Compute loss count and loss value at every iteration

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Build a binary classifier for human versus horse based on logistic regression using the dataset that consists of human and horse images

The dataset consists of human images and horse images for the training and the validation
The classifier should be trained using the training set
The classifier should be tested using the validation set

```
In [18]: import matplotlib.pyplot as plt
         import numpy as np

         import torch
         from torch.utils.data import Dataset, DataLoader
         import torchvision.transforms as transforms
         import torchvision
         import os

         import timeit

         transform = transforms.Compose([#transforms.Resize((256,256)),
                                         transforms.Grayscale(),
             # the code transforms.Graysclae() is for changing the size [3,100,100] to [1, 100
                                         transforms.ToTensor(),])


         #train_data_path = 'relative path of training data set'
         train_data_path = 'horse-or-human/horse-or-human/train'
         trainset = torchvision.datasets.ImageFolder(root=train_data_path, transform=transform)
         # change the valuse of batch_size, num_workers for your program
         # if shuffle=True, the data reshuffled at every epoch
         trainloader = torch.utils.data.DataLoader(trainset, batch_size=1, shuffle=False, num_w

         validation_data_path = 'horse-or-human/horse-or-human/validation'
```

1

```python
valset = torchvision.datasets.ImageFolder(root=validation_data_path, transform=transf
# change the valuse of batch_size, num_workers for your program
valloader = torch.utils.data.DataLoader(valset, batch_size=1, shuffle=False, num_worke

NUM_EPOCH = range(1) # my code

#
# Image size and number of data
#
image_size = 10000
train_count = 1027
validation_count = 256

train_label = np.empty(train_count, dtype=float)
train_data = np.ones((train_count, image_size + 1), dtype=float)

validation_label = np.empty(validation_count, dtype=float)
validation_data = np.ones((validation_count, image_size + 1), dtype=float)

for epoch in (NUM_EPOCH):
    # load training images of the batch size for every iteration
    for i, data in enumerate(trainloader):

        # inputs is the image
        # labels is the class of the image
        inputs, labels = data

        # if you don't change the image size, it will be [batch_size, 1, 100, 100]
        #print(inputs.shape)

        # if labels is horse it returns tensor[0,0,0] else it returns tensor[1,1,1]
        #print(labels)

        train_label[i] = int(labels)
        train_tmp = np.asfarray(inputs)
        train_data[i, :10000] = train_tmp[0, 0, :, :].reshape(10000)

    # load validation images of the batch size for every iteration
    for i, data in enumerate(valloader):

        # inputs is the image
        # labels is the class of the image
        inputs, labels = data

        # if you don't change the image size, it will be [batch_size, 1, 100, 100]
        #print(inputs.shape)

        # if labels is horse it returns tensor[0,0,0] else it returns tensor[1,1,1]
```

```
            #print(labels)

            validation_label[i] = int(labels)
            validation_tmp = np.asfarray(inputs)
            validation_data[i, :10000] = validation_tmp[0, 0, :, :].reshape(10000)

In [19]: np.random.seed(1)

         learningRate = 10**(-5)
         delta = 10**(-9)

         def sigmoid(x):
             return 1/(1 + np.exp(-x))

         def loss_function(t, y):
             return -np.sum(t*np.log(y+delta) + (1-t)*np.log(1-y+delta))

         iteration = 5000

         d = np.empty(train_count, dtype=float)
         w = np.empty(image_size + 1, dtype=float)

         loss_arr = np.zeros(iteration, dtype=float)
         t_loss_arr = np.zeros(iteration, dtype=float)
         loss_value_arr = np.zeros(iteration, dtype=float)
         t_loss_value_arr = np.zeros(iteration, dtype=float)
         iteration_time = np.zeros(iteration, dtype=float)

         for i in range(image_size + 1):
             w[i] = np.random.rand(1)

         for iter in range(iteration):

             start = timeit.default_timer()


             for i in range(train_count):
                 d[i] = sigmoid(w[:].dot(train_data[i, :])) - train_label[i]

             for i in range(image_size + 1):
                 w[i] = w[i] - learningRate * np.sum(d[:].dot(train_data[:, i]))

             loss_value = 0
             t_loss_value = 0
             training_loss = 0
             testing_loss = 0

             for i in range(train_count):
```

```python
            loss_value += loss_function(train_label[i], sigmoid(w[:].dot(train_data[i, :])

            if train_label[i] == 1:
                if sigmoid(w[:].dot(train_data[i, :])) <= 0.5: # loss count
                    training_loss += 1

            else:
                if sigmoid(w[:].dot(train_data[i, :])) > 0.5: # loss count
                    training_loss += 1

        for i in range(validation_count):
            t_loss_value += loss_function(validation_label[i], sigmoid(w[:].dot(validatio
            if validation_label[i] == 1:
                if sigmoid(w[:].dot(validation_data[i, :])) <= 0.5: # loss count
                    testing_loss += 1

            else:
                if sigmoid(w[:].dot(validation_data[i, :])) > 0.5: # loss count
                    testing_loss += 1

        if iter % 10 == 0:
            print("iter =", iter)
            print("train loss count =", training_loss)
            print("train loss value =", loss_value)
            print("validation loss count =", testing_loss)
            print("validation loss value =", t_loss_value)


        loss_value_arr[iter] = loss_value
        t_loss_value_arr[iter] = t_loss_value
        loss_arr[iter] = training_loss
        t_loss_arr[iter] = testing_loss

        stop = timeit.default_timer()

        iteration_time[iter] = stop - start

        if iter % 10 == 0:
            print(iter, 'iteration time =', iteration_time[iter])


iter = 0
train loss count = 500
train loss value = 10361.63291794603
validation loss count = 128
validation loss value = 2652.5780270011383
0 iteration time = 0.2175913999999466
iter = 10
```

4

```
train loss count = 500
train loss value = 10361.63291794603
validation loss count = 128
validation loss value = 2652.5780270011383
10 iteration time = 0.21390270000028977
iter = 20
train loss count = 500
train loss value = 10361.63291794603
validation loss count = 128
validation loss value = 2652.5780270011383
20 iteration time = 0.18531009999969683
iter = 30
train loss count = 500
train loss value = 10361.63291794603
validation loss count = 128
validation loss value = 2652.5780270011383
30 iteration time = 0.19031569999970088
iter = 40
train loss count = 500
train loss value = 10361.63291794603
validation loss count = 128
validation loss value = 2652.5780270011383
40 iteration time = 0.22262190000037663
iter = 50
train loss count = 500
train loss value = 10361.63291794603
validation loss count = 128
validation loss value = 2652.5780270011383
50 iteration time = 0.1874974000002112
iter = 60
train loss count = 500
train loss value = 10361.63291794603
validation loss count = 128
validation loss value = 2652.5780270011383
60 iteration time = 0.19113370000013674
iter = 70
train loss count = 500
train loss value = 10361.63291794603
validation loss count = 128
validation loss value = 2652.5780270011383
70 iteration time = 0.17761479999990115
iter = 80
train loss count = 500
train loss value = 10361.63291794603
validation loss count = 128
validation loss value = 2652.5780270011383
80 iteration time = 0.21924889999991137
iter = 90
```

```
train loss count = 500
train loss value = 10361.63291794603
validation loss count = 128
validation loss value = 2652.5780270011383
90 iteration time = 0.17945999999938067
iter = 100
train loss count = 500
train loss value = 10361.63291794603
validation loss count = 128
validation loss value = 2652.5780270011383
100 iteration time = 0.17195660000015778
iter = 110
train loss count = 500
train loss value = 10361.63291794603
validation loss count = 128
validation loss value = 2652.5780270011383
110 iteration time = 0.182892300000276
iter = 120
train loss count = 500
train loss value = 10361.63291794603
validation loss count = 128
validation loss value = 2652.5780270011383
120 iteration time = 0.19143139999960113
iter = 130
train loss count = 500
train loss value = 10361.63291794603
validation loss count = 128
validation loss value = 2652.5780270011383
130 iteration time = 0.1757967000003191
iter = 140
train loss count = 500
train loss value = 10361.63291794603
validation loss count = 128
validation loss value = 2652.5780270011383
140 iteration time = 0.17071709999981977
iter = 150
train loss count = 500
train loss value = 10361.63291794603
validation loss count = 128
validation loss value = 2652.5780270011383
150 iteration time = 0.17067820000011125
iter = 160
train loss count = 500
train loss value = 10361.63291794603
validation loss count = 128
validation loss value = 2652.5780270011383
160 iteration time = 0.16438139999991108
iter = 170
```

```
train loss count = 500
train loss value = 10361.63291794603
validation loss count = 128
validation loss value = 2652.5780270011383
170 iteration time = 0.19273530000009487
iter = 180
train loss count = 500
train loss value = 10361.63291794603
validation loss count = 128
validation loss value = 2652.5780270011383
180 iteration time = 0.19074730000011186
iter = 190
train loss count = 500
train loss value = 10361.63291794603
validation loss count = 128
validation loss value = 2652.5780270011383
190 iteration time = 0.1741082999997161
iter = 200
train loss count = 481
train loss value = 8861.651126925031
validation loss count = 125
validation loss value = 2496.19021548516
200 iteration time = 0.18025719999968715
iter = 210
train loss count = 425
train loss value = 4904.921553213166
validation loss count = 140
validation loss value = 2376.907096650134
210 iteration time = 0.1753196999998181
iter = 220
train loss count = 420
train loss value = 4620.941544245704
validation loss count = 140
validation loss value = 2286.7885266267676
220 iteration time = 0.18839110000044457
iter = 230
train loss count = 411
train loss value = 4345.62251519742
validation loss count = 136
validation loss value = 2198.474198197537
230 iteration time = 0.21314299999994546
iter = 240
train loss count = 406
train loss value = 4082.770068811558
validation loss count = 134
validation loss value = 2108.7951575370053
240 iteration time = 0.2283584000006158
iter = 250
```

```
train loss count = 393
train loss value = 3832.684682493835
validation loss count = 134
validation loss value = 2007.2637370642622
250 iteration time = 0.17075850000037462
iter = 260
train loss count = 375
train loss value = 3595.6163511365776
validation loss count = 132
validation loss value = 1890.4159049004045
260 iteration time = 0.17630480000025273
iter = 270
train loss count = 372
train loss value = 3371.94092964056
validation loss count = 131
validation loss value = 1761.226597512048
270 iteration time = 0.20980320000035135
iter = 280
train loss count = 361
train loss value = 3160.718811655162
validation loss count = 131
validation loss value = 1623.3400350485233
280 iteration time = 0.1967717999996239
iter = 290
train loss count = 350
train loss value = 2963.725443598746
validation loss count = 128
validation loss value = 1481.094714153204
290 iteration time = 0.19567229999938718
iter = 300
train loss count = 335
train loss value = 2783.356956412319
validation loss count = 127
validation loss value = 1339.6491048079727
300 iteration time = 0.19315009999991162
iter = 310
train loss count = 322
train loss value = 2619.284356988522
validation loss count = 125
validation loss value = 1203.0300463399778
310 iteration time = 0.18726229999992938
iter = 320
train loss count = 318
train loss value = 2469.5919999239295
validation loss count = 124
validation loss value = 1072.9905554628474
320 iteration time = 0.18162560000018857
iter = 330
```

```
train loss count = 303
train loss value = 2332.4105566636304
validation loss count = 121
