt.title("Average Energy Absolute Train Error", pad = 20)
      plt.xlabel('Number of Epochs')
      plt.ylabel('Average Energy Error (MeV)')
```

[23]: Text(0, 0.5, 'Average Energy Error (MeV)')



```
[24]: # Results with 100,000 points
      # Number of epochs: 1
      # Time spent: 41.4709038734436
      # Number of epochs: 5
      # Time spent: 209.08989548683167
      # Number of epochs: 10
      # Time spent: 423.1534082889557
      # Number of epochs: 15
      # Time spent: 646.6692581176758
      # Number of epochs: 20
      # Time spent: 835.7174115180969
      # Number of epochs: 50
      # Time spent: 2107.0108013153076
      # Number of epochs: 1
      # Max energy percent error: 19.58636320715849
      # Total energy percent error: 24.325337635849067
      # Average energy percent error: 14.268807343509357
      # Number of epochs: 5
      # Max energy percent error: 24.806485173653556
      # Total energy percent error: 43.16065515019244
      # Average energy percent error: 22.830055824436172
      # Number of epochs: 10
```

```
# Max energy percent error: 22.419187074140353
# Total energy percent error: 37.010358828319994
# Average energy percent error: 19.137852256849456

# Number of epochs: 15
# Max energy percent error: 22.667619660241414
# Total energy percent error: 37.72516050555141
# Average energy percent error: 18.710265948355165

# Number of epochs: 20
# Max energy percent error: 34.52741609944199
# Total energy percent error: 44.01372313803574
# Average energy percent error: 33.48004556367719

# Number of epochs: 50
# Max energy percent error: 29.11596143268651
# Total energy percent error: 41.24085503272979
# Average energy percent error: 26.759934569978807
```

```
[25]: # Results with 20,000 points
      # Number of epochs: 1
      # Time spent: 9.709996938705444
      # Number of epochs: 5
      # Time spent: 42.58600425720215
      # Number of epochs: 10
      # Time spent: 86.28900504112244
      # Number of epochs: 15
      # Time spent: 129.9060001373291
      # Number of epochs: 20
      # Time spent: 172.23799514770508
      # Number of epochs: 50
      # Time spent: 436.66264843940735
      # Number of epochs: 1
      # Max energy percent error: 14.266001682042852
      # Total energy percent error: 36.2113883322816
      # Average energy percent error: 14.382154573345156
      # Number of epochs: 5
      # Max energy percent error: 13.186282608741399
      # Total energy percent error: 20.86685418910202
```

```
# Average energy percent error: 11.821664805706583
# Number of epochs: 10
# Max energy percent error: 17.19713317728656
# Total energy percent error: 23.92806554969021
# Average energy percent error: 12.881195411127187
# Number of epochs: 15
# Max energy percent error: 19.317774507765645
# Total energy percent error: 28.18222565512904
# Average energy percent error: 16.43670669838012
# Number of epochs: 20
# Max energy percent error: 25.952888453939533
# Total energy percent error: 39.46280229124166
# Average energy percent error: 25.0593774302352
# Number of epochs: 50
# Max energy percent error: 24.551931096353997
# Total energy percent error: 34.28238226862895
# Average energy percent error: 20.571137202898512
```