validation loss value = 950.3988738032882
330 iteration time = 0.20103149999977177
iter = 340
train loss count = 298
train loss value = 2205.6212006691676
validation loss count = 115
validation loss value = 836.4570433499177
340 iteration time = 0.164525400000457
iter = 350
train loss count = 295
train loss value = 2086.2130138113284
validation loss count = 111
validation loss value = 731.3952036325934
350 iteration time = 0.17177989999981946
iter = 360
train loss count = 291
train loss value = 1972.913542730832
validation loss count = 108
validation loss value = 635.5220054104323
360 iteration time = 0.18595400000049267
iter = 370
train loss count = 286
train loss value = 1865.9923308166046
validation loss count = 102
validation loss value = 549.1042829297533
370 iteration time = 0.1798533999999563
iter = 380
train loss count = 283
train loss value = 1766.2420350629775
validation loss count = 95
validation loss value = 472.31816129630323
380 iteration time = 0.22273179999956483
iter = 390
train loss count = 289
train loss value = 1673.730300788846
validation loss count = 87
validation loss value = 405.46415325675133
390 iteration time = 0.19263069999942672
iter = 400
train loss count = 287
train loss value = 1588.446477388786
validation loss count = 82
validation loss value = 348.84782844761025
400 iteration time = 0.2229038000004948
iter = 410
```

```
train loss count = 280
train loss value = 1510.4062458274282
validation loss count = 73
validation loss value = 302.55041198571587
410 iteration time = 0.16500379999979486
iter = 420
train loss count = 284
train loss value = 1439.3802622084172
validation loss count = 63
validation loss value = 265.83901477105877
420 iteration time = 0.18712389999927836
iter = 430
train loss count = 284
train loss value = 1375.082260747143
validation loss count = 57
validation loss value = 237.25511404298314
430 iteration time = 0.17781620000005205
iter = 440
train loss count = 285
train loss value = 1316.987692861587
validation loss count = 55
validation loss value = 215.23453622245535
440 iteration time = 0.18776030000026367
iter = 450
train loss count = 280
train loss value = 1264.3283528023342
validation loss count = 49
validation loss value = 198.4033844464263
450 iteration time = 0.18602779999946506
iter = 460
train loss count = 281
train loss value = 1216.3403745073033
validation loss count = 51
validation loss value = 185.6114438576825
460 iteration time = 0.1780404000000999
iter = 470
train loss count = 282
train loss value = 1172.4453711717258
validation loss count = 47
validation loss value = 175.94297811224044
470 iteration time = 0.18077350000021397
iter = 480
train loss count = 277
train loss value = 1132.2578922930825
validation loss count = 45
validation loss value = 168.70772040743282
480 iteration time = 0.17257940000035887
iter = 490
```

```
train loss count = 276
train loss value = 1095.495302685649
validation loss count = 44
validation loss value = 163.39499732128962
490 iteration time = 0.20826349999970262
iter = 500
train loss count = 276
train loss value = 1061.9238629511465
validation loss count = 42
validation loss value = 159.61475936738566
500 iteration time = 0.16328039999916655
iter = 510
train loss count = 275
train loss value = 1031.3261181972096
validation loss count = 41
validation loss value = 157.05446734663548
510 iteration time = 0.1956608000000415
iter = 520
train loss count = 272
train loss value = 1003.4613504575387
validation loss count = 41
validation loss value = 155.45824177923132
520 iteration time = 0.1901480000005904
iter = 530
train loss count = 267
train loss value = 978.0355062489868
validation loss count = 41
validation loss value = 154.61520333669736
530 iteration time = 0.16942550000021583
iter = 540
train loss count = 266
train loss value = 954.7101120775228
validation loss count = 40
validation loss value = 154.34834390556833
540 iteration time = 0.16485560000000987
iter = 550
train loss count = 265
train loss value = 933.1524903259906
validation loss count = 41
validation loss value = 154.5102303212745
550 iteration time = 0.17339240000001155
iter = 560
train loss count = 263
train loss value = 913.0802242730394
validation loss count = 41
validation loss value = 154.98447782718398
560 iteration time = 0.19857060000049387
iter = 570
```

```
train loss count = 259
train loss value = 894.2722556940809
validation loss count = 41
validation loss value = 155.68407096691445
570 iteration time = 0.17382799999995768
iter = 580
train loss count = 255
train loss value = 876.559158615099
validation loss count = 41
validation loss value = 156.5455301039592
580 iteration time = 0.22120020000056684
iter = 590
train loss count = 252
train loss value = 859.80941589101
validation loss count = 41
validation loss value = 157.52246019210938
590 iteration time = 0.17186300000048504
iter = 600
train loss count = 250
train loss value = 843.9185128847947
validation loss count = 41
validation loss value = 158.58047322318743
600 iteration time = 0.17350660000010976
iter = 610
train loss count = 248
train loss value = 828.8015611618017
validation loss count = 41
validation loss value = 159.69372098971854
610 iteration time = 0.18392560000029334
iter = 620
train loss count = 246
train loss value = 814.388398644743
validation loss count = 41
validation loss value = 160.84264117529324
620 iteration time = 0.16491599999972095
iter = 630
train loss count = 243
train loss value = 800.6201390175994
validation loss count = 41
validation loss value = 162.01246700269618
630 iteration time = 0.21712380000008125
iter = 640
train loss count = 243
train loss value = 787.4465777404406
validation loss count = 41
validation loss value = 163.19217603662315
640 iteration time = 0.1644477999998344
iter = 650
```

```
train loss count = 242
train loss value = 774.8241980212197
validation loss count = 41
validation loss value = 164.37369166911247
650 iteration time = 0.20404839999991964
iter = 660
train loss count = 241
train loss value = 762.7146706103052
validation loss count = 41
validation loss value = 165.55124694308512
660 iteration time = 0.17892589999974007
iter = 670
train loss count = 241
train loss value = 751.0837711525485
validation loss count = 41
validation loss value = 166.72087064003034
670 iteration time = 0.2240575000005265
iter = 680
train loss count = 238
train loss value = 739.9006270329797
validation loss count = 42
validation loss value = 167.87997437286884
680 iteration time = 0.17361519999940356
iter = 690
train loss count = 238
train loss value = 729.1371986873204
validation loss count = 42
validation loss value = 169.02702292514005
690 iteration time = 0.2031546000007438
iter = 700
train loss count = 238
train loss value = 718.7679111593893
validation loss count = 42
validation loss value = 170.16126968955078
700 iteration time = 0.2277721999998903
iter = 710
train loss count = 235
train loss value = 708.7693741390635
validation loss count = 42
validation loss value = 171.28254030315384
710 iteration time = 0.21120520000022225
iter = 720
train loss count = 232
train loss value = 699.1201523622084
validation loss count = 43
validation loss value = 172.39105140038168
720 iteration time = 0.21193050000056246
iter = 730
```

```
train loss count = 228
train loss value = 689.8005663509609
validation loss count = 43
validation loss value = 173.487256471196
730 iteration time = 0.18593390000023646
iter = 740
train loss count = 227
train loss value = 680.7925145544051
validation loss count = 43
validation loss value = 174.5717154295973
740 iteration time = 0.2060263000003033
iter = 750
train loss count = 225
train loss value = 672.0793133487365
validation loss count = 44
validation loss value = 175.64498758527654
750 iteration time = 0.17573150000043825
iter = 760
train loss count = 223
train loss value = 663.6455534624024
validation loss count = 43
validation loss value = 176.7075489537559
760 iteration time = 0.18647480000072392
iter = 770
train loss count = 223
train loss value = 655.4769718577063
validation loss count = 43
validation loss value = 177.7597344963832
770 iteration time = 0.1721850000003542
iter = 780
train loss count = 220
train loss value = 647.5603380222299
validation loss count = 42
validation loss value = 178.80170452740228
780 iteration time = 0.18174569999973755
iter = 790
train loss count = 218
train loss value = 639.8833534490302
validation loss count = 42
validation loss value = 179.83343283275767
790 iteration time = 0.19457349999993312
iter = 800
train loss count = 215
train loss value = 632.4345629595961
validation loss count = 42
validation loss value = 180.8547125998284
800 iteration time = 0.17293399999925896
iter = 810
```

```
train loss count = 212
train loss value = 625.2032764792968
validation loss count = 42
validation loss value = 181.86517543057963
810 iteration time = 0.1869261000001643
iter = 820
train loss count = 210
train loss value = 618.17949991005
validation loss count = 42
validation loss value = 182.86431861334358
820 iteration time = 0.20346199999949022
iter = 830
train loss count = 207
train loss value = 611.3538738241363
validation loss count = 42
validation loss value = 183.8515363488078
830 iteration time = 0.21338009999999485
iter = 840
train loss count = 205
train loss value = 604.7176188094397
validation loss count = 43
validation loss value = 184.82615152634213
840 iteration time = 0.17637180000019725
iter = 850
train loss count = 205
train loss value = 598.2624864702055
validation loss count = 44
validation loss value = 185.78744567086994
850 iteration time = 0.18238909999945463
iter = 860
train loss count = 203
train loss value = 591.9807152263862
validation loss count = 44
validation loss value = 186.73468562795694
860 iteration time = 0.19993320000048698
iter = 870
train loss count = 203
train loss value = 585.8649902299348
validation loss count = 44
validation loss value = 187.66714631263318
870 iteration time = 0.20324080000045797
iter = 880
train loss count = 203
train loss value = 579.9084068688277
validation loss count = 44
validation loss value = 188.58412938238322
880 iteration time = 0.18580440000005183
iter = 890
```

```
train loss count = 204
train loss value = 574.1044374515652
validation loss count = 45
validation loss value = 189.48497802717876
890 iteration time = 0.1633213999994041
iter = 900
train loss count = 202
train loss value = 568.4469007798484
validation loss count = 45
validation loss value = 190.36908824519875
900 iteration time = 0.2024531000006391
iter = 910
train loss count = 199
train loss value = 562.9299343898119
validation loss count = 45
validation loss value = 191.23591704192654
910 iteration time = 0.21923379999952886
iter = 920
train loss count = 196
train loss value = 557.5479692984541
validation loss count = 45
validation loss value = 192.08498799508368
920 iteration time = 0.23587529999986145
iter = 930
train loss count = 196
train loss value = 552.2957071209894
validation loss count = 46
validation loss value = 192.9158945992045
930 iteration time = 0.22058019999985845
iter = 940
train loss count = 192
train loss value = 547.1680994400358
validation loss count = 47
validation loss value = 193.72830176130554
940 iteration time = 0.18235379999987344
iter = 950
train loss count = 190
train loss value = 542.1603293137138
validation loss count = 47
validation loss value = 194.52194577426113
950 iteration time = 0.2486017000001084
iter = 960
train loss count = 188
train loss value = 537.2677947967269
validation loss count = 47
validation loss value = 195.29663305251765
960 iteration time = 0.30642600000010134
iter = 970
```

```
train loss count = 187
train loss value = 532.4860943447568
validation loss count = 47
validation loss value = 196.052237877658
970 iteration time = 0.2330644999992728
iter = 980
train loss count = 186
train loss value = 527.811013956421
validation loss count = 47
validation loss value = 196.78869936910624
980 iteration time = 0.2412860999993427
iter = 990
train loss count = 185
train loss value = 523.2385159018554
validation loss count = 47
validation loss value = 197.50601786736317
990 iteration time = 0.24474190000000817
iter = 1000
train loss count = 185
train loss value = 518.7647288721199
validation loss count = 47
validation loss value = 198.2042508926666
1000 iteration time = 0.21953120000034687
iter = 1010
train loss count = 184
train loss value = 514.3859393862073
validation loss count = 47
validation loss value = 198.8835088201013
1010 iteration time = 0.21163249999972322
iter = 1020
train loss count = 181
train loss value = 510.09858428849975
validation loss count = 47
validation loss value = 199.5439503923312
1020 iteration time = 0.19854190000023664
iter = 1030
train loss count = 181
train loss value = 505.8992441755514
validation loss count = 47
validation loss value = 200.18577817288755
1030 iteration time = 0.22176450000006298
iter = 1040
train loss count = 179
train loss value = 501.7846375994877
validation loss count = 47
validation loss value = 200.8092340260834
1040 iteration time = 0.20654409999951895
iter = 1050
```

```
train loss count = 178
train loss value = 497.75161590303713
validation loss count = 48
validation loss value = 201.4145946940491
1050 iteration time = 0.22315449999950943
iter = 1060
train loss count = 174
train loss value = 493.79715856211544
validation loss count = 48
validation loss value = 202.0021675270969
1060 iteration time = 0.20207209999989573
iter = 1070
train loss count = 169
train loss value = 489.9183689188707
validation loss count = 47
validation loss value = 202.57228641062468
1070 iteration time = 0.22410599999966507
iter = 1080
train loss count = 167
train loss value = 486.11247021243855
validation loss count = 47
validation loss value = 203.12530792017677
1080 iteration time = 0.22958829999970476
iter = 1090
train loss count = 165
train loss value = 482.3768018228569
validation loss count = 47
validation loss value = 203.6616077260654
1090 iteration time = 0.21891229999982897
iter = 1100
train loss count = 163
train loss value = 478.7088156662074
validation loss count = 46
validation loss value = 204.18157726016096
1100 iteration time = 0.21546919999946113
iter = 1110
train loss count = 161
train loss value = 475.1060726886481
validation loss count = 46
validation loss value = 204.68562065006503
1110 iteration time = 0.1980519999997341
iter = 1120
train loss count = 158
train loss value = 471.5662394221083
validation loss count = 46
validation loss value = 205.17415191980595
1120 iteration time = 0.22203889999946114
iter = 1130
```

```
train loss count = 157
train loss value = 468.0870845754401
validation loss count = 46
validation loss value = 205.64759245134675
1130 iteration time = 0.20678510000016104
iter = 1140
train loss count = 157
train loss value = 464.666475642851
validation loss count = 46
validation loss value = 206.10636869750826
1140 iteration time = 0.20664920000035636
iter = 1150
train loss count = 157
train loss value = 461.30237552132934
validation loss count = 46
validation loss value = 206.55091013414275
1150 iteration time = 0.1939544000006208
iter = 1160
train loss count = 155
train loss value = 457.9928391348052
validation loss count = 46
validation loss value = 206.9816474375706
1160 iteration time = 0.209776900000179
iter = 1170
train loss count = 155
train loss value = 454.7360100638624
validation loss count = 46
validation loss value = 207.39901087208116
1170 iteration time = 0.1995120000001407
iter = 1180
train loss count = 153
train loss value = 451.5301171898236
validation loss count = 46
validation loss value = 207.80342887178952
1180 iteration time = 0.2099091000000044
iter = 1190
train loss count = 151
train loss value = 448.37347135680614
validation loss count = 46
validation loss value = 208.19532680097558
1190 iteration time = 0.1990139999998064
iter = 1200
train loss count = 149
train loss value = 445.2644620625424
validation loss count = 46
validation loss value = 208.57512587733007
1200 iteration time = 0.21859889999996085
iter = 1210
```

```
train loss count = 148
train loss value = 442.2015541876451
validation loss count = 46
validation loss value = 208.94324224303398
1210 iteration time = 0.20747380000011617
iter = 1220
train loss count = 148
train loss value = 439.18328477032486
validation loss count = 46
validation loss value = 209.30008616930402
1220 iteration time = 0.1908573000000615
iter = 1230
train loss count = 146
train loss value = 436.20825983880934
validation loss count = 46
validation loss value = 209.64606138088368
1230 iteration time = 0.20977039999979752
iter = 1240
train loss count = 145
train loss value = 433.2751513068138
validation loss count = 47
validation loss value = 209.9815644878505
1240 iteration time = 0.19509820000075706
iter = 1250
train loss count = 145
train loss value = 430.3826939423485
validation loss count = 47
validation loss value = 210.30698451307066
1250 iteration time = 0.20868200000040815
iter = 1260
train loss count = 144
train loss value = 427.5296824139465
validation loss count = 47
validation loss value = 210.62270250455637
1260 iteration time = 0.21150160000070173
iter = 1270
train loss count = 143
train loss value = 424.71496842158024
validation loss count = 47
validation loss value = 210.92909122292804
1270 iteration time = 0.18752760000006674
iter = 1280
train loss count = 143
train loss value = 421.93745791681107
validation loss count = 48
validation loss value = 211.22651489505995
1280 iteration time = 0.21108019999974204
iter = 1290
```

```
train loss count = 142
train loss value = 419.19610841445063
validation loss count = 48
validation loss value = 211.5153290258502
1290 iteration time = 0.2089750000004642
iter = 1300
train loss count = 141
train loss value = 416.4899263993658
validation loss count = 48
validation loss value = 211.79588026084065
1300 iteration time = 0.2219994000006409
iter = 1310
train loss count = 141
train loss value = 413.81796483023044
validation loss count = 48
validation loss value = 212.06850629316676
1310 iteration time = 0.21527070000047388
iter = 1320
train loss count = 141
train loss value = 411.17932073975993
validation loss count = 50
validation loss value = 212.33353580900183
1320 iteration time = 0.2084365999999136
iter = 1330
train loss count = 140
train loss value = 408.5731329338568
validation loss count = 50
validation loss value = 212.59128846629676
1330 iteration time = 0.20708879999983765
iter = 1340
train loss count = 140
train loss value = 405.9985797870346
validation loss count = 50
validation loss value = 212.84207490219634
1340 iteration time = 0.21063820000017586
iter = 1350
train loss count = 139
train loss value = 403.45487713477394
validation loss count = 50
validation loss value = 213.0861967650444
1350 iteration time = 0.19304710000051273
iter = 1360
train loss count = 138
train loss value = 400.94127626044497
validation loss count = 50
validation loss value = 213.32394676737954
1360 iteration time = 0.20403150000038295
iter = 1370
```

```
train loss count = 138
train loss value = 398.45706197558883
validation loss count = 51
validation loss value = 213.5556087567517
1370 iteration time = 0.2004739999993035
iter = 1380
train loss count = 138
train loss value = 396.00155079071936
validation loss count = 51
validation loss value = 213.78145780160457
1380 iteration time = 0.20622309999998834
iter = 1390
train loss count = 138
train loss value = 393.57408917545075
validation loss count = 51
validation loss value = 214.00176028979484
1390 iteration time = 0.20485590000043885
iter = 1400
train loss count = 138
train loss value = 391.1740519040413
validation loss count = 51
validation loss value = 214.21677403768425
1400 iteration time = 0.21167849999983446
iter = 1410
train loss count = 138
train loss value = 388.80084048499043
validation loss count = 51
validation loss value = 214.42674840798156
1410 iteration time = 0.19285559999934776
iter = 1420
train loss count = 138
train loss value = 386.4538816709709
validation loss count = 51
validation loss value = 214.63192443480546
1420 iteration time = 0.20424660000026051
iter = 1430
train loss count = 138
train loss value = 384.13262604629085
validation loss count = 50
validation loss value = 214.83253495464018
1430 iteration time = 0.20853390000047511
iter = 1440
train loss count = 137
train loss value = 381.83654668975583
validation loss count = 50
validation loss value = 215.02880474206407
1440 iteration time = 0.19837740000002668
iter = 1450
```

```
train loss count = 137
train loss value = 379.56513790925356
validation loss count = 50
validation loss value = 215.2209506493165
1450 iteration time = 0.21008080000046903
iter = 1460
train loss count = 137
train loss value = 377.3179140458109
validation loss count = 50
validation loss value = 215.409181748891
1460 iteration time = 0.20419029999993654
iter = 1470
train loss count = 137
train loss value = 375.0944083436413
validation loss count = 50
validation loss value = 215.59369947851044
1470 iteration time = 0.20581119999951625
iter = 1480
train loss count = 135
train loss value = 372.89417188383186
validation loss count = 50
validation loss value = 215.77469778791956
1480 iteration time = 0.19119709999995393
iter = 1490
train loss count = 135
train loss value = 370.7167725792382
validation loss count = 50
validation loss value = 215.9523632870486
1490 iteration time = 0.19073649999972986
iter = 1500
train loss count = 135
train loss value = 368.5617942269783
validation loss count = 50
validation loss value = 216.1268753951549
1500 iteration time = 0.19717630000013742
iter = 1510
train loss count = 135
train loss value = 366.42883561701547
validation loss count = 50
validation loss value = 216.29840649064695
1510 iteration time = 0.19959219999964262
iter = 1520
train loss count = 134
train loss value = 364.3175096935953
validation loss count = 50
validation loss value = 216.46712206132295
1520 iteration time = 0.2268657999993593
iter = 1530
```

```
train loss count = 134
train loss value = 362.2274427672925
validation loss count = 50
validation loss value = 216.63318085480486
1530 iteration time = 0.20482719999927212
iter = 1540
train loss count = 134
train loss value = 360.15827377526386
validation loss count = 50
validation loss value = 216.79673502899345
1540 iteration time = 0.2179255999999441
iter = 1550
train loss count = 132
train loss value = 358.10965358762513
validation loss count = 50
validation loss value = 216.957930302388
1550 iteration time = 0.21687130000009347
iter = 1560
train loss count = 132
train loss value = 356.0812443575055
validation loss count = 50
validation loss value = 217.116906104138
1560 iteration time = 0.19105260000014823
iter = 1570
train loss count = 132
train loss value = 354.07271891242283
validation loss count = 50
validation loss value = 217.27379572371052
1570 iteration time = 0.2109055000000808
iter = 1580
train loss count = 132
train loss value = 352.08376018542987
validation loss count = 50
validation loss value = 217.4287264600759
1580 iteration time = 0.1990296000003582
iter = 1590
train loss count = 133
train loss value = 350.11406068344775
validation loss count = 50
validation loss value = 217.5818197703135
1590 iteration time = 0.2073104000000967
iter = 1600
train loss count = 132
train loss value = 348.1633219912249
validation loss count = 50
validation loss value = 217.73319141756753
1600 iteration time = 0.21192619999965245
iter = 1610
```

```
train loss count = 132
train loss value = 346.23125430867833
validation loss count = 50
validation loss value = 217.8829516182648
1610 iteration time = 0.19150179999996908
iter = 1620
train loss count = 132
train loss value = 344.3175760197772
validation loss count = 50
validation loss value = 218.03120518854686
1620 iteration time = 0.2065272999998342
iter = 1630
train loss count = 131
train loss value = 342.4220132916256
validation loss count = 50
validation loss value = 218.1780516898429
1630 iteration time = 0.2056574999996883
iter = 1640
train loss count = 131
train loss value = 340.54429970134606
validation loss count = 50
validation loss value = 218.323585573546
1640 iteration time = 0.18804610000006505
iter = 1650
train loss count = 130
train loss value = 338.6841758893573
validation loss count = 50
validation loss value = 218.4678963247436
1650 iteration time = 0.2023786999998265
iter = 1660
train loss count = 130
train loss value = 336.8413892374453
validation loss count = 49
validation loss value = 218.61106860496986
1660 iteration time = 0.20739309999953548
iter = 1670
train loss count = 130
train loss value = 335.0156935699026
validation loss count = 49
validation loss value = 218.75318239396304
1670 iteration time = 0.2041836999997031
iter = 1680
train loss count = 129
train loss value = 333.20684887624304
validation loss count = 50
validation loss value = 218.89431313039188
1680 iteration time = 0.19767899999988003
iter = 1690
```

```
train loss count = 128
train loss value = 331.41462105373233
validation loss count = 50
validation loss value = 219.03453185156374
1690 iteration time = 0.21470229999977164
iter = 1700
train loss count = 128
train loss value = 329.638781668699
validation loss count = 50
validation loss value = 219.1739053320967
1700 iteration time = 0.21868219999942085
iter = 1710
train loss count = 128
train loss value = 327.87910773478603
validation loss count = 50
validation loss value = 219.3124962215684
1710 iteration time = 0.20187970000006317
iter = 1720
train loss count = 124
train loss value = 326.1353815070914
validation loss count = 50
validation loss value = 219.4503631811456
1720 iteration time = 0.1899317000006704
iter = 1730
train loss count = 124
train loss value = 324.4073902904894
validation loss count = 50
validation loss value = 219.5875610192194
1730 iteration time = 0.21550220000062836
iter = 1740
train loss count = 123
train loss value = 322.69492626129136
validation loss count = 50
validation loss value = 219.72414082604746
1740 iteration time = 0.21543899999960558
iter = 1750
train loss count = 123
train loss value = 320.9977863006919
validation loss count = 50
validation loss value = 219.8601501074365
1750 iteration time = 0.2041839000003165
iter = 1760
train loss count = 123
train loss value = 319.3157718387663
validation loss count = 50
validation loss value = 219.99563291747816
1760 iteration time = 0.22538710000026185
iter = 1770
```

```
train loss count = 123
train loss value = 317.64868870855935
validation loss count = 51
validation loss value = 220.13062999033843
1770 iteration time = 0.19728390000000218
iter = 1780
train loss count = 122
train loss value = 315.99634700803057
validation loss count = 51
validation loss value = 220.26517887113945
1780 iteration time = 0.2196103000005678
iter = 1790
train loss count = 122
train loss value = 314.3585609699031
validation loss count = 51
validation loss value = 220.39931404590942
1790 iteration time = 0.2234902999998667
iter = 1800
train loss count = 122
train loss value = 312.73514883806405
validation loss count = 51
validation loss value = 220.53306707060378
1800 iteration time = 0.2208913999993456
iter = 1810
train loss count = 122
train loss value = 311.1259327492919
validation loss count = 51
validation loss value = 220.66646669917856
1810 iteration time = 0.2012382000002617
iter = 1820
train loss count = 122
train loss value = 309.53073862014753
validation loss count = 51
validation loss value = 220.79953901070036
1820 iteration time = 0.1936759999998685
iter = 1830
train loss count = 122
train loss value = 307.94939603767193
validation loss count = 51
validation loss value = 220.93230753541877
1830 iteration time = 0.1965924999994968
iter = 1840
train loss count = 122
train loss value = 306.38173815347767
validation loss count = 51
validation loss value = 221.0647933797693
1840 iteration time = 0.19459029999961786
iter = 1850
```

```
train loss count = 122
train loss value = 304.827601580487
validation loss count = 51
validation loss value = 221.19701535020621
1850 iteration time = 0.20945560000018304
iter = 1860
train loss count = 122
train loss value = 303.28682629187256
validation loss count = 51
validation loss value = 221.32899007578993
1860 iteration time = 0.21519399999942834
iter = 1870
train loss count = 122
train loss value = 301.7592555215742
validation loss count = 51
validation loss value = 221.4607321293941
1870 iteration time = 0.2225365000003876
iter = 1880
train loss count = 122
train loss value = 300.2447356659218
validation loss count = 51
validation loss value = 221.59225414740663
1880 iteration time = 0.20503199999984645
iter = 1890
train loss count = 122
train loss value = 298.7431161862453
validation loss count = 51
validation loss value = 221.7235669477845
1890 iteration time = 0.199894200000017
iter = 1900
train loss count = 121
train loss value = 297.254249511988
validation loss count = 51
validation loss value = 221.85467964625695
1900 iteration time = 0.21014990000003309
iter = 1910
train loss count = 120
train loss value = 295.77799094409465
validation loss count = 51
validation loss value = 221.9855997705343
1910 iteration time = 0.22044110000024375
iter = 1920
train loss count = 120
train loss value = 294.314198558704
validation loss count = 52
validation loss value = 222.11633337227613
1920 iteration time = 0.2074185999999827
iter = 1930
```

```
train loss count = 120
train loss value = 292.8627331109064
validation loss count = 52
validation loss value = 222.24688513662858
1930 iteration time = 0.21284900000046036
iter = 1940
train loss count = 119
train loss value = 291.42345793867713
validation loss count = 53
validation loss value = 222.3772584890953
1940 iteration time = 0.19368320000012318
iter = 1950
train loss count = 119
train loss value = 289.99623886693087
validation loss count = 53
validation loss value = 222.5074556995099
1950 iteration time = 0.21382720000019617
iter = 1960
train loss count = 119
train loss value = 288.5809441119228
validation loss count = 53
validation loss value = 222.63747798285942
1960 iteration time = 0.22285329999976966
iter = 1970
train loss count = 119
train loss value = 287.1774441860159
validation loss count = 53
validation loss value = 222.76732559673644
1970 iteration time = 0.20856569999978092
iter = 1980
train loss count = 119
train loss value = 285.7856118031577
validation loss count = 53
validation loss value = 222.8969979351781
1980 iteration time = 0.29026380000050267
iter = 1990
train loss count = 118
train loss value = 284.40532178527155
validation loss count = 53
validation loss value = 223.0264936186702
1990 iteration time = 0.295448299999407
iter = 2000
train loss count = 118
train loss value = 283.0364509697672
validation loss count = 53
validation loss value = 223.15581058009266
2000 iteration time = 0.22454730000026757
iter = 2010
```

```
train loss count = 115
train loss value = 281.67887811853126
validation loss count = 53
validation loss value = 223.28494614643202
2010 iteration time = 0.19752490000064427
iter = 2020
train loss count = 115
train loss value = 280.33248382877855
validation loss count = 53
validation loss value = 223.41389711608088
2020 iteration time = 0.20322510000005423
iter = 2030
train loss count = 115
train loss value = 278.9971504458851
validation loss count = 53
validation loss value = 223.5426598315754
2030 iteration time = 0.1789862000005087
iter = 2040
train loss count = 113
train loss value = 277.6727619787677
validation loss count = 53
validation loss value = 223.67123024767247
2040 iteration time = 0.17178340000009484
iter = 2050
train loss count = 113
train loss value = 276.3592040180108
validation loss count = 54
validation loss value = 223.79960399467436
2050 iteration time = 0.18284130000029108
iter = 2060
train loss count = 113
train loss value = 275.0563636569919
validation loss count = 54
validation loss value = 223.92777643696823
2060 iteration time = 0.20389279999926657
iter = 2070
train loss count = 113
train loss value = 273.7641294163715
validation loss count = 54
validation loss value = 224.0557427267673
2070 iteration time = 0.1632067000000461
iter = 2080
train loss count = 113
train loss value = 272.4823911721841
validation loss count = 54
validation loss value = 224.18349785309752
2080 iteration time = 0.21890220000022964
iter = 2090
```

```
train loss count = 112
train loss value = 271.21104008769356
validation loss count = 54
validation loss value = 224.31103668610172
2090 iteration time = 0.1872364999999263
iter = 2100
train loss count = 112
train loss value = 269.9499685493148
validation loss count = 54
validation loss value = 224.43835401677217
2100 iteration time = 0.1700403999993796
iter = 2110
train loss count = 112
train loss value = 268.69907010657386
validation loss count = 54
validation loss value = 224.56544459225262
2110 iteration time = 0.18427279999923485
iter = 2120
train loss count = 112
train loss value = 267.45823941640396
validation loss count = 55
validation loss value = 224.692303146914
2120 iteration time = 0.17954620000000432
iter = 2130
train loss count = 110
train loss value = 266.2273721916218
validation loss count = 55
validation loss value = 224.81892442939667
2130 iteration time = 0.1593273999997109
iter = 2140
train loss count = 110
train loss value = 265.0063651538868
validation loss count = 55
validation loss value = 224.9453032258604
2140 iteration time = 0.16982199999984005
iter = 2150
train loss count = 109
train loss value = 263.7951159908087
validation loss count = 55
validation loss value = 225.07143437972806
2150 iteration time = 0.20043009999972128
iter = 2160
train loss count = 109
train loss value = 262.5935233173429
validation loss count = 55
validation loss value = 225.19731280816205
2160 iteration time = 0.19272999999975582
iter = 2170
```

```
train loss count = 109
train loss value = 261.401486641412
validation loss count = 55
validation loss value = 225.32293351560375
2170 iteration time = 0.19440259999919363
iter = 2180
train loss count = 109
train loss value = 260.2189063334217
validation loss count = 55
validation loss value = 225.44829160464383
2180 iteration time = 0.17875520000052347
iter = 2190
train loss count = 109
train loss value = 259.0456835997526
validation loss count = 55
validation loss value = 225.57338228454688
2190 iteration time = 0.18806150000000343
iter = 2200
train loss count = 109
train loss value = 257.88172045990535
validation loss count = 55
validation loss value = 225.6982008777133
2200 iteration time = 0.2064637000003131
iter = 2210
train loss count = 108
train loss value = 256.7269197271585
validation loss count = 55
validation loss value = 225.82274282437245
2210 iteration time = 0.205971800000043
iter = 2220
train loss count = 107
train loss value = 255.58118499252558
validation loss count = 55
validation loss value = 225.94700368577682
2220 iteration time = 0.17213300000003073
iter = 2230
train loss count = 104
train loss value = 254.44442061178538
validation loss count = 55
validation loss value = 226.0709791461915
2230 iteration time = 0.19833070000004227
iter = 2240
train loss count = 103
train loss value = 253.31653169539274
validation loss count = 55
validation loss value = 226.19466501388408
2240 iteration time = 0.17815630000040983
iter = 2250
```

```
train loss count = 103
train loss value = 252.19742410098888
validation loss count = 55
validation loss value = 226.31805722136508
2250 iteration time = 0.17009110000071814
iter = 2260
train loss count = 103
train loss value = 251.08700442834166
validation loss count = 55
validation loss value = 226.4411518250863
2260 iteration time = 0.18708750000041618
iter = 2270
train loss count = 103
train loss value = 249.9851800164415
validation loss count = 55
validation loss value = 226.56394500476532
2270 iteration time = 0.1764798999993218
iter = 2280
train loss count = 103
train loss value = 248.89185894257642
validation loss count = 55
validation loss value = 226.68643306250107
2280 iteration time = 0.1955088999993677
iter = 2290
train loss count = 103
train loss value = 247.8069500231671
validation loss count = 55
validation loss value = 226.80861242182837
2290 iteration time = 0.20393460000013874
iter = 2300
train loss count = 103
train loss value = 246.7303628161694
validation loss count = 55
validation loss value = 226.93047962678912
2300 iteration time = 0.2056990000000951
iter = 2310
train loss count = 103
train loss value = 245.66200762479116
validation loss count = 55
validation loss value = 227.0520313411575
2310 iteration time = 0.177727600000253
iter = 2320
train loss count = 103
train loss value = 244.6017955024066
validation loss count = 56
validation loss value = 227.17326434785005
2320 iteration time = 0.20025579999946785
iter = 2330
```

```
train loss count = 103
train loss value = 243.5496382585236
validation loss count = 56
validation loss value = 227.29417554859117
2330 iteration time = 0.192681999999877
iter = 2340
train loss count = 103
train loss value = 242.5054484655417
validation loss count = 56
validation loss value = 227.41476196386398
2340 iteration time = 0.22062909999931435
iter = 2350
train loss count = 102
train loss value = 241.46913946620853
validation loss count = 56
validation loss value = 227.53502073315633
2350 iteration time = 0.23155980000046839
iter = 2360
train loss count = 101
train loss value = 240.44062538166386
validation loss count = 56
validation loss value = 227.65494911552094
2360 iteration time = 0.17730659999961063
iter = 2370
train loss count = 101
train loss value = 239.41982111986573
validation loss count = 57
validation loss value = 227.7745444904162
2370 iteration time = 0.18973499999992782
iter = 2380
train loss count = 101
train loss value = 238.4066423843064
validation loss count = 57
validation loss value = 227.89380435883174
2380 iteration time = 0.18899289999990287
iter = 2390
train loss count = 100
train loss value = 237.40100568295216
validation loss count = 57
validation loss value = 228.01272634465826
2390 iteration time = 0.19307260000005044
iter = 2400
train loss count = 99
train loss value = 236.40282833717575
validation loss count = 57
validation loss value = 228.1313081962743
2400 iteration time = 0.19580219999988913
iter = 2410
```

```
train loss count = 99
train loss value = 235.41202849072255
validation loss count = 57
validation loss value = 228.2495477883035
2410 iteration time = 0.2035249999998996
iter = 2420
train loss count = 99
train loss value = 234.42852511851734
validation loss count = 58
validation loss value = 228.36744312350308
2420 iteration time = 0.2045903999996881
iter = 2430
train loss count = 98
train loss value = 233.45223803523356
validation loss count = 58
validation loss value = 228.48499233474436
2430 iteration time = 0.1960729000002175
iter = 2440
train loss count = 95
train loss value = 232.48308790363674
validation loss count = 58
validation loss value = 228.602193687028
2440 iteration time = 0.2287330999997721
iter = 2450
train loss count = 95
train loss value = 231.52099624244917
validation loss count = 58
validation loss value = 228.71904557950464
2450 iteration time = 0.1924869000004037
iter = 2460
train loss count = 94
train loss value = 230.56588543388457
validation loss count = 58
validation loss value = 228.83554654745194
2460 iteration time = 0.22740439999961382
iter = 2470
train loss count = 94
train loss value = 229.61767873059517
validation loss count = 58
validation loss value = 228.95169526414762
2470 iteration time = 0.20322660000056203
iter = 2480
train loss count = 93
train loss value = 228.67630026214124
validation loss count = 58
validation loss value = 229.0674905426439
2480 iteration time = 0.19348720000016328
iter = 2490
```

```
train loss count = 92
train loss value = 227.74167504077215
validation loss count = 58
validation loss value = 229.1829313373584
2490 iteration time = 0.232511400000476
iter = 2500
train loss count = 92
train loss value = 226.81372896664223
validation loss count = 58
validation loss value = 229.29801674549978
2500 iteration time = 0.2799958000005063
iter = 2510
train loss count = 92
train loss value = 225.89238883228472
validation loss count = 58
validation loss value = 229.41274600826773
2510 iteration time = 0.21764279999933933
iter = 2520
train loss count = 92
train loss value = 224.97758232641362
validation loss count = 58
validation loss value = 229.52711851181422
2520 iteration time = 0.2468183000000863
iter = 2530
train loss count = 92
train loss value = 224.06923803695258
validation loss count = 58
validation loss value = 229.64113378795795
2530 iteration time = 0.19638909999957832
iter = 2540
train loss count = 90
train loss value = 223.16728545336886
validation loss count = 58
validation loss value = 229.7547915146471
2540 iteration time = 0.19222499999978027
iter = 2550
train loss count = 90
train loss value = 222.27165496817668
validation loss count = 58
validation loss value = 229.86809151612476
2550 iteration time = 0.2004376000004413
iter = 2560
train loss count = 89
train loss value = 221.38227787772445
validation loss count = 58
validation loss value = 229.98103376284962
2560 iteration time = 0.1824690000003102
iter = 2570
```

```
train loss count = 89
train loss value = 220.49908638218758
validation loss count = 58
validation loss value = 230.0936183711237
2570 iteration time = 0.1901053999999931
iter = 2580
train loss count = 87
train loss value = 219.62201358481727
validation loss count = 59
validation loss value = 230.20584560246127
2580 iteration time = 0.35841530000016064
iter = 2590
train loss count = 87
train loss value = 218.7509934904013
validation loss count = 59
validation loss value = 230.31771586269954
2590 iteration time = 0.16041100000074948
iter = 2600
train loss count = 86
train loss value = 217.88596100303423
validation loss count = 59
validation loss value = 230.42922970086337
2600 iteration time = 0.258816200000183
iter = 2610
train loss count = 85
train loss value = 217.0268519231155
validation loss count = 59
validation loss value = 230.54038780777654
2610 iteration time = 0.21404839999922842
iter = 2620
train loss count = 84
train loss value = 216.17360294368638
validation loss count = 59
validation loss value = 230.6511910144935
2620 iteration time = 0.17611399999987043
iter = 2630
train loss count = 84
train loss value = 215.3261516460664
validation loss count = 59
validation loss value = 230.76164029048923
2630 iteration time = 0.19272520000049553
iter = 2640
train loss count = 83
train loss value = 214.48443649487504
validation loss count = 59
validation loss value = 230.8717367417024
2640 iteration time = 0.2207035999999789
iter = 2650
```

```
train loss count = 83
train loss value = 213.64839683237682
validation loss count = 59
validation loss value = 230.98148160839446
2650 iteration time = 0.20863629999985278
iter = 2660
train loss count = 83
train loss value = 212.8179728723188
validation loss count = 59
validation loss value = 231.09087626288502
2660 iteration time = 0.21844729999975243
iter = 2670
train loss count = 82
train loss value = 211.99310569315978
validation loss count = 59
validation loss value = 231.19992220715994
2670 iteration time = 0.20804260000022623
iter = 2680
train loss count = 82
train loss value = 211.1737372307805
validation loss count = 59
validation loss value = 231.3086210703897
2680 iteration time = 0.19532500000059372
iter = 2690
train loss count = 82
train loss value = 210.35981027076818
validation loss count = 59
validation loss value = 231.4169746063548
2690 iteration time = 0.20904969999992318
iter = 2700
train loss count = 82
train loss value = 209.551268440175
validation loss count = 59
validation loss value = 231.52498469083002
2700 iteration time = 0.22371609999936481
iter = 2710
train loss count = 82
train loss value = 208.74805619894246
validation loss count = 59
validation loss value = 231.63265331891597
2710 iteration time = 0.1736935999997513
iter = 2720
train loss count = 82
train loss value = 207.9501188308887
validation loss count = 59
validation loss value = 231.73998260235325
2720 iteration time = 0.16581919999953243
iter = 2730
```

```
train loss count = 82
train loss value = 207.15740243438918
validation loss count = 59
validation loss value = 231.84697476682652
2730 iteration time = 0.17630279999957565
iter = 2740
train loss count = 83
train loss value = 206.36985391274774
validation loss count = 59
validation loss value = 231.95363214927613
2740 iteration time = 0.2024649999993926
iter = 2750
train loss count = 82
train loss value = 205.5874209642763
validation loss count = 59
validation loss value = 232.0599571952285
2750 iteration time = 0.2027392999998483
iter = 2760
train loss count = 82
train loss value = 204.81005207215978
validation loss count = 59
validation loss value = 232.16595245615275
2760 iteration time = 0.20075009999982285
iter = 2770
train loss count = 82
train loss value = 204.0376964940999
validation loss count = 59
validation loss value = 232.2716205868596
2770 iteration time = 0.2032738000007157
iter = 2780
train loss count = 82
train loss value = 203.2703042517656
validation loss count = 59
validation loss value = 232.3769643429468
2780 iteration time = 0.17598200000065845
iter = 2790
train loss count = 82
train loss value = 202.5078261201206
validation loss count = 59
validation loss value = 232.48198657828488
2790 iteration time = 0.2204319000002215
iter = 2800
train loss count = 81
train loss value = 201.75021361659194
validation loss count = 59
validation loss value = 232.58669024256707
2800 iteration time = 0.21750669999983074
iter = 2810
```

```
train loss count = 80
train loss value = 200.99741899017977
validation loss count = 59
validation loss value = 232.69107837891988
2810 iteration time = 0.2007966999999553
iter = 2820
train loss count = 80
train loss value = 200.24939521045533
validation loss count = 59
validation loss value = 232.79515412154592
2820 iteration time = 0.2076574000002438
iter = 2830
train loss count = 80
train loss value = 199.50609595652142
validation loss count = 59
validation loss value = 232.89892069345612
2830 iteration time = 0.19148539999969216
iter = 2840
train loss count = 80
train loss value = 198.76747560594845
validation loss count = 59
validation loss value = 233.00238140422442
2840 iteration time = 0.17775149999943096
iter = 2850
train loss count = 79
train loss value = 198.03348922366538
validation loss count = 59
validation loss value = 233.10553964780755
2850 iteration time = 0.20412910000050033
iter = 2860
train loss count = 78
train loss value = 197.3040925508981
validation loss count = 59
validation loss value = 233.2083989004016
2860 iteration time = 0.21119420000013633
iter = 2870
train loss count = 78
train loss value = 196.57924199408333
validation loss count = 59
validation loss value = 233.31096271834807
2870 iteration time = 0.2001350000000457
iter = 2880
train loss count = 77
train loss value = 195.85889461383942
validation loss count = 59
validation loss value = 233.4132347360446
2880 iteration time = 0.20194770000034623
iter = 2890
```

```
train loss count = 77
train loss value = 195.1430081139862
validation loss count = 59
validation loss value = 233.51521866389896
2890 iteration time = 0.1950950999998895
iter = 2900
train loss count = 77
train loss value = 194.4315408306008
validation loss count = 59
validation loss value = 233.61691828629748
2900 iteration time = 0.2187685999997484
iter = 2910
train loss count = 77
train loss value = 193.724451721159
validation loss count = 59
validation loss value = 233.71833745956624
2910 iteration time = 0.20437259999926027
iter = 2920
train loss count = 77
train loss value = 193.0217003537531
validation loss count = 59
validation loss value = 233.81948010993213
2920 iteration time = 0.200751900000796
iter = 2930
train loss count = 76
train loss value = 192.32324689637002
validation loss count = 59
validation loss value = 233.92035023146428
2930 iteration time = 0.1877295000003869
iter = 2940
train loss count = 76
train loss value = 191.62905210629947
validation loss count = 59
validation loss value = 234.02095188400034
2940 iteration time = 0.17947039999944536
iter = 2950
train loss count = 76
train loss value = 190.93907731959828
validation loss count = 59
validation loss value = 234.12128919102642
2950 iteration time = 0.2219957000006616
iter = 2960
train loss count = 75
train loss value = 190.2532844406816
validation loss count = 59
validation loss value = 234.22136633751683
2960 iteration time = 0.20228289999977278
iter = 2970
```

```
train loss count = 73
train loss value = 189.57163593200727
validation loss count = 59
validation loss value = 234.321187567712
2970 iteration time = 0.19508369999948627
iter = 2980
train loss count = 73
train loss value = 188.8940948038798
validation loss count = 59
validation loss value = 234.4207571828341
2980 iteration time = 0.22679270000026008
iter = 2990
train loss count = 73
train loss value = 188.22062460433713
validation loss count = 59
validation loss value = 234.52007953872308
2990 iteration time = 0.19839200000023993
iter = 3000
train loss count = 73
train loss value = 187.55118940919184
validation loss count = 59
validation loss value = 234.6191590434003
3000 iteration time = 0.20036929999969288
iter = 3010
train loss count = 73
train loss value = 186.8857538121375
validation loss count = 59
validation loss value = 234.71800015450577
3010 iteration time = 0.1813521000003675
iter = 3020
train loss count = 73
train loss value = 186.22428291500805
validation loss count = 59
validation loss value = 234.81660737666581
3020 iteration time = 0.19095139999990351
iter = 3030
train loss count = 73
train loss value = 185.56674231812565
validation loss count = 59
validation loss value = 234.9149852587479
3030 iteration time = 0.21187520000057702
iter = 3040
train loss count = 73
train loss value = 184.91309811078253
validation loss count = 59
validation loss value = 235.01313839095764
3040 iteration time = 0.21646979999968607
iter = 3050
```

```
train loss count = 73
train loss value = 184.2633168618108
validation loss count = 59
validation loss value = 235.11107140187397
3050 iteration time = 0.20817199999964942
iter = 3060
train loss count = 73
train loss value = 183.61736561028752
validation loss count = 59
validation loss value = 235.20878895529827
3060 iteration time = 0.20886960000007093
iter = 3070
train loss count = 73
train loss value = 182.97521185634466
validation loss count = 59
validation loss value = 235.30629574701248
3070 iteration time = 0.2198183999998946
iter = 3080
train loss count = 72
train loss value = 182.33682355208768
validation loss count = 59
validation loss value = 235.40359650135898
3080 iteration time = 0.2094345000004978
iter = 3090
train loss count = 72
train loss value = 181.70216909261825
validation loss count = 59
validation loss value = 235.50069596772272
3090 iteration time = 0.2153283999996347
iter = 3100
train loss count = 72
train loss value = 181.07121730718308
validation loss count = 59
validation loss value = 235.59759891683774
3100 iteration time = 0.19567970000025525
iter = 3110
train loss count = 71
train loss value = 180.4439374504155
validation loss count = 59
validation loss value = 235.69431013697184
3110 iteration time = 0.2078614000001835
iter = 3120
train loss count = 70
train loss value = 179.82029919368838
validation loss count = 60
validation loss value = 235.790834429945
3120 iteration time = 0.16843769999923097
iter = 3130
```

```
train loss count = 69
train loss value = 179.20027261658453
validation loss count = 60
validation loss value = 235.8871766070348
3130 iteration time = 0.2044824000004155
iter = 3140
train loss count = 68
train loss value = 178.58382819844633
validation loss count = 60
validation loss value = 235.983341484723
3140 iteration time = 0.21375020000050426
iter = 3150
train loss count = 67
train loss value = 177.970936810068
validation loss count = 60
validation loss value = 236.07933388032313
3150 iteration time = 0.16841790000034962
iter = 3160
train loss count = 67
train loss value = 177.36156970545693
validation loss count = 60
validation loss value = 236.1751586074502
3160 iteration time = 0.17912350000005972
iter = 3170
train loss count = 65
train loss value = 176.75569851372794
validation loss count = 59
validation loss value = 236.27082047139876
3170 iteration time = 0.1770939999996699
iter = 3180
train loss count = 64
train loss value = 176.15329523108775
validation loss count = 59
validation loss value = 236.36632426438163
3180 iteration time = 0.19087499999932334
iter = 3190
train loss count = 63
train loss value = 175.55433221293003
validation loss count = 59
validation loss value = 236.46167476066807
3190 iteration time = 0.22727560000021185
iter = 3200
train loss count = 62
train loss value = 174.95878216604268
validation loss count = 59
validation loss value = 236.5568767116233
3200 iteration time = 0.19239270000070974
iter = 3210
```

```
train loss count = 62
train loss value = 174.36661814091033
validation loss count = 59
validation loss value = 236.65193484065216
3210 iteration time = 0.1979394999998476
iter = 3220
train loss count = 61
train loss value = 173.77781352414377
validation loss count = 59
validation loss value = 236.74685383805505
3220 iteration time = 0.17944699999952718
iter = 3230
train loss count = 60
train loss value = 173.19234203100305
validation loss count = 59
validation loss value = 236.84163835585207
3230 iteration time = 0.191583100000571
iter = 3240
train loss count = 60
train loss value = 172.61017769804678
validation loss count = 59
validation loss value = 236.9362930025103
3240 iteration time = 0.20031810000000405
iter = 3250
train loss count = 60
train loss value = 172.0312948758934
validation loss count = 59
validation loss value = 237.03082233766492
3250 iteration time = 0.17358429999967484
iter = 3260
train loss count = 59
train loss value = 171.4556682220918
validation loss count = 59
validation loss value = 237.12523086679388
3260 iteration time = 0.21846180000011373
iter = 3270
train loss count = 60
train loss value = 170.88327269412704
validation loss count = 59
validation loss value = 237.2195230359019
3270 iteration time = 0.20193560000006983
iter = 3280
train loss count = 60
train loss value = 170.31408354253568
validation loss count = 59
validation loss value = 237.31370322619273
3280 iteration time = 0.19989059999988967
iter = 3290
```

```
train loss count = 59
train loss value = 169.74807630415287
validation loss count = 59
validation loss value = 237.40777574879812
3290 iteration time = 0.22757630000069184
iter = 3300
train loss count = 59
train loss value = 169.18522679549335
validation loss count = 59
validation loss value = 237.5017448395009
3300 iteration time = 0.17225619999953778
iter = 3310
train loss count = 59
train loss value = 168.62551110625614
validation loss count = 59
validation loss value = 237.59561465355708
3310 iteration time = 0.1737990000001446
iter = 3320
train loss count = 59
train loss value = 168.06890559297065
validation loss count = 59
validation loss value = 237.68938926059707
3320 iteration time = 0.19121439999980794
iter = 3330
train loss count = 59
train loss value = 167.51538687278307
validation loss count = 59
validation loss value = 237.78307263957657
3330 iteration time = 0.21108530000037717
iter = 3340
train loss count = 59
train loss value = 166.9649318173808
validation loss count = 59
validation loss value = 237.876668673898
3340 iteration time = 0.1852911000005406
iter = 3350
train loss count = 59
train loss value = 166.41751754706942
validation loss count = 59
validation loss value = 237.97018114663933
3350 iteration time = 0.20803890000024694
iter = 3360
train loss count = 59
train loss value = 165.87312142499385
validation loss count = 59
validation loss value = 238.06361373592927
3360 iteration time = 0.21747010000035516
iter = 3370
```

```
train loss count = 59
train loss value = 165.33172105151814
validation loss count = 59
validation loss value = 238.1569700104835
3370 iteration time = 0.2005511999996088
iter = 3380
train loss count = 58
train loss value = 164.79329425875895
validation loss count = 59
validation loss value = 238.25025342537467
3380 iteration time = 0.19413480000002892
iter = 3390
train loss count = 57
train loss value = 164.25781910527255
validation loss count = 59
validation loss value = 238.34346731792644
3390 iteration time = 0.19317000000046392
iter = 3400
train loss count = 56
train loss value = 163.72527387091878
validation loss count = 60
validation loss value = 238.43661490391372
3400 iteration time = 0.16687430000001768
iter = 3410
train loss count = 56
train loss value = 163.19563705187272
validation loss count = 60
validation loss value = 238.52969927392033
3410 iteration time = 0.1930301000002146
iter = 3420
train loss count = 53
train loss value = 162.66888735581512
validation loss count = 60
validation loss value = 238.6227233900013
3420 iteration time = 0.21716939999987517
iter = 3430
train loss count = 53
train loss value = 162.1450036972895
validation loss count = 61
validation loss value = 238.7156900825775
3430 iteration time = 0.25009959999988496
iter = 3440
train loss count = 53
train loss value = 161.62396519322473
validation loss count = 61
validation loss value = 238.8086020476276
3440 iteration time = 0.16917490000014368
iter = 3450
```

```
train loss count = 53
train loss value = 161.10575115863648
validation loss count = 61
validation loss value = 238.90146184414075
3450 iteration time = 0.2134526999998343
iter = 3460
train loss count = 53
train loss value = 160.5903411024953
validation loss count = 61
validation loss value = 238.99427189189532
3460 iteration time = 0.21732359999987239
iter = 3470
train loss count = 53
train loss value = 160.07771472377388
validation loss count = 61
validation loss value = 239.08703446952478
3470 iteration time = 0.22069610000016837
iter = 3480
train loss count = 53
train loss value = 159.56785190766357
validation loss count = 62
validation loss value = 239.17975171290138
3480 iteration time = 0.19618570000056934
iter = 3490
train loss count = 53
train loss value = 159.06073272196338
validation loss count = 62
validation loss value = 239.27242561386066
3490 iteration time = 0.19826279999961116
iter = 3500
train loss count = 53
train loss value = 158.55633741364338
validation loss count = 62
validation loss value = 239.365058019206
3500 iteration time = 0.17198399999961111
iter = 3510
train loss count = 53
train loss value = 158.05464640557994
validation loss count = 62
validation loss value = 239.4576506300919
3510 iteration time = 0.19297529999948893
iter = 3520
train loss count = 51
train loss value = 157.55564029345163
validation loss count = 62
validation loss value = 239.55020500170565
3520 iteration time = 0.20370749999983673
iter = 3530
```

```
train loss count = 51
train loss value = 157.059299842815
validation loss count = 62
validation loss value = 239.64272254327852
3530 iteration time = 0.17374430000018037
iter = 3540
train loss count = 51
train loss value = 156.5656059863294
validation loss count = 62
validation loss value = 239.7352045184477
3540 iteration time = 0.19724500000029366
iter = 3550
train loss count = 51
train loss value = 156.07453982115354
validation loss count = 62
validation loss value = 239.82765204592027
3550 iteration time = 0.20740870000008726
iter = 3560
train loss count = 51
train loss value = 155.58608260649362
validation loss count = 62
validation loss value = 239.92006610046212
3560 iteration time = 0.19028380000054312
iter = 3570
train loss count = 51
train loss value = 155.10021576130345
validation loss count = 62
validation loss value = 240.01244751422797
3570 iteration time = 0.18871330000001763
iter = 3580
train loss count = 51
train loss value = 154.61692086213745
validation loss count = 62
validation loss value = 240.10479697833648
3580 iteration time = 0.19860960000005434
iter = 3590
train loss count = 51
train loss value = 154.13617964114025
validation loss count = 62
validation loss value = 240.197115044826
3590 iteration time = 0.1717348000001948
iter = 3600
train loss count = 51
train loss value = 153.65797398418098
validation loss count = 62
validation loss value = 240.28940212881827
3600 iteration time = 0.17295059999923978
iter = 3610
```

```
train loss count = 51
train loss value = 153.18228592911393
validation loss count = 62
validation loss value = 240.38165851102977
3610 iteration time = 0.17908940000052098
iter = 3620
train loss count = 51
train loss value = 152.70909766416912
validation loss count = 62
validation loss value = 240.4738843404757
3620 iteration time = 0.18655570000009902
iter = 3630
train loss count = 51
train loss value = 152.23839152646158
validation loss count = 62
validation loss value = 240.5660796374948
3630 iteration time = 0.22225969999999506
iter = 3640
train loss count = 51
train loss value = 151.7701500006169
validation loss count = 62
validation loss value = 240.6582442969549
3640 iteration time = 0.17980179999995016
iter = 3650
train loss count = 51
train loss value = 151.3043557174973
validation loss count = 62
validation loss value = 240.75037809170783
3650 iteration time = 0.214002800000344
iter = 3660
train loss count = 50
train loss value = 150.84099145303642
validation loss count = 62
validation loss value = 240.84248067624628
3660 iteration time = 0.19727289999991626
iter = 3670
train loss count = 50
train loss value = 150.38004012715942
validation loss count = 62
validation loss value = 240.93455159053147
3670 iteration time = 0.21238020000055258
iter = 3680
train loss count = 50
train loss value = 149.92148480279366
validation loss count = 62
validation loss value = 241.02659026401358
3680 iteration time = 0.20692030000009254
iter = 3690
```

```
train loss count = 50
train loss value = 149.4653086849545
validation loss count = 62
validation loss value = 241.1185960197835
3690 iteration time = 0.18100270000013552
iter = 3700
train loss count = 50
train loss value = 149.01149511990894
validation loss count = 62
validation loss value = 241.21056807887973
3700 iteration time = 0.1761504000005516
iter = 3710
train loss count = 48
train loss value = 148.56002759439232
validation loss count = 62
validation loss value = 241.3025055646986
3710 iteration time = 0.16148880000037025
iter = 3720
train loss count = 48
train loss value = 148.11088973489564
validation loss count = 62
validation loss value = 241.39440750749117
3720 iteration time = 0.21734560000004421
iter = 3730
train loss count = 48
train loss value = 147.66406530699035
validation loss count = 62
validation loss value = 241.4862728489757
3730 iteration time = 0.19472880000012083
iter = 3740
train loss count = 48
train loss value = 147.2195382147032
validation loss count = 62
validation loss value = 241.5781004469691
3740 iteration time = 0.21759430000020075
iter = 3750
train loss count = 48
train loss value = 146.77729249992387
validation loss count = 62
validation loss value = 241.66988908010276
3750 iteration time = 0.1918391999997766
iter = 3760
train loss count = 48
train loss value = 146.3373123418422
validation loss count = 62
validation loss value = 241.76163745252285
3760 iteration time = 0.19789289999971515
iter = 3770
```

```
train loss count = 48
train loss value = 145.89958205640923
validation loss count = 62
validation loss value = 241.8533441986365
3770 iteration time = 0.2023736999999528
iter = 3780
train loss count = 47
train loss value = 145.46408609580897
validation loss count = 62
validation loss value = 241.94500788782997
3780 iteration time = 0.18818040000041947
iter = 3790
train loss count = 47
train loss value = 145.0308090479473
validation loss count = 62
validation loss value = 242.03662702917134
3790 iteration time = 0.20255059999999503
iter = 3800
train loss count = 47
train loss value = 144.5997356359374
validation loss count = 61
validation loss value = 242.12820007606038
3800 iteration time = 0.21444340000016382
iter = 3810
train loss count = 47
train loss value = 144.17085071758822
validation loss count = 61
validation loss value = 242.21972543085184
3810 iteration time = 0.17979680000007647
iter = 3820
train loss count = 47
train loss value = 143.7441392848843
validation loss count = 61
validation loss value = 242.3112014493781
3820 iteration time = 0.21117400000002817
iter = 3830
train loss count = 47
train loss value = 143.31958646345
validation loss count = 61
validation loss value = 242.40262644541397
3830 iteration time = 0.1742050000002564
iter = 3840
train loss count = 47
train loss value = 142.8971775120017
validation loss count = 61
validation loss value = 242.49399869503222
3840 iteration time = 0.1973240999996051
iter = 3850
```

```
train loss count = 47
train loss value = 142.47689782177315
validation loss count = 61
validation loss value = 242.58531644088092
3850 iteration time = 0.21803629999976692
iter = 3860
train loss count = 47
train loss value = 142.05873291591953
validation loss count = 61
validation loss value = 242.67657789630655
3860 iteration time = 0.16525850000016362
iter = 3870
train loss count = 47
train loss value = 141.6426684488886
validation loss count = 61
validation loss value = 242.76778124937172
3870 iteration time = 0.20808889999989333
iter = 3880
train loss count = 47
train loss value = 141.2286902057596
validation loss count = 61
validation loss value = 242.85892466675426
3880 iteration time = 0.18623359999946842
iter = 3890
train loss count = 47
train loss value = 140.8167841015458
validation loss count = 61
validation loss value = 242.95000629746485
3890 iteration time = 0.20522600000003877
iter = 3900
train loss count = 47
train loss value = 140.4069361804616
validation loss count = 61
validation loss value = 243.0410242764505
3900 iteration time = 0.21445369999946706
iter = 3910
train loss count = 47
train loss value = 139.99913261514058
validation loss count = 61
validation loss value = 243.1319767280376
3910 iteration time = 0.20893750000050204
iter = 3920
train loss count = 47
train loss value = 139.59335970581716
validation loss count = 61
validation loss value = 243.2228617691899
3920 iteration time = 0.19121129999984987
iter = 3930
```

```
train loss count = 47
train loss value = 139.18960387946066
validation loss count = 61
validation loss value = 243.31367751261766
3930 iteration time = 0.1972052999999505
iter = 3940
train loss count = 47
train loss value = 138.78785168886273
validation loss count = 61
validation loss value = 243.4044220697431
3940 iteration time = 0.21021990000008373
iter = 3950
train loss count = 47
train loss value = 138.38808981167787
validation loss count = 61
validation loss value = 243.49509355344617
3950 iteration time = 0.17727230000036798
iter = 3960
train loss count = 47
train loss value = 137.99030504941518
validation loss count = 61
validation loss value = 243.58569008067653
3960 iteration time = 0.190966600000138
iter = 3970
train loss count = 47
train loss value = 137.59448432638135
validation loss count = 61
validation loss value = 243.67620977486703
3970 iteration time = 0.17528949999996257
iter = 3980
train loss count = 47
train loss value = 137.20061468857543
validation loss count = 61
validation loss value = 243.76665076820552
3980 iteration time = 0.19741530000010243
iter = 3990
train loss count = 47
train loss value = 136.80868330253864
validation loss count = 61
validation loss value = 243.85701120368708
3990 iteration time = 0.2009051000004547
iter = 4000
train loss count = 47
train loss value = 136.4186774541487
validation loss count = 61
validation loss value = 243.94728923705716
4000 iteration time = 0.20973570000023756
iter = 4010
```

```
train loss count = 47
train loss value = 136.03058454737453
validation loss count = 61
validation loss value = 244.03748303850298
4010 iteration time = 0.19097039999996923
iter = 4020
train loss count = 47
train loss value = 135.6443921029829
validation loss count = 61
validation loss value = 244.12759079427224
4020 iteration time = 0.17398570000023028
iter = 4030
train loss count = 47
train loss value = 135.2600877571976
validation loss count = 61
validation loss value = 244.21761070804905
4030 iteration time = 0.19124560000000201
iter = 4040
train loss count = 47
train loss value = 134.8776592603214
validation loss count = 61
validation loss value = 244.3075410022126
4040 iteration time = 0.20491190000029746
iter = 4050
train loss count = 47
train loss value = 134.4970944753116
validation loss count = 61
validation loss value = 244.3973799189169
4050 iteration time = 0.17008249999980762
iter = 4060
train loss count = 47
train loss value = 134.11838137632083
validation loss count = 61
validation loss value = 244.48712572105424
4060 iteration time = 0.2099262000001545
iter = 4070
train loss count = 47
train loss value = 133.74150804719864
validation loss count = 61
validation loss value = 244.57677669303675
4070 iteration time = 0.1779960999992909
iter = 4080
train loss count = 47
train loss value = 133.36646267995985
validation loss count = 61
validation loss value = 244.66633114143085
4080 iteration time = 0.21638199999961216
iter = 4090
```

```
train loss count = 47
train loss value = 132.99323357322098
validation loss count = 61
validation loss value = 244.75578739551796
4090 iteration time = 0.25948520000019926
iter = 4100
train loss count = 47
train loss value = 132.62180913060774
validation loss count = 61
validation loss value = 244.84514380764585
4100 iteration time = 0.26655250000021624
iter = 4110
train loss count = 47
train loss value = 132.25217785913975
validation loss count = 61
validation loss value = 244.93439875352024
4110 iteration time = 0.21309889999974985
iter = 4120
train loss count = 47
train loss value = 131.88432836758471
validation loss count = 61
validation loss value = 245.0235506323483
4120 iteration time = 0.21165860000019165
iter = 4130
train loss count = 47
train loss value = 131.51824936480273
validation loss count = 61
validation loss value = 245.11259786689482
4130 iteration time = 0.24465320000035717
iter = 4140
train loss count = 44
train loss value = 131.15392965806535
validation loss count = 61
validation loss value = 245.20153890341078
4140 iteration time = 0.2264936999999918
iter = 4150
train loss count = 43
train loss value = 130.79135815136806
validation loss count = 61
validation loss value = 245.29037221148437
4150 iteration time = 0.2232800000001589
iter = 4160
train loss count = 43
train loss value = 130.4305238437279
validation loss count = 61
validation loss value = 245.3790962838164
4160 iteration time = 0.16698230000019976
iter = 4170
```

```
train loss count = 43
train loss value = 130.07141582747826
validation loss count = 62
validation loss value = 245.467709635884
4170 iteration time = 0.20949579999978596
iter = 4180
train loss count = 42
train loss value = 129.71402328655785
validation loss count = 62
validation loss value = 245.55621080556185
4180 iteration time = 0.18190030000005208
iter = 4190
train loss count = 42
train loss value = 129.35833549480068
validation loss count = 62
validation loss value = 245.64459835265248
4190 iteration time = 0.21978089999993244
iter = 4200
train loss count = 41
train loss value = 129.00434181423284
validation loss count = 62
validation loss value = 245.73287085838382
4200 iteration time = 0.2029328999997233
iter = 4210
train loss count = 41
train loss value = 128.65203169337008
validation loss count = 62
validation loss value = 245.8210269248423
4210 iteration time = 0.20282809999935125
iter = 4220
train loss count = 41
train loss value = 128.30139466553064
validation loss count = 62
validation loss value = 245.90906517434678
4220 iteration time = 0.2026083999999173
iter = 4230
train loss count = 41
train loss value = 127.95242034716024
validation loss count = 62
validation loss value = 245.99698424881225
4230 iteration time = 0.20927449999999226
iter = 4240
train loss count = 41
train loss value = 127.60509843617338
validation loss count = 62
validation loss value = 246.08478280907073
4240 iteration time = 0.22080929999992804
iter = 4250
```

```
train loss count = 41
train loss value = 127.25941871031354
validation loss count = 62
validation loss value = 246.17245953414883
4250 iteration time = 0.21862480000072537
iter = 4260
train loss count = 41
train loss value = 126.91537102553833
validation loss count = 62
validation loss value = 246.2600131205872
4260 iteration time = 0.21551670000008016
iter = 4270
train loss count = 41
train loss value = 126.57294531442777
validation loss count = 62
validation loss value = 246.3474422816554
4270 iteration time = 0.18436129999918194
iter = 4280
train loss count = 39
train loss value = 126.23213158462266
validation loss count = 62
validation loss value = 246.43474574664674
4280 iteration time = 0.21116540000002715
iter = 4290
train loss count = 38
train loss value = 125.89291991729301
validation loss count = 62
validation loss value = 246.5219222601298
4290 iteration time = 0.23016759999973146
iter = 4300
train loss count = 37
train loss value = 125.55530046563752
validation loss count = 62
validation loss value = 246.60897058120534
4300 iteration time = 0.20802480000020296
iter = 4310
train loss count = 36
train loss value = 125.2192634534239
validation loss count = 62
validation loss value = 246.69588948278678
4310 iteration time = 0.2007154000002629
iter = 4320
train loss count = 36
train loss value = 124.88479917356084
validation loss count = 62
validation loss value = 246.78267775089483
4320 iteration time = 0.1863035000005766
iter = 4330
```

```
train loss count = 36
train loss value = 124.551897986714
validation loss count = 62
validation loss value = 246.86933418394946
4330 iteration time = 0.21233140000003914
iter = 4340
train loss count = 35
train loss value = 124.22055031996004
validation loss count = 62
validation loss value = 246.95585759210044
4340 iteration time = 0.1924709000004441
iter = 4350
train loss count = 35
train loss value = 123.89074666548471
validation loss count = 62
validation loss value = 247.04224679660646
4350 iteration time = 0.17086250000011205
iter = 4360
train loss count = 35
train loss value = 123.56247757932691
validation loss count = 62
validation loss value = 247.12850062920063
4360 iteration time = 0.2053515999996307
iter = 4370
train loss count = 34
train loss value = 123.23573368016415
validation loss count = 62
validation loss value = 247.21461793151855
4370 iteration time = 0.17365320000044449
iter = 4380
train loss count = 34
train loss value = 122.91050564814837
validation loss count = 62
validation loss value = 247.30059755454488
4380 iteration time = 0.21953810000013618
iter = 4390
train loss count = 33
train loss value = 122.58678422378665
validation loss count = 62
validation loss value = 247.386438358118
4390 iteration time = 0.17459250000047177
iter = 4400
train loss count = 33
train loss value = 122.26456020686894
validation loss count = 62
validation loss value = 247.47213921046963
4400 iteration time = 0.21626259999993636
iter = 4410
```

```
train loss count = 32
train loss value = 121.94382445544879
validation loss count = 62
validation loss value = 247.55769898778144
4410 iteration time = 0.1702289999993809
iter = 4420
train loss count = 32
train loss value = 121.62456788486408
validation loss count = 62
validation loss value = 247.6431165738162
4420 iteration time = 0.16593030000058206
iter = 4430
train loss count = 32
train loss value = 121.30678146681682
validation loss count = 62
validation loss value = 247.7283908595864
4430 iteration time = 0.19881420000001526
iter = 4440
train loss count = 32
train loss value = 120.99045622849066
validation loss count = 62
validation loss value = 247.81352074304866
4440 iteration time = 0.1899182999995901
iter = 4450
train loss count = 32
train loss value = 120.67558325172541
validation loss count = 62
validation loss value = 247.89850512887708
4450 iteration time = 0.18840559999989637
iter = 4460
train loss count = 32
train loss value = 120.36215367223461
validation loss count = 62
validation loss value = 247.98334292824396
4460 iteration time = 0.18637039999975968
iter = 4470
train loss count = 32
train loss value = 120.05015867886999
validation loss count = 62
validation loss value = 248.06803305869207
4470 iteration time = 0.20256609999978537
iter = 4480
train loss count = 31
train loss value = 119.73958951293498
validation loss count = 62
validation loss value = 248.15257444399776
4480 iteration time = 0.16618539999944915
iter = 4490
```

```
train loss count = 31
train loss value = 119.4304374675424
validation loss count = 62
validation loss value = 248.2369660141265
4490 iteration time = 0.16896009999982198
iter = 4500
train loss count = 31
train loss value = 119.12269388701466
validation loss count = 62
validation loss value = 248.3212067052146
4500 iteration time = 0.17988450000029843
iter = 4510
train loss count = 31
train loss value = 118.81635016633217
validation loss count = 62
validation loss value = 248.40529545958222
4510 iteration time = 0.19683179999992717
iter = 4520
train loss count = 31
train loss value = 118.51139775061728
validation loss count = 62
validation loss value = 248.48923122579694
4520 iteration time = 0.20040369999969698
iter = 4530
train loss count = 31
train loss value = 118.20782813466637
validation loss count = 62
validation loss value = 248.573012958805
4530 iteration time = 0.18192210000052
iter = 4540
train loss count = 31
train loss value = 117.90563286251425
validation loss count = 62
validation loss value = 248.65663962004018
4540 iteration time = 0.18530420000024606
iter = 4550
train loss count = 31
train loss value = 117.60480352704074
validation loss count = 62
validation loss value = 248.74011017763308
4550 iteration time = 0.1737263000004532
iter = 4560
train loss count = 31
train loss value = 117.30533176961426
validation loss count = 61
validation loss value = 248.82342360661175
4560 iteration time = 0.16973110000071756
iter = 4570
```

```
train loss count = 30
train loss value = 117.00720927976525
validation loss count = 61
validation loss value = 248.906578889172
4570 iteration time = 0.2128271000001405
iter = 4580
train loss count = 30
train loss value = 116.7104277948968
validation loss count = 61
validation loss value = 248.9895750149147
4580 iteration time = 0.17966679999972257
iter = 4590
train loss count = 30
train loss value = 116.41497910002552
validation loss count = 61
validation loss value = 249.07241098120554
4590 iteration time = 0.17711010000039096
iter = 4600
train loss count = 30
train loss value = 116.12085502755023
validation loss count = 61
validation loss value = 249.15508579348023
4600 iteration time = 0.20392790000005334
iter = 4610
train loss count = 29
train loss value = 115.8280474570503
validation loss count = 61
validation loss value = 249.2375984656189
4610 iteration time = 0.18877900000006775
iter = 4620
train loss count = 28
train loss value = 115.53654831510829
validation loss count = 61
validation loss value = 249.31994802031528
4620 iteration time = 0.19951159999982337
iter = 4630
train loss count = 28
train loss value = 115.24634957515812
validation loss count = 61
validation loss value = 249.40213348948146
4630 iteration time = 0.19517110000015236
iter = 4640
train loss count = 28
train loss value = 114.95744325735336
validation loss count = 61
validation loss value = 249.48415391468927
4640 iteration time = 0.22013270000024932
iter = 4650
```

```
train loss count = 28
train loss value = 114.66982142845919
validation loss count = 61
validation loss value = 249.56600834755923
4650 iteration time = 0.1748225999999704
iter = 4660
train loss count = 28
train loss value = 114.38347620175865
validation loss count = 61
validation loss value = 249.64769585026286
4660 iteration time = 0.19565869999951246
iter = 4670
train loss count = 28
train loss value = 114.09839973698034
validation loss count = 61
validation loss value = 249.72921549591993
4670 iteration time = 0.20583979999992152
iter = 4680
train loss count = 28
train loss value = 113.8145842402388
validation loss count = 61
validation loss value = 249.81056636912763
4680 iteration time = 0.17213150000043242
iter = 4690
train loss count = 28
train loss value = 113.53202196398911
validation loss count = 61
validation loss value = 249.89174756636567
4690 iteration time = 0.17158980000021984
iter = 4700
train loss count = 27
train loss value = 113.25070520699322
validation loss count = 61
validation loss value = 249.97275819652629
4700 iteration time = 0.19800359999953798
iter = 4710
train loss count = 27
train loss value = 112.97062631429773
validation loss count = 61
validation loss value = 250.05359738136931
4710 iteration time = 0.18203939999966678
iter = 4720
train loss count = 27
train loss value = 112.69177767721884
validation loss count = 61
validation loss value = 250.13426425597905
4720 iteration time = 0.2165463000001182
iter = 4730
```

```
train loss count = 27
train loss value = 112.41415173333712
validation loss count = 61
validation loss value = 250.21475796929244
4730 iteration time = 0.197988400000213
iter = 4740
train loss count = 27
train loss value = 112.13774096649605
validation loss count = 61
validation loss value = 250.2950776845091
4740 iteration time = 0.2123912000006385
iter = 4750
train loss count = 27
train loss value = 111.86253790680753
validation loss count = 61
validation loss value = 250.37522257960103
4750 iteration time = 0.16789699999935692
iter = 4760
train loss count = 27
train loss value = 111.5885351306578
validation loss count = 61
validation loss value = 250.45519184775313
4760 iteration time = 0.1726730000000316
iter = 4770
train loss count = 27
train loss value = 111.31572526071933
validation loss count = 61
validation loss value = 250.53498469781726
4770 iteration time = 0.18880079999962618
iter = 4780
train loss count = 27
train loss value = 111.04410096596206
validation loss count = 62
validation loss value = 250.61460035476043
4780 iteration time = 0.1782665000000634
iter = 4790
train loss count = 27
train loss value = 110.7736549616631
validation loss count = 62
validation loss value = 250.69403806007534
4790 iteration time = 0.18377030000010564
iter = 4800
train loss count = 27
train loss value = 110.5043800094195
validation loss count = 62
validation loss value = 250.77329707222455
4800 iteration time = 0.18559759999970993
iter = 4810
```

```
train loss count = 25
train loss value = 110.23626891715548
validation loss count = 62
validation loss value = 250.85237666701735
4810 iteration time = 0.1810341000000335
iter = 4820
train loss count = 25
train loss value = 109.96931453912897
validation loss count = 62
validation loss value = 250.9312761380141
4820 iteration time = 0.19617529999959515
iter = 4830
train loss count = 25
train loss value = 109.70350977593371
validation loss count = 62
validation loss value = 251.00999479691103
4830 iteration time = 0.18937480000022333
iter = 4840
train loss count = 25
train loss value = 109.43884757449875
validation loss count = 62
validation loss value = 251.08853197386767
4840 iteration time = 0.18286580000039976
iter = 4850
train loss count = 25
train loss value = 109.17532092808135
validation loss count = 62
validation loss value = 251.16688701788024
4850 iteration time = 0.17379470000014408
iter = 4860
train loss count = 25
train loss value = 108.91292287625451
validation loss count = 62
validation loss value = 251.24505929708332
4860 iteration time = 0.2144293999999718
iter = 4870
train loss count = 25
train loss value = 108.65164650489051
validation loss count = 62
validation loss value = 251.32304819906105
4870 iteration time = 0.1681522999997469
iter = 4880
train loss count = 25
train loss value = 108.39148494613559
validation loss count = 62
validation loss value = 251.4008531311479
4880 iteration time = 0.1817298000005394
iter = 4890
```

```
train loss count = 25
train loss value = 108.13243137837989
validation loss count = 62
validation loss value = 251.4784735206891
4890 iteration time = 0.1683309999998528
iter = 4900
train loss count = 25
train loss value = 107.8744790262181
validation loss count = 62
validation loss value = 251.5559088152872
4900 iteration time = 0.19202279999990424
iter = 4910
train loss count = 24
train loss value = 107.61762116040488
validation loss count = 62
validation loss value = 251.63315848301633
4910 iteration time = 0.1903984999999011
iter = 4920
train loss count = 24
train loss value = 107.36185109780112
validation loss count = 62
validation loss value = 251.71022201268426
4920 iteration time = 0.18576050000046962
iter = 4930
train loss count = 24
train loss value = 107.1071622013121
validation loss count = 62
validation loss value = 251.7870989139818
4930 iteration time = 0.2041622999995525
iter = 4940
train loss count = 24
train loss value = 106.85354787981831
validation loss count = 62
validation loss value = 251.8637887176544
4940 iteration time = 0.21046240000032412
iter = 4950
train loss count = 24
train loss value = 106.60100158809848
validation loss count = 62
validation loss value = 251.94029097568912
4950 iteration time = 0.19586620000063704
iter = 4960
train loss count = 24
train loss value = 106.34951682674236
validation loss count = 62
validation loss value = 252.0166052614192
4960 iteration time = 0.21065960000032646
iter = 4970
```

```
train loss count = 24
train loss value = 106.09908714205817
validation loss count = 62
validation loss value = 252.09273116965525
4970 iteration time = 0.19112279999990278
iter = 4980
train loss count = 24
train loss value = 105.84970612596854
validation loss count = 62
validation loss value = 252.1686683167701
4980 iteration time = 0.182546199999706
iter = 4990
train loss count = 24
train loss value = 105.60136741590118
validation loss count = 62
validation loss value = 252.2444163407809
4990 iteration time = 0.1740362999998979
```

In [ ]:

In [ ]: