GRU_10_FOLD_CROSS_VALIDATION_UNIQUE_DATASET_2

December 12, 2018

In [1]:
```
# GRU 10 FOLD CROSS VALIDATION ON UNIQUE DATASET (based on model 'gru_8_unique'):
# copyright (c) ABDUL HASIB UDDIN <abdulhasibuddin@gmail.com>
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# Courtesy: https://github.com/mchablani/deep-learning/blob/master/sentiment-rnn/Senti
```

In [2]:
```
import numpy as np
import tensorflow as tf
from timeit import default_timer as timer
from collections import Counter
from string import punctuation
#from google.colab import files
```

In [3]:
```
gru_size = 512
gru_layers = 5
k = 10
batch_size = 5
learning_rate = 0.0001
epochs = 3
```

In [4]:
```
fileName = "gru_10_fold_cross_validation_12"
checkpointName = "checkpoints/"+fileName+".ckpt"
print(checkpointName)
print(type(checkpointName))
```

```
checkpoints/gru_10_fold_cross_validation_12.ckpt
<class 'str'>
```

In [5]:
```
#files.upload()
#files.upload()

with open('data_all_unique_dnd_stratified_text.txt', 'r', encoding="utf8") as f:
    tweets = f.read()
with open('data_all_unique_dnd_stratified_labels.txt', 'r', encoding="utf8") as f:
    labels_org = f.read()

print('File upload done!')
```

```
File upload done!
```

```
In [6]: # Data preprocessing::
        #all_text = ''.join([c for c in tweets if c not in punctuation])
        all_text = ''.join([c for c in tweets])
        tweets = all_text.split('\n')

        all_text = ' '.join(tweets)
        words = all_text.split()
```

```
In [7]: counts = Counter(words)
        vocab = sorted(counts, key=counts.get, reverse=True)
        vocab_to_int = {word: ii for ii, word in enumerate(vocab, 1)}

        tweets_ints = []
        for each in tweets:
            tweets_ints.append([vocab_to_int[word] for word in each.split()])
```

```
In [8]: # Encoding the labels::
        list_labels = []

        for l in labels_org.split():
            if l == "depressive":
                list_labels.append(1)
            else:
                list_labels.append(0)

        labels = np.array(list_labels)
        print(len(labels))
```

```
1176
```

```
In [9]: tweets_lens = Counter([len(x) for x in tweets_ints])
        print("Zero-length tweets: {}".format(tweets_lens[0]))
        print("Maximum tweets length: {}".format(max(tweets_lens)))
```

```
Zero-length tweets: 1
Maximum tweets length: 63
```

```
In [10]: # Filter out that tweets with 0 length
         tweets_ints = [r[0:200] for r in tweets_ints if len(r) > 0]
```

```
In [11]: from collections import Counter
         tweets_lens = Counter([len(x) for x in tweets_ints])
         print("Zero-length tweets: {}".format(tweets_lens[0]))
         print("Maximum tweet length: {}".format(max(tweets_lens)))
```

```
Zero-length tweets: 0
Maximum tweet length: 63
```

```
In [12]: seq_len = 200
         features = np.zeros((len(tweets_ints), seq_len), dtype=int)
         # print(features[:10,:100])
         for i, row in enumerate(tweets_ints):
             features[i, -len(row):] = np.array(row)[:seq_len]
         #features[:10,:100]
```

```
In [13]: #split_frac = 0.8

         #split_index = int(split_frac * len(features))

         #training_validation_x, test_x = features[:split_index], features[split_index:]
         #training_validation_y, test_y = labels[:split_index], labels[split_index:]

         training_validation_x = features
         training_validation_y = labels

         split_train_val = int(len(features)/k)
         #split_index = int(split_frac * len(val_x))

         #val_x, test_x = val_x[:split_index], val_x[split_index:]
         #val_y, test_y = val_y[:split_index], val_y[split_index:]

         print("\t\t\tFeature Shapes:")
         print("Train & Validation data set: {}".format(training_validation_x.shape))
         print("Train & Validation label set: {}".format(training_validation_y.shape))

         ############
         '''
         dataset_split_index = int(len(final_dataset)*0.1)

         training_validation_dataset = final_dataset[dataset_split_index:]
         testing_dataset = final_dataset[:dataset_split_index]

         training_validation_labelset = final_labelset[dataset_split_index:]
         testing_labelset = final_labelset[:dataset_split_index]

         print(dataset_split_index)

         print('len(training_validation_dataset) =',len(training_validation_dataset))
         print('len(training_validation_labelset) =',len(training_validation_labelset))

         print('len(testing_dataset) =',len(testing_dataset))
         print('len(testing_labelset)',len(testing_labelset))
         '''
```

```
                        Feature Shapes:
Train & Validation data set: (1176, 200)
Train & Validation label set: (1176,)
```

```
Out[13]: "\ndataset_split_index = int(len(final_dataset)*0.1)\n\ntraining_validation_dataset =
```

```
In [14]: n_words = len(vocab_to_int) + 1 # Add 1 for 0 added to vocab

         # Create the graph object
         tf.reset_default_graph()
         with tf.name_scope('inputs'):
             inputs_ = tf.placeholder(tf.int32, [None, None], name="inputs")
             labels_ = tf.placeholder(tf.int32, [None, None], name="labels")
             keep_prob = tf.placeholder(tf.float32, name="keep_prob")
```

```
In [15]: # Size of the embedding vectors (number of units in the embedding layer)
         embed_size = 300

         with tf.name_scope("Embeddings"):
             embedding = tf.Variable(tf.random_uniform((n_words, embed_size), -1, 1))
             embed = tf.nn.embedding_lookup(embedding, inputs_)
```

```
In [16]: def gru_cell():
             # Basic GRU cell
             gru = tf.contrib.rnn.GRUCell(gru_size, reuse=tf.get_variable_scope().reuse)
             # Add dropout to the cell
             return tf.contrib.rnn.DropoutWrapper(gru, output_keep_prob=keep_prob)

         with tf.name_scope("RNN_layers"):
             # Stack up multiple GRU layers, for deep learning
             cell = tf.contrib.rnn.MultiRNNCell([gru_cell() for _ in range(gru_layers)])

             # Getting an initial state of all zeros
             initial_state = cell.zero_state(batch_size, tf.float32)
```

```
In [17]: with tf.name_scope("RNN_forward"):
             outputs, final_state = tf.nn.dynamic_rnn(cell, embed, initial_state=initial_state)
```

```
In [18]: # Output::

         with tf.name_scope('predictions'):
             predictions = tf.contrib.layers.fully_connected(outputs[:, -1], 1, activation_fn=t
             tf.summary.histogram('predictions', predictions)
         with tf.name_scope('cost'):
             cost = tf.losses.mean_squared_error(labels_, predictions)
             tf.summary.scalar('cost', cost)

         with tf.name_scope('train'):
```

```
            optimizer = tf.train.AdamOptimizer(learning_rate).minimize(cost)

        merged = tf.summary.merge_all()
```

In [19]:
```
        # Validation accuracy::

        with tf.name_scope('validation'):
            correct_pred = tf.equal(tf.cast(tf.round(predictions), tf.int32), labels_)
            accuracy = tf.reduce_mean(tf.cast(correct_pred, tf.float32))
```

In [20]:
```
        # Batching::

        def get_batches(x, y, batch_size=100):

            n_batches = len(x)//batch_size
            x, y = x[:n_batches*batch_size], y[:n_batches*batch_size]
            for ii in range(0, len(x), batch_size):
                yield x[ii:ii+batch_size], y[ii:ii+batch_size]
```

In [21]:
```
        # Training::
        saver = tf.train.Saver()
        start = timer()
        folds_val_acc = []

        with tf.Session() as sess:
            sess.run(tf.global_variables_initializer())
            train_writer = tf.summary.FileWriter('./logs/tb/train', sess.graph)
            test_writer = tf.summary.FileWriter('./logs/tb/test', sess.graph)

            for fold in range(1,k+1):
                print('Fold -',fold,'out of',k,'::')
                print('---------------')

                training_validation_x = training_validation_x.tolist()
                train_x = training_validation_x[:fold*split_train_val-split_train_val]
                train_x += training_validation_x[fold*split_train_val:]
                val_x = training_validation_x[fold*split_train_val-split_train_val:fold*split

                training_validation_x = np.array(training_validation_x)
                train_x = np.array(train_x)
                val_x = np.array(val_x)

                training_validation_y = training_validation_y.tolist()
                train_y = training_validation_y[:fold*split_train_val-split_train_val]
                train_y += training_validation_y[fold*split_train_val:]
                val_y = training_validation_y[fold*split_train_val-split_train_val:fold*split

                training_validation_y = np.array(training_validation_y)
```

```
train_y = np.array(train_y)
val_y = np.array(val_y)

print('Training on',len(train_y),'samples & validating on',len(val_y),'samples
iteration = 1
for e in range(1, epochs+1):
    state = sess.run(initial_state)
    for ii, (x, y) in enumerate(get_batches(train_x, train_y, batch_size), 1)
        feed = {inputs_: x,
                labels_: y[:, None],
                keep_prob: 0.5,
                initial_state: state}
        summary, loss, state, _ = sess.run([merged, cost, final_state, optimiz

        train_writer.add_summary(summary, iteration)

        if iteration%5==0:
            print("Epoch: {}/{}".format(e, epochs),
                  "Iteration: {}".format(iteration),
                  "Train loss: {:.4f}".format(loss))

        if iteration%25==0:
            val_acc = []
            val_state = sess.run(cell.zero_state(batch_size, tf.float32))
            for x, y in get_batches(val_x, val_y, batch_size):
                feed = {inputs_: x,
                        labels_: y[:, None],
                        keep_prob: 1,
                        initial_state: val_state}
                summary, batch_acc, val_state = sess.run([merged, accuracy, fi
                val_acc.append(batch_acc)
            print("Val acc: {:.4f}".format(np.mean(val_acc)))
        iteration +=1
        test_writer.add_summary(summary, iteration)
        saver.save(sess, checkpointName)

    #saver.save(sess, checkpointName)
    # After an epoch is completed:
    val_acc = []
    val_state = sess.run(cell.zero_state(batch_size, tf.float32))
    for x, y in get_batches(val_x, val_y, batch_size):
        feed = {inputs_: x,
                labels_: y[:, None],
                keep_prob: 1,
                initial_state: val_state}
        summary, batch_acc, val_state = sess.run([merged, accuracy, final_stat
        val_acc.append(batch_acc)
    print("Val acc for epoch {:} = {:.4f}".format(e,np.mean(val_acc)))
```

```
                    test_writer.add_summary(summary, iteration)
                    saver.save(sess, checkpointName)

                saver.save(sess, checkpointName)
                # After a fold is completed:
                val_acc = []
                val_state = sess.run(cell.zero_state(batch_size, tf.float32))
                for x, y in get_batches(val_x, val_y, batch_size):
                    feed = {inputs_: x,
                            labels_: y[:, None],
                            keep_prob: 1,
                            initial_state: val_state}
                    summary, batch_acc, val_state = sess.run([merged, accuracy, final_state],
                    val_acc.append(batch_acc)
                    folds_val_acc.append(batch_acc)
                print("Val acc for fold = {:.4f}".format(np.mean(val_acc)))
                test_writer.add_summary(summary, iteration)
                saver.save(sess, checkpointName)

                print('--------------\n')

        duration = timer() - start
        print('Time elasped =',duration,'sec(s)')
```

```
Fold - 1 out of 10 ::
--------------
Training on 1059 samples & validating on 117 samples with batch size 5 .
Epoch: 1/3 Iteration: 5 Train loss: 0.2658
Epoch: 1/3 Iteration: 10 Train loss: 0.3008
Epoch: 1/3 Iteration: 15 Train loss: 0.2515
Epoch: 1/3 Iteration: 20 Train loss: 0.3014
Epoch: 1/3 Iteration: 25 Train loss: 0.2259
Val acc: 0.5043
Epoch: 1/3 Iteration: 30 Train loss: 0.2492
Epoch: 1/3 Iteration: 35 Train loss: 0.2869
Epoch: 1/3 Iteration: 40 Train loss: 0.2760
Epoch: 1/3 Iteration: 45 Train loss: 0.2017
Epoch: 1/3 Iteration: 50 Train loss: 0.2214
Val acc: 0.5304
Epoch: 1/3 Iteration: 55 Train loss: 0.2669
Epoch: 1/3 Iteration: 60 Train loss: 0.2125
Epoch: 1/3 Iteration: 65 Train loss: 0.3807
Epoch: 1/3 Iteration: 70 Train loss: 0.2127
Epoch: 1/3 Iteration: 75 Train loss: 0.2373
Val acc: 0.5391
Epoch: 1/3 Iteration: 80 Train loss: 0.2953
Epoch: 1/3 Iteration: 85 Train loss: 0.2588
Epoch: 1/3 Iteration: 90 Train loss: 0.2410
```

```
Epoch: 1/3 Iteration: 95 Train loss: 0.2041
Epoch: 1/3 Iteration: 100 Train loss: 0.3104
Val acc: 0.5304
Epoch: 1/3 Iteration: 105 Train loss: 0.3199
Epoch: 1/3 Iteration: 110 Train loss: 0.4063
Epoch: 1/3 Iteration: 115 Train loss: 0.2691
Epoch: 1/3 Iteration: 120 Train loss: 0.2196
Epoch: 1/3 Iteration: 125 Train loss: 0.3491
Val acc: 0.5217
Epoch: 1/3 Iteration: 130 Train loss: 0.3392
Epoch: 1/3 Iteration: 135 Train loss: 0.3808
Epoch: 1/3 Iteration: 140 Train loss: 0.2695
Epoch: 1/3 Iteration: 145 Train loss: 0.3592
Epoch: 1/3 Iteration: 150 Train loss: 0.1846
Val acc: 0.4609
Epoch: 1/3 Iteration: 155 Train loss: 0.3380
Epoch: 1/3 Iteration: 160 Train loss: 0.5114
Epoch: 1/3 Iteration: 165 Train loss: 0.1776
Epoch: 1/3 Iteration: 170 Train loss: 0.4212
Epoch: 1/3 Iteration: 175 Train loss: 0.3288
Val acc: 0.4870
Epoch: 1/3 Iteration: 180 Train loss: 0.0839
Epoch: 1/3 Iteration: 185 Train loss: 0.2193
Epoch: 1/3 Iteration: 190 Train loss: 0.2319
Epoch: 1/3 Iteration: 195 Train loss: 0.2269
Epoch: 1/3 Iteration: 200 Train loss: 0.2080
Val acc: 0.4870
Epoch: 1/3 Iteration: 205 Train loss: 0.1839
Epoch: 1/3 Iteration: 210 Train loss: 0.2354
Val acc for epoch 1 = 0.4609
Epoch: 2/3 Iteration: 215 Train loss: 0.4712
Epoch: 2/3 Iteration: 220 Train loss: 0.3533
Epoch: 2/3 Iteration: 225 Train loss: 0.3974
Val acc: 0.4957
Epoch: 2/3 Iteration: 230 Train loss: 0.3598
Epoch: 2/3 Iteration: 235 Train loss: 0.3434
Epoch: 2/3 Iteration: 240 Train loss: 0.1628
Epoch: 2/3 Iteration: 245 Train loss: 0.3247
Epoch: 2/3 Iteration: 250 Train loss: 0.3690
Val acc: 0.5304
Epoch: 2/3 Iteration: 255 Train loss: 0.1874
Epoch: 2/3 Iteration: 260 Train loss: 0.2177
Epoch: 2/3 Iteration: 265 Train loss: 0.2862
Epoch: 2/3 Iteration: 270 Train loss: 0.3718
Epoch: 2/3 Iteration: 275 Train loss: 0.2277
Val acc: 0.5478
Epoch: 2/3 Iteration: 280 Train loss: 0.2815
Epoch: 2/3 Iteration: 285 Train loss: 0.4904
```

```
Epoch: 2/3 Iteration: 290 Train loss: 0.2695
Epoch: 2/3 Iteration: 295 Train loss: 0.3221
Epoch: 2/3 Iteration: 300 Train loss: 0.3794
Val acc: 0.5043
Epoch: 2/3 Iteration: 305 Train loss: 0.1696
Epoch: 2/3 Iteration: 310 Train loss: 0.2687
Epoch: 2/3 Iteration: 315 Train loss: 0.3984
Epoch: 2/3 Iteration: 320 Train loss: 0.2109
Epoch: 2/3 Iteration: 325 Train loss: 0.1666
Val acc: 0.5478
Epoch: 2/3 Iteration: 330 Train loss: 0.2349
Epoch: 2/3 Iteration: 335 Train loss: 0.2086
Epoch: 2/3 Iteration: 340 Train loss: 0.3410
Epoch: 2/3 Iteration: 345 Train loss: 0.3091
Epoch: 2/3 Iteration: 350 Train loss: 0.2172
Val acc: 0.4870
Epoch: 2/3 Iteration: 355 Train loss: 0.2463
Epoch: 2/3 Iteration: 360 Train loss: 0.2714
Epoch: 2/3 Iteration: 365 Train loss: 0.2477
Epoch: 2/3 Iteration: 370 Train loss: 0.1881
Epoch: 2/3 Iteration: 375 Train loss: 0.4434
Val acc: 0.4609
Epoch: 2/3 Iteration: 380 Train loss: 0.3104
Epoch: 2/3 Iteration: 385 Train loss: 0.3477
Epoch: 2/3 Iteration: 390 Train loss: 0.3416
Epoch: 2/3 Iteration: 395 Train loss: 0.1519
Epoch: 2/3 Iteration: 400 Train loss: 0.4090
Val acc: 0.4957
Epoch: 2/3 Iteration: 405 Train loss: 0.2079
Epoch: 2/3 Iteration: 410 Train loss: 0.0885
Epoch: 2/3 Iteration: 415 Train loss: 0.0564
Epoch: 2/3 Iteration: 420 Train loss: 0.2507
Val acc for epoch 2 = 0.4348
Epoch: 3/3 Iteration: 425 Train loss: 0.2838
Val acc: 0.4348
Epoch: 3/3 Iteration: 430 Train loss: 0.3365
Epoch: 3/3 Iteration: 435 Train loss: 0.3000
Epoch: 3/3 Iteration: 440 Train loss: 0.4032
Epoch: 3/3 Iteration: 445 Train loss: 0.2731
Epoch: 3/3 Iteration: 450 Train loss: 0.3814
Val acc: 0.5391
Epoch: 3/3 Iteration: 455 Train loss: 0.2511
Epoch: 3/3 Iteration: 460 Train loss: 0.0834
Epoch: 3/3 Iteration: 465 Train loss: 0.3726
Epoch: 3/3 Iteration: 470 Train loss: 0.2860
Epoch: 3/3 Iteration: 475 Train loss: 0.2226
Val acc: 0.5478
Epoch: 3/3 Iteration: 480 Train loss: 0.1882
```

```
Epoch: 3/3 Iteration: 485 Train loss: 0.2399
Epoch: 3/3 Iteration: 490 Train loss: 0.2691
Epoch: 3/3 Iteration: 495 Train loss: 0.2801
Epoch: 3/3 Iteration: 500 Train loss: 0.3263
Val acc: 0.5130
Epoch: 3/3 Iteration: 505 Train loss: 0.1413
Epoch: 3/3 Iteration: 510 Train loss: 0.2026
Epoch: 3/3 Iteration: 515 Train loss: 0.2489
Epoch: 3/3 Iteration: 520 Train loss: 0.3482
Epoch: 3/3 Iteration: 525 Train loss: 0.2974
Val acc: 0.5304
Epoch: 3/3 Iteration: 530 Train loss: 0.2783
Epoch: 3/3 Iteration: 535 Train loss: 0.2876
Epoch: 3/3 Iteration: 540 Train loss: 0.2588
Epoch: 3/3 Iteration: 545 Train loss: 0.1748
Epoch: 3/3 Iteration: 550 Train loss: 0.3195
Val acc: 0.5478
Epoch: 3/3 Iteration: 555 Train loss: 0.2144
Epoch: 3/3 Iteration: 560 Train loss: 0.3046
Epoch: 3/3 Iteration: 565 Train loss: 0.2656
Epoch: 3/3 Iteration: 570 Train loss: 0.0681
Epoch: 3/3 Iteration: 575 Train loss: 0.3850
Val acc: 0.4522
Epoch: 3/3 Iteration: 580 Train loss: 0.2949
Epoch: 3/3 Iteration: 585 Train loss: 0.2763
Epoch: 3/3 Iteration: 590 Train loss: 0.1110
Epoch: 3/3 Iteration: 595 Train loss: 0.0576
Epoch: 3/3 Iteration: 600 Train loss: 0.3294
Val acc: 0.5043
Epoch: 3/3 Iteration: 605 Train loss: 0.1715
Epoch: 3/3 Iteration: 610 Train loss: 0.2352
Epoch: 3/3 Iteration: 615 Train loss: 0.2893
Epoch: 3/3 Iteration: 620 Train loss: 0.1188
Epoch: 3/3 Iteration: 625 Train loss: 0.2184
Val acc: 0.4870
Epoch: 3/3 Iteration: 630 Train loss: 0.2387
Val acc for epoch 3 = 0.4609
Val acc for fold = 0.4609
--------------

Fold - 2 out of 10 ::
--------------
Training on 1059 samples & validating on 117 samples with batch size 5 .
Epoch: 1/3 Iteration: 5 Train loss: 0.3860
Epoch: 1/3 Iteration: 10 Train loss: 0.3659
Epoch: 1/3 Iteration: 15 Train loss: 0.3313
Epoch: 1/3 Iteration: 20 Train loss: 0.2186
Epoch: 1/3 Iteration: 25 Train loss: 0.3535
```

```
Val acc: 0.5565
Epoch: 1/3 Iteration: 30 Train loss: 0.2220
Epoch: 1/3 Iteration: 35 Train loss: 0.2713
Epoch: 1/3 Iteration: 40 Train loss: 0.2216
Epoch: 1/3 Iteration: 45 Train loss: 0.3378
Epoch: 1/3 Iteration: 50 Train loss: 0.1774
Val acc: 0.6522
Epoch: 1/3 Iteration: 55 Train loss: 0.2536
Epoch: 1/3 Iteration: 60 Train loss: 0.2716
Epoch: 1/3 Iteration: 65 Train loss: 0.1311
Epoch: 1/3 Iteration: 70 Train loss: 0.1306
Epoch: 1/3 Iteration: 75 Train loss: 0.1691
Val acc: 0.7217
Epoch: 1/3 Iteration: 80 Train loss: 0.2663
Epoch: 1/3 Iteration: 85 Train loss: 0.3369
Epoch: 1/3 Iteration: 90 Train loss: 0.3165
Epoch: 1/3 Iteration: 95 Train loss: 0.1566
Epoch: 1/3 Iteration: 100 Train loss: 0.3637
Val acc: 0.6087
Epoch: 1/3 Iteration: 105 Train loss: 0.2059
Epoch: 1/3 Iteration: 110 Train loss: 0.2698
Epoch: 1/3 Iteration: 115 Train loss: 0.3927
Epoch: 1/3 Iteration: 120 Train loss: 0.3369
Epoch: 1/3 Iteration: 125 Train loss: 0.3158
Val acc: 0.5826
Epoch: 1/3 Iteration: 130 Train loss: 0.3783
Epoch: 1/3 Iteration: 135 Train loss: 0.3615
Epoch: 1/3 Iteration: 140 Train loss: 0.1320
Epoch: 1/3 Iteration: 145 Train loss: 0.1332
Epoch: 1/3 Iteration: 150 Train loss: 0.1720
Val acc: 0.5043
Epoch: 1/3 Iteration: 155 Train loss: 0.3551
Epoch: 1/3 Iteration: 160 Train loss: 0.3743
Epoch: 1/3 Iteration: 165 Train loss: 0.1920
Epoch: 1/3 Iteration: 170 Train loss: 0.2202
Epoch: 1/3 Iteration: 175 Train loss: 0.3019
Val acc: 0.4957
Epoch: 1/3 Iteration: 180 Train loss: 0.0714
Epoch: 1/3 Iteration: 185 Train loss: 0.1274
Epoch: 1/3 Iteration: 190 Train loss: 0.0619
Epoch: 1/3 Iteration: 195 Train loss: 0.2585
Epoch: 1/3 Iteration: 200 Train loss: 0.0768
Val acc: 0.5217
Epoch: 1/3 Iteration: 205 Train loss: 0.1656
Epoch: 1/3 Iteration: 210 Train loss: 0.1047
Val acc for epoch 1 = 0.5304
Epoch: 2/3 Iteration: 215 Train loss: 0.5007
Epoch: 2/3 Iteration: 220 Train loss: 0.3650
```

```
Epoch: 2/3 Iteration: 225 Train loss: 0.1264
Val acc: 0.5565
Epoch: 2/3 Iteration: 230 Train loss: 0.1332
Epoch: 2/3 Iteration: 235 Train loss: 0.2654
Epoch: 2/3 Iteration: 240 Train loss: 0.1325
Epoch: 2/3 Iteration: 245 Train loss: 0.3140
Epoch: 2/3 Iteration: 250 Train loss: 0.3256
Val acc: 0.6261
Epoch: 2/3 Iteration: 255 Train loss: 0.2565
Epoch: 2/3 Iteration: 260 Train loss: 0.2474
Epoch: 2/3 Iteration: 265 Train loss: 0.2806
Epoch: 2/3 Iteration: 270 Train loss: 0.1309
Epoch: 2/3 Iteration: 275 Train loss: 0.2184
Val acc: 0.6870
Epoch: 2/3 Iteration: 280 Train loss: 0.0721
Epoch: 2/3 Iteration: 285 Train loss: 0.1709
Epoch: 2/3 Iteration: 290 Train loss: 0.0783
Epoch: 2/3 Iteration: 295 Train loss: 0.1481
Epoch: 2/3 Iteration: 300 Train loss: 0.1058
Val acc: 0.7217
Epoch: 2/3 Iteration: 305 Train loss: 0.2409
Epoch: 2/3 Iteration: 310 Train loss: 0.0284
Epoch: 2/3 Iteration: 315 Train loss: 0.3413
Epoch: 2/3 Iteration: 320 Train loss: 0.0298
Epoch: 2/3 Iteration: 325 Train loss: 0.2488
Val acc: 0.6348
Epoch: 2/3 Iteration: 330 Train loss: 0.1780
Epoch: 2/3 Iteration: 335 Train loss: 0.1078
Epoch: 2/3 Iteration: 340 Train loss: 0.0178
Epoch: 2/3 Iteration: 345 Train loss: 0.2823
Epoch: 2/3 Iteration: 350 Train loss: 0.2762
Val acc: 0.5043
Epoch: 2/3 Iteration: 355 Train loss: 0.1399
Epoch: 2/3 Iteration: 360 Train loss: 0.3817
Epoch: 2/3 Iteration: 365 Train loss: 0.1912
Epoch: 2/3 Iteration: 370 Train loss: 0.1537
Epoch: 2/3 Iteration: 375 Train loss: 0.4297
Val acc: 0.5043
Epoch: 2/3 Iteration: 380 Train loss: 0.2482
Epoch: 2/3 Iteration: 385 Train loss: 0.3471
Epoch: 2/3 Iteration: 390 Train loss: 0.3888
Epoch: 2/3 Iteration: 395 Train loss: 0.2383
Epoch: 2/3 Iteration: 400 Train loss: 0.6709
Val acc: 0.5391
Epoch: 2/3 Iteration: 405 Train loss: 0.2150
Epoch: 2/3 Iteration: 410 Train loss: 0.0647
Epoch: 2/3 Iteration: 415 Train loss: 0.0545
Epoch: 2/3 Iteration: 420 Train loss: 0.1121
```

```
Val acc for epoch 2 = 0.5913
Epoch: 3/3 Iteration: 425 Train loss: 0.4591
Val acc: 0.5391
Epoch: 3/3 Iteration: 430 Train loss: 0.2658
Epoch: 3/3 Iteration: 435 Train loss: 0.1627
Epoch: 3/3 Iteration: 440 Train loss: 0.2637
Epoch: 3/3 Iteration: 445 Train loss: 0.0970
Epoch: 3/3 Iteration: 450 Train loss: 0.3039
Val acc: 0.5391
Epoch: 3/3 Iteration: 455 Train loss: 0.1892
Epoch: 3/3 Iteration: 460 Train loss: 0.2957
Epoch: 3/3 Iteration: 465 Train loss: 0.2592
Epoch: 3/3 Iteration: 470 Train loss: 0.2460
Epoch: 3/3 Iteration: 475 Train loss: 0.2602
Val acc: 0.6783
Epoch: 3/3 Iteration: 480 Train loss: 0.0799
Epoch: 3/3 Iteration: 485 Train loss: 0.1169
Epoch: 3/3 Iteration: 490 Train loss: 0.2491
Epoch: 3/3 Iteration: 495 Train loss: 0.1674
Epoch: 3/3 Iteration: 500 Train loss: 0.2589
Val acc: 0.7130
Epoch: 3/3 Iteration: 505 Train loss: 0.0705
Epoch: 3/3 Iteration: 510 Train loss: 0.0781
Epoch: 3/3 Iteration: 515 Train loss: 0.1642
Epoch: 3/3 Iteration: 520 Train loss: 0.2274
Epoch: 3/3 Iteration: 525 Train loss: 0.3336
Val acc: 0.6696
Epoch: 3/3 Iteration: 530 Train loss: 0.2430
Epoch: 3/3 Iteration: 535 Train loss: 0.0377
Epoch: 3/3 Iteration: 540 Train loss: 0.0450
Epoch: 3/3 Iteration: 545 Train loss: 0.3538
Epoch: 3/3 Iteration: 550 Train loss: 0.3065
Val acc: 0.6522
Epoch: 3/3 Iteration: 555 Train loss: 0.1292
Epoch: 3/3 Iteration: 560 Train loss: 0.0794
Epoch: 3/3 Iteration: 565 Train loss: 0.4973
Epoch: 3/3 Iteration: 570 Train loss: 0.0037
Epoch: 3/3 Iteration: 575 Train loss: 0.2657
Val acc: 0.5217
Epoch: 3/3 Iteration: 580 Train loss: 0.1725
Epoch: 3/3 Iteration: 585 Train loss: 0.1153
Epoch: 3/3 Iteration: 590 Train loss: 0.0287
Epoch: 3/3 Iteration: 595 Train loss: 0.0551
Epoch: 3/3 Iteration: 600 Train loss: 0.1449
Val acc: 0.6174
Epoch: 3/3 Iteration: 605 Train loss: 0.2017
Epoch: 3/3 Iteration: 610 Train loss: 0.0750
Epoch: 3/3 Iteration: 615 Train loss: 0.3010
```

```
Epoch: 3/3 Iteration: 620 Train loss: 0.0631
Epoch: 3/3 Iteration: 625 Train loss: 0.2408
Val acc: 0.5043
Epoch: 3/3 Iteration: 630 Train loss: 0.0128
Val acc for epoch 3 = 0.4957
Val acc for fold = 0.4957
--------------

Fold - 3 out of 10 ::
--------------
Training on 1059 samples & validating on 117 samples with batch size 5 .
Epoch: 1/3 Iteration: 5 Train loss: 0.3448
Epoch: 1/3 Iteration: 10 Train loss: 0.2965
Epoch: 1/3 Iteration: 15 Train loss: 0.1600
Epoch: 1/3 Iteration: 20 Train loss: 0.2265
Epoch: 1/3 Iteration: 25 Train loss: 0.7115
Val acc: 0.7217
Epoch: 1/3 Iteration: 30 Train loss: 0.3462
Epoch: 1/3 Iteration: 35 Train loss: 0.2917
Epoch: 1/3 Iteration: 40 Train loss: 0.2779
Epoch: 1/3 Iteration: 45 Train loss: 0.2103
Epoch: 1/3 Iteration: 50 Train loss: 0.1485
Val acc: 0.7565
Epoch: 1/3 Iteration: 55 Train loss: 0.0633
Epoch: 1/3 Iteration: 60 Train loss: 0.3260
Epoch: 1/3 Iteration: 65 Train loss: 0.1840
Epoch: 1/3 Iteration: 70 Train loss: 0.1288
Epoch: 1/3 Iteration: 75 Train loss: 0.1512
Val acc: 0.7913
Epoch: 1/3 Iteration: 80 Train loss: 0.1935
Epoch: 1/3 Iteration: 85 Train loss: 0.2074
Epoch: 1/3 Iteration: 90 Train loss: 0.0931
Epoch: 1/3 Iteration: 95 Train loss: 0.0801
Epoch: 1/3 Iteration: 100 Train loss: 0.2063
Val acc: 0.8087
Epoch: 1/3 Iteration: 105 Train loss: 0.2173
Epoch: 1/3 Iteration: 110 Train loss: 0.0334
Epoch: 1/3 Iteration: 115 Train loss: 0.0720
Epoch: 1/3 Iteration: 120 Train loss: 0.1910
Epoch: 1/3 Iteration: 125 Train loss: 0.0493
Val acc: 0.7826
Epoch: 1/3 Iteration: 130 Train loss: 0.3561
Epoch: 1/3 Iteration: 135 Train loss: 0.3433
Epoch: 1/3 Iteration: 140 Train loss: 0.0735
Epoch: 1/3 Iteration: 145 Train loss: 0.0058
Epoch: 1/3 Iteration: 150 Train loss: 0.0791
Val acc: 0.6000
Epoch: 1/3 Iteration: 155 Train loss: 0.1335
```

```
Epoch: 1/3 Iteration: 160 Train loss: 0.3668
Epoch: 1/3 Iteration: 165 Train loss: 0.0785
Epoch: 1/3 Iteration: 170 Train loss: 0.1239
Epoch: 1/3 Iteration: 175 Train loss: 0.2644
Val acc: 0.6783
Epoch: 1/3 Iteration: 180 Train loss: 0.0763
Epoch: 1/3 Iteration: 185 Train loss: 0.0599
Epoch: 1/3 Iteration: 190 Train loss: 0.0586
Epoch: 1/3 Iteration: 195 Train loss: 0.3039
Epoch: 1/3 Iteration: 200 Train loss: 0.0374
Val acc: 0.7043
Epoch: 1/3 Iteration: 205 Train loss: 0.0621
Epoch: 1/3 Iteration: 210 Train loss: 0.0110
Val acc for epoch 1 = 0.6696
Epoch: 2/3 Iteration: 215 Train loss: 0.3946
Epoch: 2/3 Iteration: 220 Train loss: 0.1888
Epoch: 2/3 Iteration: 225 Train loss: 0.0003
Val acc: 0.6783
Epoch: 2/3 Iteration: 230 Train loss: 0.1809
Epoch: 2/3 Iteration: 235 Train loss: 0.0259
Epoch: 2/3 Iteration: 240 Train loss: 0.1249
Epoch: 2/3 Iteration: 245 Train loss: 0.3689
Epoch: 2/3 Iteration: 250 Train loss: 0.0426
Val acc: 0.7826
Epoch: 2/3 Iteration: 255 Train loss: 0.0161
Epoch: 2/3 Iteration: 260 Train loss: 0.2163
Epoch: 2/3 Iteration: 265 Train loss: 0.0297
Epoch: 2/3 Iteration: 270 Train loss: 0.0869
Epoch: 2/3 Iteration: 275 Train loss: 0.0029
Val acc: 0.7652
Epoch: 2/3 Iteration: 280 Train loss: 0.0016
Epoch: 2/3 Iteration: 285 Train loss: 0.1875
Epoch: 2/3 Iteration: 290 Train loss: 0.2974
Epoch: 2/3 Iteration: 295 Train loss: 0.1688
Epoch: 2/3 Iteration: 300 Train loss: 0.0839
Val acc: 0.7652
Epoch: 2/3 Iteration: 305 Train loss: 0.1940
Epoch: 2/3 Iteration: 310 Train loss: 0.0322
Epoch: 2/3 Iteration: 315 Train loss: 0.1547
Epoch: 2/3 Iteration: 320 Train loss: 0.0007
Epoch: 2/3 Iteration: 325 Train loss: 0.0541
Val acc: 0.7478
Epoch: 2/3 Iteration: 330 Train loss: 0.1733
Epoch: 2/3 Iteration: 335 Train loss: 0.0101
Epoch: 2/3 Iteration: 340 Train loss: 0.0067
Epoch: 2/3 Iteration: 345 Train loss: 0.0744
Epoch: 2/3 Iteration: 350 Train loss: 0.0014
Val acc: 0.6957
```

```
Epoch: 2/3 Iteration: 355 Train loss: 0.0532
Epoch: 2/3 Iteration: 360 Train loss: 0.1513
Epoch: 2/3 Iteration: 365 Train loss: 0.0061
Epoch: 2/3 Iteration: 370 Train loss: 0.1375
Epoch: 2/3 Iteration: 375 Train loss: 0.2790
Val acc: 0.6348
Epoch: 2/3 Iteration: 380 Train loss: 0.1291
Epoch: 2/3 Iteration: 385 Train loss: 0.1444
Epoch: 2/3 Iteration: 390 Train loss: 0.1413
Epoch: 2/3 Iteration: 395 Train loss: 0.0056
Epoch: 2/3 Iteration: 400 Train loss: 0.2762
Val acc: 0.6957
Epoch: 2/3 Iteration: 405 Train loss: 0.0050
Epoch: 2/3 Iteration: 410 Train loss: 0.0053
Epoch: 2/3 Iteration: 415 Train loss: 0.0011
Epoch: 2/3 Iteration: 420 Train loss: 0.0002
Val acc for epoch 2 = 0.6087
Epoch: 3/3 Iteration: 425 Train loss: 0.3875
Val acc: 0.6261
Epoch: 3/3 Iteration: 430 Train loss: 0.2017
Epoch: 3/3 Iteration: 435 Train loss: 0.0010
Epoch: 3/3 Iteration: 440 Train loss: 0.2185
Epoch: 3/3 Iteration: 445 Train loss: 0.0010
Epoch: 3/3 Iteration: 450 Train loss: 0.0338
Val acc: 0.6696
Epoch: 3/3 Iteration: 455 Train loss: 0.3036
Epoch: 3/3 Iteration: 460 Train loss: 0.0014
Epoch: 3/3 Iteration: 465 Train loss: 0.0010
Epoch: 3/3 Iteration: 470 Train loss: 0.0550
Epoch: 3/3 Iteration: 475 Train loss: 0.3425
Val acc: 0.7913
Epoch: 3/3 Iteration: 480 Train loss: 0.0122
Epoch: 3/3 Iteration: 485 Train loss: 0.0028
Epoch: 3/3 Iteration: 490 Train loss: 0.0804
Epoch: 3/3 Iteration: 495 Train loss: 0.0042
Epoch: 3/3 Iteration: 500 Train loss: 0.0058
Val acc: 0.7652
Epoch: 3/3 Iteration: 505 Train loss: 0.0076
Epoch: 3/3 Iteration: 510 Train loss: 0.0892
Epoch: 3/3 Iteration: 515 Train loss: 0.0056
Epoch: 3/3 Iteration: 520 Train loss: 0.3550
Epoch: 3/3 Iteration: 525 Train loss: 0.3171
Val acc: 0.7391
Epoch: 3/3 Iteration: 530 Train loss: 0.0003
Epoch: 3/3 Iteration: 535 Train loss: 0.0165
Epoch: 3/3 Iteration: 540 Train loss: 0.0062
Epoch: 3/3 Iteration: 545 Train loss: 0.3463
Epoch: 3/3 Iteration: 550 Train loss: 0.2218
```

```
Val acc: 0.7391
Epoch: 3/3 Iteration: 555 Train loss: 0.0479
Epoch: 3/3 Iteration: 560 Train loss: 0.0775
Epoch: 3/3 Iteration: 565 Train loss: 0.4605
Epoch: 3/3 Iteration: 570 Train loss: 0.0155
Epoch: 3/3 Iteration: 575 Train loss: 0.2626
Val acc: 0.6696
Epoch: 3/3 Iteration: 580 Train loss: 0.0014
Epoch: 3/3 Iteration: 585 Train loss: 0.0497
Epoch: 3/3 Iteration: 590 Train loss: 0.0374
Epoch: 3/3 Iteration: 595 Train loss: 0.1385
Epoch: 3/3 Iteration: 600 Train loss: 0.0176
Val acc: 0.7043
Epoch: 3/3 Iteration: 605 Train loss: 0.1097
Epoch: 3/3 Iteration: 610 Train loss: 0.0003
Epoch: 3/3 Iteration: 615 Train loss: 0.0001
Epoch: 3/3 Iteration: 620 Train loss: 0.0423
Epoch: 3/3 Iteration: 625 Train loss: 0.0178
Val acc: 0.6783
Epoch: 3/3 Iteration: 630 Train loss: 0.0033
Val acc for epoch 3 = 0.6348
Val acc for fold = 0.6348
--------------

Fold - 4 out of 10 ::
--------------
Training on 1059 samples & validating on 117 samples with batch size 5 .
Epoch: 1/3 Iteration: 5 Train loss: 0.0314
Epoch: 1/3 Iteration: 10 Train loss: 0.3007
Epoch: 1/3 Iteration: 15 Train loss: 0.2727
Epoch: 1/3 Iteration: 20 Train loss: 0.1529
Epoch: 1/3 Iteration: 25 Train loss: 0.3642
Val acc: 0.7565
Epoch: 1/3 Iteration: 30 Train loss: 0.5572
Epoch: 1/3 Iteration: 35 Train loss: 0.0024
Epoch: 1/3 Iteration: 40 Train loss: 0.1475
Epoch: 1/3 Iteration: 45 Train loss: 0.0141
Epoch: 1/3 Iteration: 50 Train loss: 0.1347
Val acc: 0.9043
Epoch: 1/3 Iteration: 55 Train loss: 0.3349
Epoch: 1/3 Iteration: 60 Train loss: 0.0461
Epoch: 1/3 Iteration: 65 Train loss: 0.1054
Epoch: 1/3 Iteration: 70 Train loss: 0.1902
Epoch: 1/3 Iteration: 75 Train loss: 0.0203
Val acc: 0.9043
Epoch: 1/3 Iteration: 80 Train loss: 0.1992
Epoch: 1/3 Iteration: 85 Train loss: 0.2051
Epoch: 1/3 Iteration: 90 Train loss: 0.0066
```

```
Epoch: 1/3 Iteration: 95 Train loss: 0.0009
Epoch: 1/3 Iteration: 100 Train loss: 0.0174
Val acc: 0.9391
Epoch: 1/3 Iteration: 105 Train loss: 0.0656
Epoch: 1/3 Iteration: 110 Train loss: 0.0257
Epoch: 1/3 Iteration: 115 Train loss: 0.0199
Epoch: 1/3 Iteration: 120 Train loss: 0.2074
Epoch: 1/3 Iteration: 125 Train loss: 0.0004
Val acc: 0.9217
Epoch: 1/3 Iteration: 130 Train loss: 0.4278
Epoch: 1/3 Iteration: 135 Train loss: 0.0975
Epoch: 1/3 Iteration: 140 Train loss: 0.0367
Epoch: 1/3 Iteration: 145 Train loss: 0.0014
Epoch: 1/3 Iteration: 150 Train loss: 0.0007
Val acc: 0.8000
Epoch: 1/3 Iteration: 155 Train loss: 0.0001
Epoch: 1/3 Iteration: 160 Train loss: 0.1950
Epoch: 1/3 Iteration: 165 Train loss: 0.0068
Epoch: 1/3 Iteration: 170 Train loss: 0.0013
Epoch: 1/3 Iteration: 175 Train loss: 0.0008
Val acc: 0.6957
Epoch: 1/3 Iteration: 180 Train loss: 0.0343
Epoch: 1/3 Iteration: 185 Train loss: 0.0012
Epoch: 1/3 Iteration: 190 Train loss: 0.0003
Epoch: 1/3 Iteration: 195 Train loss: 0.1919
Epoch: 1/3 Iteration: 200 Train loss: 0.0002
Val acc: 0.7130
Epoch: 1/3 Iteration: 205 Train loss: 0.0144
Epoch: 1/3 Iteration: 210 Train loss: 0.0003
Val acc for epoch 1 = 0.7043
Epoch: 2/3 Iteration: 215 Train loss: 0.3461
Epoch: 2/3 Iteration: 220 Train loss: 0.0011
Epoch: 2/3 Iteration: 225 Train loss: 0.0002
Val acc: 0.7217
Epoch: 2/3 Iteration: 230 Train loss: 0.0043
Epoch: 2/3 Iteration: 235 Train loss: 0.0191
Epoch: 2/3 Iteration: 240 Train loss: 0.0076
Epoch: 2/3 Iteration: 245 Train loss: 0.3675
Epoch: 2/3 Iteration: 250 Train loss: 0.0362
Val acc: 0.8609
Epoch: 2/3 Iteration: 255 Train loss: 0.1867
Epoch: 2/3 Iteration: 260 Train loss: 0.1185
Epoch: 2/3 Iteration: 265 Train loss: 0.1578
Epoch: 2/3 Iteration: 270 Train loss: 0.0056
Epoch: 2/3 Iteration: 275 Train loss: 0.0002
Val acc: 0.8957
Epoch: 2/3 Iteration: 280 Train loss: 0.2024
Epoch: 2/3 Iteration: 285 Train loss: 0.1237
```

```
Epoch: 2/3 Iteration: 290 Train loss: 0.1475
Epoch: 2/3 Iteration: 295 Train loss: 0.0580
Epoch: 2/3 Iteration: 300 Train loss: 0.0005
Val acc: 0.9043
Epoch: 2/3 Iteration: 305 Train loss: 0.0017
Epoch: 2/3 Iteration: 310 Train loss: 0.0742
Epoch: 2/3 Iteration: 315 Train loss: 0.0483
Epoch: 2/3 Iteration: 320 Train loss: 0.0005
Epoch: 2/3 Iteration: 325 Train loss: 0.1715
Val acc: 0.9043
Epoch: 2/3 Iteration: 330 Train loss: 0.0318
Epoch: 2/3 Iteration: 335 Train loss: 0.0004
Epoch: 2/3 Iteration: 340 Train loss: 0.0002
Epoch: 2/3 Iteration: 345 Train loss: 0.1950
Epoch: 2/3 Iteration: 350 Train loss: 0.1905
Val acc: 0.8957
Epoch: 2/3 Iteration: 355 Train loss: 0.1969
Epoch: 2/3 Iteration: 360 Train loss: 0.0063
Epoch: 2/3 Iteration: 365 Train loss: 0.0001
Epoch: 2/3 Iteration: 370 Train loss: 0.1560
Epoch: 2/3 Iteration: 375 Train loss: 0.0373
Val acc: 0.7652
Epoch: 2/3 Iteration: 380 Train loss: 0.0002
Epoch: 2/3 Iteration: 385 Train loss: 0.0040
Epoch: 2/3 Iteration: 390 Train loss: 0.2036
Epoch: 2/3 Iteration: 395 Train loss: 0.0001
Epoch: 2/3 Iteration: 400 Train loss: 0.3178
Val acc: 0.7739
Epoch: 2/3 Iteration: 405 Train loss: 0.0001
Epoch: 2/3 Iteration: 410 Train loss: 0.0001
Epoch: 2/3 Iteration: 415 Train loss: 0.0095
Epoch: 2/3 Iteration: 420 Train loss: 0.0000
Val acc for epoch 2 = 0.8087
Epoch: 3/3 Iteration: 425 Train loss: 0.3937
Val acc: 0.8000
Epoch: 3/3 Iteration: 430 Train loss: 0.1998
Epoch: 3/3 Iteration: 435 Train loss: 0.0000
Epoch: 3/3 Iteration: 440 Train loss: 0.1945
Epoch: 3/3 Iteration: 445 Train loss: 0.0001
Epoch: 3/3 Iteration: 450 Train loss: 0.0934
Val acc: 0.8609
Epoch: 3/3 Iteration: 455 Train loss: 0.1961
Epoch: 3/3 Iteration: 460 Train loss: 0.0000
Epoch: 3/3 Iteration: 465 Train loss: 0.0001
Epoch: 3/3 Iteration: 470 Train loss: 0.1997
Epoch: 3/3 Iteration: 475 Train loss: 0.0005
Val acc: 0.8087
Epoch: 3/3 Iteration: 480 Train loss: 0.0012
```

```
Epoch: 3/3 Iteration: 485 Train loss: 0.0379
Epoch: 3/3 Iteration: 490 Train loss: 0.1742
Epoch: 3/3 Iteration: 495 Train loss: 0.0757
Epoch: 3/3 Iteration: 500 Train loss: 0.0045
Val acc: 0.9304
Epoch: 3/3 Iteration: 505 Train loss: 0.0003
Epoch: 3/3 Iteration: 510 Train loss: 0.0274
Epoch: 3/3 Iteration: 515 Train loss: 0.0085
Epoch: 3/3 Iteration: 520 Train loss: 0.2011
Epoch: 3/3 Iteration: 525 Train loss: 0.2000
Val acc: 0.9130
Epoch: 3/3 Iteration: 530 Train loss: 0.0001
Epoch: 3/3 Iteration: 535 Train loss: 0.0542
Epoch: 3/3 Iteration: 540 Train loss: 0.0006
Epoch: 3/3 Iteration: 545 Train loss: 0.1991
Epoch: 3/3 Iteration: 550 Train loss: 0.1548
Val acc: 0.8609
Epoch: 3/3 Iteration: 555 Train loss: 0.0008
Epoch: 3/3 Iteration: 560 Train loss: 0.1120
Epoch: 3/3 Iteration: 565 Train loss: 0.2452
Epoch: 3/3 Iteration: 570 Train loss: 0.0087
Epoch: 3/3 Iteration: 575 Train loss: 0.1994
Val acc: 0.7826
Epoch: 3/3 Iteration: 580 Train loss: 0.0017
Epoch: 3/3 Iteration: 585 Train loss: 0.0468
Epoch: 3/3 Iteration: 590 Train loss: 0.0240
Epoch: 3/3 Iteration: 595 Train loss: 0.0012
Epoch: 3/3 Iteration: 600 Train loss: 0.0011
Val acc: 0.7304
Epoch: 3/3 Iteration: 605 Train loss: 0.0148
Epoch: 3/3 Iteration: 610 Train loss: 0.0012
Epoch: 3/3 Iteration: 615 Train loss: 0.0014
Epoch: 3/3 Iteration: 620 Train loss: 0.0000
Epoch: 3/3 Iteration: 625 Train loss: 0.0049
Val acc: 0.7478
Epoch: 3/3 Iteration: 630 Train loss: 0.0019
Val acc for epoch 3 = 0.8087
Val acc for fold = 0.8087
--------------

Fold - 5 out of 10 ::
--------------
Training on 1059 samples & validating on 117 samples with batch size 5 .
Epoch: 1/3 Iteration: 5 Train loss: 0.0002
Epoch: 1/3 Iteration: 10 Train loss: 0.2015
Epoch: 1/3 Iteration: 15 Train loss: 0.1596
Epoch: 1/3 Iteration: 20 Train loss: 0.0794
Epoch: 1/3 Iteration: 25 Train loss: 0.2909
```

```
Val acc: 0.9304
Epoch: 1/3 Iteration: 30 Train loss: 0.0020
Epoch: 1/3 Iteration: 35 Train loss: 0.0001
Epoch: 1/3 Iteration: 40 Train loss: 0.0031
Epoch: 1/3 Iteration: 45 Train loss: 0.1166
Epoch: 1/3 Iteration: 50 Train loss: 0.0008
Val acc: 0.9478
Epoch: 1/3 Iteration: 55 Train loss: 0.1834
Epoch: 1/3 Iteration: 60 Train loss: 0.0762
Epoch: 1/3 Iteration: 65 Train loss: 0.1968
Epoch: 1/3 Iteration: 70 Train loss: 0.0009
Epoch: 1/3 Iteration: 75 Train loss: 0.2267
Val acc: 0.9391
Epoch: 1/3 Iteration: 80 Train loss: 0.1972
Epoch: 1/3 Iteration: 85 Train loss: 0.0014
Epoch: 1/3 Iteration: 90 Train loss: 0.0027
Epoch: 1/3 Iteration: 95 Train loss: 0.1756
Epoch: 1/3 Iteration: 100 Train loss: 0.0006
Val acc: 0.9913
Epoch: 1/3 Iteration: 105 Train loss: 0.0100
Epoch: 1/3 Iteration: 110 Train loss: 0.0004
Epoch: 1/3 Iteration: 115 Train loss: 0.0254
Epoch: 1/3 Iteration: 120 Train loss: 0.3942
Epoch: 1/3 Iteration: 125 Train loss: 0.0002
Val acc: 0.9913
Epoch: 1/3 Iteration: 130 Train loss: 0.1161
Epoch: 1/3 Iteration: 135 Train loss: 0.0004
Epoch: 1/3 Iteration: 140 Train loss: 0.0011
Epoch: 1/3 Iteration: 145 Train loss: 0.1052
Epoch: 1/3 Iteration: 150 Train loss: 0.0009
Val acc: 0.9739
Epoch: 1/3 Iteration: 155 Train loss: 0.0003
Epoch: 1/3 Iteration: 160 Train loss: 0.1942
Epoch: 1/3 Iteration: 165 Train loss: 0.0129
Epoch: 1/3 Iteration: 170 Train loss: 0.0001
Epoch: 1/3 Iteration: 175 Train loss: 0.0649
Val acc: 0.9391
Epoch: 1/3 Iteration: 180 Train loss: 0.0002
Epoch: 1/3 Iteration: 185 Train loss: 0.0003
Epoch: 1/3 Iteration: 190 Train loss: 0.0013
Epoch: 1/3 Iteration: 195 Train loss: 0.0836
Epoch: 1/3 Iteration: 200 Train loss: 0.0056
Val acc: 0.8609
Epoch: 1/3 Iteration: 205 Train loss: 0.0007
Epoch: 1/3 Iteration: 210 Train loss: 0.0003
Val acc for epoch 1 = 0.8957
Epoch: 2/3 Iteration: 215 Train loss: 0.2987
Epoch: 2/3 Iteration: 220 Train loss: 0.0000
```

```
Epoch: 2/3 Iteration: 225 Train loss: 0.0000
Val acc: 0.9043
Epoch: 2/3 Iteration: 230 Train loss: 0.0017
Epoch: 2/3 Iteration: 235 Train loss: 0.0076
Epoch: 2/3 Iteration: 240 Train loss: 0.0180
Epoch: 2/3 Iteration: 245 Train loss: 0.1313
Epoch: 2/3 Iteration: 250 Train loss: 0.0022
Val acc: 0.9565
Epoch: 2/3 Iteration: 255 Train loss: 0.0301
Epoch: 2/3 Iteration: 260 Train loss: 0.2030
Epoch: 2/3 Iteration: 265 Train loss: 0.0011
Epoch: 2/3 Iteration: 270 Train loss: 0.0002
Epoch: 2/3 Iteration: 275 Train loss: 0.0003
Val acc: 0.9826
Epoch: 2/3 Iteration: 280 Train loss: 0.2547
Epoch: 2/3 Iteration: 285 Train loss: 0.1803
Epoch: 2/3 Iteration: 290 Train loss: 0.0011
Epoch: 2/3 Iteration: 295 Train loss: 0.0558
Epoch: 2/3 Iteration: 300 Train loss: 0.0006
Val acc: 0.9652
Epoch: 2/3 Iteration: 305 Train loss: 0.0016
Epoch: 2/3 Iteration: 310 Train loss: 0.0000
Epoch: 2/3 Iteration: 315 Train loss: 0.0014
Epoch: 2/3 Iteration: 320 Train loss: 0.0027
Epoch: 2/3 Iteration: 325 Train loss: 0.1500
Val acc: 0.9652
Epoch: 2/3 Iteration: 330 Train loss: 0.1537
Epoch: 2/3 Iteration: 335 Train loss: 0.0000
Epoch: 2/3 Iteration: 340 Train loss: 0.0000
Epoch: 2/3 Iteration: 345 Train loss: 0.1642
Epoch: 2/3 Iteration: 350 Train loss: 0.0378
Val acc: 0.9826
Epoch: 2/3 Iteration: 355 Train loss: 0.0082
Epoch: 2/3 Iteration: 360 Train loss: 0.0012
Epoch: 2/3 Iteration: 365 Train loss: 0.0001
Epoch: 2/3 Iteration: 370 Train loss: 0.0056
Epoch: 2/3 Iteration: 375 Train loss: 0.0002
Val acc: 0.9043
Epoch: 2/3 Iteration: 380 Train loss: 0.0004
Epoch: 2/3 Iteration: 385 Train loss: 0.0004
Epoch: 2/3 Iteration: 390 Train loss: 0.0008
Epoch: 2/3 Iteration: 395 Train loss: 0.0005
Epoch: 2/3 Iteration: 400 Train loss: 0.1845
Val acc: 0.9043
Epoch: 2/3 Iteration: 405 Train loss: 0.0000
Epoch: 2/3 Iteration: 410 Train loss: 0.0001
Epoch: 2/3 Iteration: 415 Train loss: 0.0003
Epoch: 2/3 Iteration: 420 Train loss: 0.0001
```

```
Val acc for epoch 2 = 0.8957
Epoch: 3/3 Iteration: 425 Train loss: 0.3962
Val acc: 0.8957
Epoch: 3/3 Iteration: 430 Train loss: 0.1993
Epoch: 3/3 Iteration: 435 Train loss: 0.0002
Epoch: 3/3 Iteration: 440 Train loss: 0.1975
Epoch: 3/3 Iteration: 445 Train loss: 0.0002
Epoch: 3/3 Iteration: 450 Train loss: 0.0014
Val acc: 0.8783
Epoch: 3/3 Iteration: 455 Train loss: 0.1735
Epoch: 3/3 Iteration: 460 Train loss: 0.0049
Epoch: 3/3 Iteration: 465 Train loss: 0.0000
Epoch: 3/3 Iteration: 470 Train loss: 0.1989
Epoch: 3/3 Iteration: 475 Train loss: 0.0016
Val acc: 0.9130
Epoch: 3/3 Iteration: 480 Train loss: 0.0002
Epoch: 3/3 Iteration: 485 Train loss: 0.0013
Epoch: 3/3 Iteration: 490 Train loss: 0.1976
Epoch: 3/3 Iteration: 495 Train loss: 0.1988
Epoch: 3/3 Iteration: 500 Train loss: 0.0002
Val acc: 0.9478
Epoch: 3/3 Iteration: 505 Train loss: 0.1439
Epoch: 3/3 Iteration: 510 Train loss: 0.3128
Epoch: 3/3 Iteration: 515 Train loss: 0.0153
Epoch: 3/3 Iteration: 520 Train loss: 0.1903
Epoch: 3/3 Iteration: 525 Train loss: 0.0926
Val acc: 0.9478
Epoch: 3/3 Iteration: 530 Train loss: 0.0011
Epoch: 3/3 Iteration: 535 Train loss: 0.0000
Epoch: 3/3 Iteration: 540 Train loss: 0.0001
Epoch: 3/3 Iteration: 545 Train loss: 0.0000
Epoch: 3/3 Iteration: 550 Train loss: 0.0030
Val acc: 0.9652
Epoch: 3/3 Iteration: 555 Train loss: 0.0007
Epoch: 3/3 Iteration: 560 Train loss: 0.0011
Epoch: 3/3 Iteration: 565 Train loss: 0.1827
Epoch: 3/3 Iteration: 570 Train loss: 0.1492
Epoch: 3/3 Iteration: 575 Train loss: 0.0018
Val acc: 0.9478
Epoch: 3/3 Iteration: 580 Train loss: 0.0001
Epoch: 3/3 Iteration: 585 Train loss: 0.0001
Epoch: 3/3 Iteration: 590 Train loss: 0.0001
Epoch: 3/3 Iteration: 595 Train loss: 0.0008
Epoch: 3/3 Iteration: 600 Train loss: 0.0001
Val acc: 0.9565
Epoch: 3/3 Iteration: 605 Train loss: 0.1914
Epoch: 3/3 Iteration: 610 Train loss: 0.1858
Epoch: 3/3 Iteration: 615 Train loss: 0.0002
```

```
Epoch: 3/3 Iteration: 620 Train loss: 0.0002
Epoch: 3/3 Iteration: 625 Train loss: 0.0008
Val acc: 0.8957
Epoch: 3/3 Iteration: 630 Train loss: 0.0191
Val acc for epoch 3 = 0.8261
Val acc for fold = 0.8261
--------------

Fold - 6 out of 10 ::
--------------
Training on 1059 samples & validating on 117 samples with batch size 5 .
Epoch: 1/3 Iteration: 5 Train loss: 0.0008
Epoch: 1/3 Iteration: 10 Train loss: 0.1998
Epoch: 1/3 Iteration: 15 Train loss: 0.0002
Epoch: 1/3 Iteration: 20 Train loss: 0.0000
Epoch: 1/3 Iteration: 25 Train loss: 0.3318
Val acc: 0.8609
Epoch: 1/3 Iteration: 30 Train loss: 0.0001
Epoch: 1/3 Iteration: 35 Train loss: 0.0001
Epoch: 1/3 Iteration: 40 Train loss: 0.0001
Epoch: 1/3 Iteration: 45 Train loss: 0.0012
Epoch: 1/3 Iteration: 50 Train loss: 0.1877
Val acc: 0.8348
Epoch: 1/3 Iteration: 55 Train loss: 0.1484
Epoch: 1/3 Iteration: 60 Train loss: 0.0002
Epoch: 1/3 Iteration: 65 Train loss: 0.0019
Epoch: 1/3 Iteration: 70 Train loss: 0.0084
Epoch: 1/3 Iteration: 75 Train loss: 0.0002
Val acc: 0.9826
Epoch: 1/3 Iteration: 80 Train loss: 0.0644
Epoch: 1/3 Iteration: 85 Train loss: 0.0005
Epoch: 1/3 Iteration: 90 Train loss: 0.0002
Epoch: 1/3 Iteration: 95 Train loss: 0.0019
Epoch: 1/3 Iteration: 100 Train loss: 0.1516
Val acc: 0.9913
Epoch: 1/3 Iteration: 105 Train loss: 0.0000
Epoch: 1/3 Iteration: 110 Train loss: 0.0000
Epoch: 1/3 Iteration: 115 Train loss: 0.0066
Epoch: 1/3 Iteration: 120 Train loss: 0.1988
Epoch: 1/3 Iteration: 125 Train loss: 0.0000
Val acc: 0.9826
Epoch: 1/3 Iteration: 130 Train loss: 0.0012
Epoch: 1/3 Iteration: 135 Train loss: 0.0001
Epoch: 1/3 Iteration: 140 Train loss: 0.0002
Epoch: 1/3 Iteration: 145 Train loss: 0.0016
Epoch: 1/3 Iteration: 150 Train loss: 0.0103
Val acc: 0.9652
Epoch: 1/3 Iteration: 155 Train loss: 0.0000
```

```
Epoch: 1/3 Iteration: 160 Train loss: 0.1944
Epoch: 1/3 Iteration: 165 Train loss: 0.0888
Epoch: 1/3 Iteration: 170 Train loss: 0.1932
Epoch: 1/3 Iteration: 175 Train loss: 0.0007
Val acc: 0.9391
Epoch: 1/3 Iteration: 180 Train loss: 0.0004
Epoch: 1/3 Iteration: 185 Train loss: 0.0026
Epoch: 1/3 Iteration: 190 Train loss: 0.0001
Epoch: 1/3 Iteration: 195 Train loss: 0.0054
Epoch: 1/3 Iteration: 200 Train loss: 0.0130
Val acc: 0.9565
Epoch: 1/3 Iteration: 205 Train loss: 0.0001
Epoch: 1/3 Iteration: 210 Train loss: 0.0000
Val acc for epoch 1 = 0.9217
Epoch: 2/3 Iteration: 215 Train loss: 0.1994
Epoch: 2/3 Iteration: 220 Train loss: 0.0000
Epoch: 2/3 Iteration: 225 Train loss: 0.0000
Val acc: 0.8783
Epoch: 2/3 Iteration: 230 Train loss: 0.0000
Epoch: 2/3 Iteration: 235 Train loss: 0.0001
Epoch: 2/3 Iteration: 240 Train loss: 0.0000
Epoch: 2/3 Iteration: 245 Train loss: 0.1397
Epoch: 2/3 Iteration: 250 Train loss: 0.0002
Val acc: 0.9304
Epoch: 2/3 Iteration: 255 Train loss: 0.0001
Epoch: 2/3 Iteration: 260 Train loss: 0.0004
Epoch: 2/3 Iteration: 265 Train loss: 0.0000
Epoch: 2/3 Iteration: 270 Train loss: 0.0003
Epoch: 2/3 Iteration: 275 Train loss: 0.0000
Val acc: 0.9043
Epoch: 2/3 Iteration: 280 Train loss: 0.1982
Epoch: 2/3 Iteration: 285 Train loss: 0.0046
Epoch: 2/3 Iteration: 290 Train loss: 0.0000
Epoch: 2/3 Iteration: 295 Train loss: 0.0000
Epoch: 2/3 Iteration: 300 Train loss: 0.0000
Val acc: 0.9739
Epoch: 2/3 Iteration: 305 Train loss: 0.0000
Epoch: 2/3 Iteration: 310 Train loss: 0.0064
Epoch: 2/3 Iteration: 315 Train loss: 0.0000
Epoch: 2/3 Iteration: 320 Train loss: 0.0001
Epoch: 2/3 Iteration: 325 Train loss: 0.0000
Val acc: 0.9739
Epoch: 2/3 Iteration: 330 Train loss: 0.0000
Epoch: 2/3 Iteration: 335 Train loss: 0.0000
Epoch: 2/3 Iteration: 340 Train loss: 0.0000
Epoch: 2/3 Iteration: 345 Train loss: 0.0070
Epoch: 2/3 Iteration: 350 Train loss: 0.0000
Val acc: 0.9739
```

```
Epoch: 2/3 Iteration: 355 Train loss: 0.0001
Epoch: 2/3 Iteration: 360 Train loss: 0.0355
Epoch: 2/3 Iteration: 365 Train loss: 0.0000
Epoch: 2/3 Iteration: 370 Train loss: 0.0000
Epoch: 2/3 Iteration: 375 Train loss: 0.0000
Val acc: 0.9391
Epoch: 2/3 Iteration: 380 Train loss: 0.0000
Epoch: 2/3 Iteration: 385 Train loss: 0.0000
Epoch: 2/3 Iteration: 390 Train loss: 0.0277
Epoch: 2/3 Iteration: 395 Train loss: 0.0081
Epoch: 2/3 Iteration: 400 Train loss: 0.0622
Val acc: 0.9478
Epoch: 2/3 Iteration: 405 Train loss: 0.0001
Epoch: 2/3 Iteration: 410 Train loss: 0.0003
Epoch: 2/3 Iteration: 415 Train loss: 0.0000
Epoch: 2/3 Iteration: 420 Train loss: 0.0000
Val acc for epoch 2 = 0.9478
Epoch: 3/3 Iteration: 425 Train loss: 0.3976
Val acc: 0.9391
Epoch: 3/3 Iteration: 430 Train loss: 0.1989
Epoch: 3/3 Iteration: 435 Train loss: 0.0000
Epoch: 3/3 Iteration: 440 Train loss: 0.1995
Epoch: 3/3 Iteration: 445 Train loss: 0.0000
Epoch: 3/3 Iteration: 450 Train loss: 0.0000
Val acc: 0.9304
Epoch: 3/3 Iteration: 455 Train loss: 0.0066
Epoch: 3/3 Iteration: 460 Train loss: 0.0001
Epoch: 3/3 Iteration: 465 Train loss: 0.0000
Epoch: 3/3 Iteration: 470 Train loss: 0.1998
Epoch: 3/3 Iteration: 475 Train loss: 0.0000
Val acc: 0.8957
Epoch: 3/3 Iteration: 480 Train loss: 0.0001
Epoch: 3/3 Iteration: 485 Train loss: 0.0000
Epoch: 3/3 Iteration: 490 Train loss: 0.1999
Epoch: 3/3 Iteration: 495 Train loss: 0.2003
Epoch: 3/3 Iteration: 500 Train loss: 0.0025
Val acc: 0.9304
Epoch: 3/3 Iteration: 505 Train loss: 0.0035
Epoch: 3/3 Iteration: 510 Train loss: 0.1986
Epoch: 3/3 Iteration: 515 Train loss: 0.0064
Epoch: 3/3 Iteration: 520 Train loss: 0.0005
Epoch: 3/3 Iteration: 525 Train loss: 0.0020
Val acc: 0.9739
Epoch: 3/3 Iteration: 530 Train loss: 0.0007
Epoch: 3/3 Iteration: 535 Train loss: 0.0005
Epoch: 3/3 Iteration: 540 Train loss: 0.0000
Epoch: 3/3 Iteration: 545 Train loss: 0.0000
Epoch: 3/3 Iteration: 550 Train loss: 0.1558
```

```
Val acc: 0.9739
Epoch: 3/3 Iteration: 555 Train loss: 0.0014
Epoch: 3/3 Iteration: 560 Train loss: 0.0000
Epoch: 3/3 Iteration: 565 Train loss: 0.0601
Epoch: 3/3 Iteration: 570 Train loss: 0.0001
Epoch: 3/3 Iteration: 575 Train loss: 0.0001
Val acc: 0.9739
Epoch: 3/3 Iteration: 580 Train loss: 0.0039
Epoch: 3/3 Iteration: 585 Train loss: 0.0000
Epoch: 3/3 Iteration: 590 Train loss: 0.0052
Epoch: 3/3 Iteration: 595 Train loss: 0.0000
Epoch: 3/3 Iteration: 600 Train loss: 0.0000
Val acc: 0.9739
Epoch: 3/3 Iteration: 605 Train loss: 0.0001
Epoch: 3/3 Iteration: 610 Train loss: 0.1312
Epoch: 3/3 Iteration: 615 Train loss: 0.0000
Epoch: 3/3 Iteration: 620 Train loss: 0.0002
Epoch: 3/3 Iteration: 625 Train loss: 0.0001
Val acc: 0.8870
Epoch: 3/3 Iteration: 630 Train loss: 0.0000
Val acc for epoch 3 = 0.8609
Val acc for fold = 0.8609
--------------

Fold - 7 out of 10 ::
--------------
Training on 1059 samples & validating on 117 samples with batch size 5 .
Epoch: 1/3 Iteration: 5 Train loss: 0.0000
Epoch: 1/3 Iteration: 10 Train loss: 0.1986
Epoch: 1/3 Iteration: 15 Train loss: 0.0000
Epoch: 1/3 Iteration: 20 Train loss: 0.0000
Epoch: 1/3 Iteration: 25 Train loss: 0.1999
Val acc: 0.9130
Epoch: 1/3 Iteration: 30 Train loss: 0.0000
Epoch: 1/3 Iteration: 35 Train loss: 0.0085
Epoch: 1/3 Iteration: 40 Train loss: 0.0000
Epoch: 1/3 Iteration: 45 Train loss: 0.1915
Epoch: 1/3 Iteration: 50 Train loss: 0.0000
Val acc: 0.9304
Epoch: 1/3 Iteration: 55 Train loss: 0.0000
Epoch: 1/3 Iteration: 60 Train loss: 0.0000
Epoch: 1/3 Iteration: 65 Train loss: 0.0001
Epoch: 1/3 Iteration: 70 Train loss: 0.0000
Epoch: 1/3 Iteration: 75 Train loss: 0.0000
Val acc: 0.9652
Epoch: 1/3 Iteration: 80 Train loss: 0.0046
Epoch: 1/3 Iteration: 85 Train loss: 0.0008
Epoch: 1/3 Iteration: 90 Train loss: 0.0021
```

```
Epoch: 1/3 Iteration: 95 Train loss: 0.0000
Epoch: 1/3 Iteration: 100 Train loss: 0.0000
Val acc: 0.9739
Epoch: 1/3 Iteration: 105 Train loss: 0.0000
Epoch: 1/3 Iteration: 110 Train loss: 0.0000
Epoch: 1/3 Iteration: 115 Train loss: 0.0004
Epoch: 1/3 Iteration: 120 Train loss: 0.0001
Epoch: 1/3 Iteration: 125 Train loss: 0.1410
Val acc: 0.9478
Epoch: 1/3 Iteration: 130 Train loss: 0.0001
Epoch: 1/3 Iteration: 135 Train loss: 0.0041
Epoch: 1/3 Iteration: 140 Train loss: 0.0007
Epoch: 1/3 Iteration: 145 Train loss: 0.0164
Epoch: 1/3 Iteration: 150 Train loss: 0.0000
Val acc: 0.9739
Epoch: 1/3 Iteration: 155 Train loss: 0.0006
Epoch: 1/3 Iteration: 160 Train loss: 0.0001
Epoch: 1/3 Iteration: 165 Train loss: 0.0001
Epoch: 1/3 Iteration: 170 Train loss: 0.0004
Epoch: 1/3 Iteration: 175 Train loss: 0.0207
Val acc: 0.9652
Epoch: 1/3 Iteration: 180 Train loss: 0.0001
Epoch: 1/3 Iteration: 185 Train loss: 0.1751
Epoch: 1/3 Iteration: 190 Train loss: 0.0000
Epoch: 1/3 Iteration: 195 Train loss: 0.0005
Epoch: 1/3 Iteration: 200 Train loss: 0.1991
Val acc: 0.9565
Epoch: 1/3 Iteration: 205 Train loss: 0.0000
Epoch: 1/3 Iteration: 210 Train loss: 0.0001
Val acc for epoch 1 = 0.9217
Epoch: 2/3 Iteration: 215 Train loss: 0.1991
Epoch: 2/3 Iteration: 220 Train loss: 0.0000
Epoch: 2/3 Iteration: 225 Train loss: 0.0001
Val acc: 0.9043
Epoch: 2/3 Iteration: 230 Train loss: 0.0000
Epoch: 2/3 Iteration: 235 Train loss: 0.0000
Epoch: 2/3 Iteration: 240 Train loss: 0.0000
Epoch: 2/3 Iteration: 245 Train loss: 0.0002
Epoch: 2/3 Iteration: 250 Train loss: 0.0001
Val acc: 0.9043
Epoch: 2/3 Iteration: 255 Train loss: 0.0000
Epoch: 2/3 Iteration: 260 Train loss: 0.0000
Epoch: 2/3 Iteration: 265 Train loss: 0.0000
Epoch: 2/3 Iteration: 270 Train loss: 0.0000
Epoch: 2/3 Iteration: 275 Train loss: 0.0001
Val acc: 0.9391
Epoch: 2/3 Iteration: 280 Train loss: 0.0049
Epoch: 2/3 Iteration: 285 Train loss: 0.0006
```

```
Epoch: 2/3 Iteration: 290 Train loss: 0.0002
Epoch: 2/3 Iteration: 295 Train loss: 0.0002
Epoch: 2/3 Iteration: 300 Train loss: 0.0152
Val acc: 0.9478
Epoch: 2/3 Iteration: 305 Train loss: 0.0013
Epoch: 2/3 Iteration: 310 Train loss: 0.0128
Epoch: 2/3 Iteration: 315 Train loss: 0.0003
Epoch: 2/3 Iteration: 320 Train loss: 0.0488
Epoch: 2/3 Iteration: 325 Train loss: 0.0001
Val acc: 0.9739
Epoch: 2/3 Iteration: 330 Train loss: 0.0143
Epoch: 2/3 Iteration: 335 Train loss: 0.0000
Epoch: 2/3 Iteration: 340 Train loss: 0.0000
Epoch: 2/3 Iteration: 345 Train loss: 0.0000
Epoch: 2/3 Iteration: 350 Train loss: 0.0000
Val acc: 0.9478
Epoch: 2/3 Iteration: 355 Train loss: 0.0062
Epoch: 2/3 Iteration: 360 Train loss: 0.0143
Epoch: 2/3 Iteration: 365 Train loss: 0.0007
Epoch: 2/3 Iteration: 370 Train loss: 0.0000
Epoch: 2/3 Iteration: 375 Train loss: 0.0000
Val acc: 0.9391
Epoch: 2/3 Iteration: 380 Train loss: 0.0000
Epoch: 2/3 Iteration: 385 Train loss: 0.0000
Epoch: 2/3 Iteration: 390 Train loss: 0.0004
Epoch: 2/3 Iteration: 395 Train loss: 0.0032
Epoch: 2/3 Iteration: 400 Train loss: 0.0000
Val acc: 0.9565
Epoch: 2/3 Iteration: 405 Train loss: 0.0000
Epoch: 2/3 Iteration: 410 Train loss: 0.0000
Epoch: 2/3 Iteration: 415 Train loss: 0.0000
Epoch: 2/3 Iteration: 420 Train loss: 0.0000
Val acc for epoch 2 = 0.9478
Epoch: 3/3 Iteration: 425 Train loss: 0.3972
Val acc: 0.9478
Epoch: 3/3 Iteration: 430 Train loss: 0.1998
Epoch: 3/3 Iteration: 435 Train loss: 0.0000
Epoch: 3/3 Iteration: 440 Train loss: 0.1980
Epoch: 3/3 Iteration: 445 Train loss: 0.0034
Epoch: 3/3 Iteration: 450 Train loss: 0.0814
Val acc: 0.9565
Epoch: 3/3 Iteration: 455 Train loss: 0.0001
Epoch: 3/3 Iteration: 460 Train loss: 0.0000
Epoch: 3/3 Iteration: 465 Train loss: 0.0001
Epoch: 3/3 Iteration: 470 Train loss: 0.1999
Epoch: 3/3 Iteration: 475 Train loss: 0.0000
Val acc: 0.9478
Epoch: 3/3 Iteration: 480 Train loss: 0.0000
```

```
Epoch: 3/3 Iteration: 485 Train loss: 0.0000
Epoch: 3/3 Iteration: 490 Train loss: 0.1955
Epoch: 3/3 Iteration: 495 Train loss: 0.1996
Epoch: 3/3 Iteration: 500 Train loss: 0.0008
Val acc: 0.9478
Epoch: 3/3 Iteration: 505 Train loss: 0.0048
Epoch: 3/3 Iteration: 510 Train loss: 0.0062
Epoch: 3/3 Iteration: 515 Train loss: 0.0004
Epoch: 3/3 Iteration: 520 Train loss: 0.0000
Epoch: 3/3 Iteration: 525 Train loss: 0.0001
Val acc: 0.9739
Epoch: 3/3 Iteration: 530 Train loss: 0.0000
Epoch: 3/3 Iteration: 535 Train loss: 0.0001
Epoch: 3/3 Iteration: 540 Train loss: 0.0000
Epoch: 3/3 Iteration: 545 Train loss: 0.0000
Epoch: 3/3 Iteration: 550 Train loss: 0.0000
Val acc: 0.9739
Epoch: 3/3 Iteration: 555 Train loss: 0.1918
Epoch: 3/3 Iteration: 560 Train loss: 0.0159
Epoch: 3/3 Iteration: 565 Train loss: 0.0000
Epoch: 3/3 Iteration: 570 Train loss: 0.0001
Epoch: 3/3 Iteration: 575 Train loss: 0.0222
Val acc: 0.9739
Epoch: 3/3 Iteration: 580 Train loss: 0.0004
Epoch: 3/3 Iteration: 585 Train loss: 0.0503
Epoch: 3/3 Iteration: 590 Train loss: 0.0000
Epoch: 3/3 Iteration: 595 Train loss: 0.0000
Epoch: 3/3 Iteration: 600 Train loss: 0.0000
Val acc: 0.9565
Epoch: 3/3 Iteration: 605 Train loss: 0.0036
Epoch: 3/3 Iteration: 610 Train loss: 0.0004
Epoch: 3/3 Iteration: 615 Train loss: 0.0000
Epoch: 3/3 Iteration: 620 Train loss: 0.0000
Epoch: 3/3 Iteration: 625 Train loss: 0.0000
Val acc: 0.8696
Epoch: 3/3 Iteration: 630 Train loss: 0.0001
Val acc for epoch 3 = 0.8696
Val acc for fold = 0.8696
--------------

Fold - 8 out of 10 ::
--------------
Training on 1059 samples & validating on 117 samples with batch size 5 .
Epoch: 1/3 Iteration: 5 Train loss: 0.0727
Epoch: 1/3 Iteration: 10 Train loss: 0.1998
Epoch: 1/3 Iteration: 15 Train loss: 0.0000
Epoch: 1/3 Iteration: 20 Train loss: 0.0000
Epoch: 1/3 Iteration: 25 Train loss: 0.1999
```

```
Val acc: 0.9826
Epoch: 1/3 Iteration: 30 Train loss: 0.0000
Epoch: 1/3 Iteration: 35 Train loss: 0.0000
Epoch: 1/3 Iteration: 40 Train loss: 0.0000
Epoch: 1/3 Iteration: 45 Train loss: 0.0002
Epoch: 1/3 Iteration: 50 Train loss: 0.0002
Val acc: 0.9739
Epoch: 1/3 Iteration: 55 Train loss: 0.0000
Epoch: 1/3 Iteration: 60 Train loss: 0.0000
Epoch: 1/3 Iteration: 65 Train loss: 0.0431
Epoch: 1/3 Iteration: 70 Train loss: 0.0000
Epoch: 1/3 Iteration: 75 Train loss: 0.0003
Val acc: 0.9913
Epoch: 1/3 Iteration: 80 Train loss: 0.1341
Epoch: 1/3 Iteration: 85 Train loss: 0.0000
Epoch: 1/3 Iteration: 90 Train loss: 0.0026
Epoch: 1/3 Iteration: 95 Train loss: 0.0000
Epoch: 1/3 Iteration: 100 Train loss: 0.0000
Val acc: 0.9913
Epoch: 1/3 Iteration: 105 Train loss: 0.0000
Epoch: 1/3 Iteration: 110 Train loss: 0.0000
Epoch: 1/3 Iteration: 115 Train loss: 0.0023
Epoch: 1/3 Iteration: 120 Train loss: 0.1797
Epoch: 1/3 Iteration: 125 Train loss: 0.1961
Val acc: 0.9826
Epoch: 1/3 Iteration: 130 Train loss: 0.0001
Epoch: 1/3 Iteration: 135 Train loss: 0.0000
Epoch: 1/3 Iteration: 140 Train loss: 0.0000
Epoch: 1/3 Iteration: 145 Train loss: 0.0000
Epoch: 1/3 Iteration: 150 Train loss: 0.0000
Val acc: 0.9826
Epoch: 1/3 Iteration: 155 Train loss: 0.0002
Epoch: 1/3 Iteration: 160 Train loss: 0.0002
Epoch: 1/3 Iteration: 165 Train loss: 0.1887
Epoch: 1/3 Iteration: 170 Train loss: 0.0000
Epoch: 1/3 Iteration: 175 Train loss: 0.0000
Val acc: 0.9652
Epoch: 1/3 Iteration: 180 Train loss: 0.0000
Epoch: 1/3 Iteration: 185 Train loss: 0.0019
Epoch: 1/3 Iteration: 190 Train loss: 0.1997
Epoch: 1/3 Iteration: 195 Train loss: 0.0166
Epoch: 1/3 Iteration: 200 Train loss: 0.0024
Val acc: 0.9826
Epoch: 1/3 Iteration: 205 Train loss: 0.0000
Epoch: 1/3 Iteration: 210 Train loss: 0.0000
Val acc for epoch 1 = 0.9826
Epoch: 2/3 Iteration: 215 Train loss: 0.1989
Epoch: 2/3 Iteration: 220 Train loss: 0.1908
```

```
Epoch: 2/3 Iteration: 225 Train loss: 0.0000
Val acc: 0.9826
Epoch: 2/3 Iteration: 230 Train loss: 0.0000
Epoch: 2/3 Iteration: 235 Train loss: 0.0000
Epoch: 2/3 Iteration: 240 Train loss: 0.0000
Epoch: 2/3 Iteration: 245 Train loss: 0.0001
Epoch: 2/3 Iteration: 250 Train loss: 0.0456
Val acc: 0.9826
Epoch: 2/3 Iteration: 255 Train loss: 0.0007
Epoch: 2/3 Iteration: 260 Train loss: 0.0000
Epoch: 2/3 Iteration: 265 Train loss: 0.0000
Epoch: 2/3 Iteration: 270 Train loss: 0.0000
Epoch: 2/3 Iteration: 275 Train loss: 0.0001
Val acc: 0.9826
Epoch: 2/3 Iteration: 280 Train loss: 0.0000
Epoch: 2/3 Iteration: 285 Train loss: 0.0000
Epoch: 2/3 Iteration: 290 Train loss: 0.0000
Epoch: 2/3 Iteration: 295 Train loss: 0.0000
Epoch: 2/3 Iteration: 300 Train loss: 0.0000
Val acc: 0.9913
Epoch: 2/3 Iteration: 305 Train loss: 0.0000
Epoch: 2/3 Iteration: 310 Train loss: 0.0000
Epoch: 2/3 Iteration: 315 Train loss: 0.0000
Epoch: 2/3 Iteration: 320 Train loss: 0.0000
Epoch: 2/3 Iteration: 325 Train loss: 0.0000
Val acc: 1.0000
Epoch: 2/3 Iteration: 330 Train loss: 0.0000
Epoch: 2/3 Iteration: 335 Train loss: 0.0000
Epoch: 2/3 Iteration: 340 Train loss: 0.0000
Epoch: 2/3 Iteration: 345 Train loss: 0.0000
Epoch: 2/3 Iteration: 350 Train loss: 0.0000
Val acc: 1.0000
Epoch: 2/3 Iteration: 355 Train loss: 0.1998
Epoch: 2/3 Iteration: 360 Train loss: 0.0003
Epoch: 2/3 Iteration: 365 Train loss: 0.0000
Epoch: 2/3 Iteration: 370 Train loss: 0.0000
Epoch: 2/3 Iteration: 375 Train loss: 0.0000
Val acc: 1.0000
Epoch: 2/3 Iteration: 380 Train loss: 0.0000
Epoch: 2/3 Iteration: 385 Train loss: 0.0000
Epoch: 2/3 Iteration: 390 Train loss: 0.0960
Epoch: 2/3 Iteration: 395 Train loss: 0.0200
Epoch: 2/3 Iteration: 400 Train loss: 0.0006
Val acc: 0.9565
Epoch: 2/3 Iteration: 405 Train loss: 0.0000
Epoch: 2/3 Iteration: 410 Train loss: 0.0000
Epoch: 2/3 Iteration: 415 Train loss: 0.0568
Epoch: 2/3 Iteration: 420 Train loss: 0.0000
```

```
Val acc for epoch 2 = 0.9304
Epoch: 3/3 Iteration: 425 Train loss: 0.3999
Val acc: 0.9304
Epoch: 3/3 Iteration: 430 Train loss: 0.1993
Epoch: 3/3 Iteration: 435 Train loss: 0.1971
Epoch: 3/3 Iteration: 440 Train loss: 0.3997
Epoch: 3/3 Iteration: 445 Train loss: 0.1951
Epoch: 3/3 Iteration: 450 Train loss: 0.0000
Val acc: 0.9652
Epoch: 3/3 Iteration: 455 Train loss: 0.0008
Epoch: 3/3 Iteration: 460 Train loss: 0.0000
Epoch: 3/3 Iteration: 465 Train loss: 0.0000
Epoch: 3/3 Iteration: 470 Train loss: 0.1998
Epoch: 3/3 Iteration: 475 Train loss: 0.1980
Val acc: 0.9826
Epoch: 3/3 Iteration: 480 Train loss: 0.0000
Epoch: 3/3 Iteration: 485 Train loss: 0.0000
Epoch: 3/3 Iteration: 490 Train loss: 0.1998
Epoch: 3/3 Iteration: 495 Train loss: 0.2016
Epoch: 3/3 Iteration: 500 Train loss: 0.0001
Val acc: 0.9826
Epoch: 3/3 Iteration: 505 Train loss: 0.0448
Epoch: 3/3 Iteration: 510 Train loss: 0.0003
Epoch: 3/3 Iteration: 515 Train loss: 0.0044
Epoch: 3/3 Iteration: 520 Train loss: 0.1966
Epoch: 3/3 Iteration: 525 Train loss: 0.0010
Val acc: 0.9652
Epoch: 3/3 Iteration: 530 Train loss: 0.0063
Epoch: 3/3 Iteration: 535 Train loss: 0.1971
Epoch: 3/3 Iteration: 540 Train loss: 0.0000
Epoch: 3/3 Iteration: 545 Train loss: 0.0187
Epoch: 3/3 Iteration: 550 Train loss: 0.0271
Val acc: 0.7043
Epoch: 3/3 Iteration: 555 Train loss: 0.0004
Epoch: 3/3 Iteration: 560 Train loss: 0.0000
Epoch: 3/3 Iteration: 565 Train loss: 0.1990
Epoch: 3/3 Iteration: 570 Train loss: 0.0000
Epoch: 3/3 Iteration: 575 Train loss: 0.0001
Val acc: 0.9217
Epoch: 3/3 Iteration: 580 Train loss: 0.0001
Epoch: 3/3 Iteration: 585 Train loss: 0.0001
Epoch: 3/3 Iteration: 590 Train loss: 0.0001
Epoch: 3/3 Iteration: 595 Train loss: 0.0000
Epoch: 3/3 Iteration: 600 Train loss: 0.0000
Val acc: 0.9826
Epoch: 3/3 Iteration: 605 Train loss: 0.0464
Epoch: 3/3 Iteration: 610 Train loss: 0.0000
Epoch: 3/3 Iteration: 615 Train loss: 0.0000
```

```
Epoch: 3/3 Iteration: 620 Train loss: 0.0000
Epoch: 3/3 Iteration: 625 Train loss: 0.0007
Val acc: 0.9652
Epoch: 3/3 Iteration: 630 Train loss: 0.0284
Val acc for epoch 3 = 0.9826
Val acc for fold = 0.9826
--------------

Fold - 9 out of 10 ::
--------------
Training on 1059 samples & validating on 117 samples with batch size 5 .
Epoch: 1/3 Iteration: 5 Train loss: 0.0000
Epoch: 1/3 Iteration: 10 Train loss: 0.1955
Epoch: 1/3 Iteration: 15 Train loss: 0.0000
Epoch: 1/3 Iteration: 20 Train loss: 0.0000
Epoch: 1/3 Iteration: 25 Train loss: 0.1948
Val acc: 1.0000
Epoch: 1/3 Iteration: 30 Train loss: 0.0000
Epoch: 1/3 Iteration: 35 Train loss: 0.0000
Epoch: 1/3 Iteration: 40 Train loss: 0.0000
Epoch: 1/3 Iteration: 45 Train loss: 0.0000
Epoch: 1/3 Iteration: 50 Train loss: 0.0000
Val acc: 1.0000
Epoch: 1/3 Iteration: 55 Train loss: 0.0000
Epoch: 1/3 Iteration: 60 Train loss: 0.0002
Epoch: 1/3 Iteration: 65 Train loss: 0.0001
Epoch: 1/3 Iteration: 70 Train loss: 0.0001
Epoch: 1/3 Iteration: 75 Train loss: 0.0001
Val acc: 0.9913
Epoch: 1/3 Iteration: 80 Train loss: 0.0000
Epoch: 1/3 Iteration: 85 Train loss: 0.0001
Epoch: 1/3 Iteration: 90 Train loss: 0.0033
Epoch: 1/3 Iteration: 95 Train loss: 0.0003
Epoch: 1/3 Iteration: 100 Train loss: 0.0000
Val acc: 1.0000
Epoch: 1/3 Iteration: 105 Train loss: 0.0005
Epoch: 1/3 Iteration: 110 Train loss: 0.0001
Epoch: 1/3 Iteration: 115 Train loss: 0.0641
Epoch: 1/3 Iteration: 120 Train loss: 0.0000
Epoch: 1/3 Iteration: 125 Train loss: 0.0001
Val acc: 1.0000
Epoch: 1/3 Iteration: 130 Train loss: 0.0000
Epoch: 1/3 Iteration: 135 Train loss: 0.0000
Epoch: 1/3 Iteration: 140 Train loss: 0.0039
Epoch: 1/3 Iteration: 145 Train loss: 0.0001
Epoch: 1/3 Iteration: 150 Train loss: 0.0000
Val acc: 0.9739
Epoch: 1/3 Iteration: 155 Train loss: 0.1111
```

```
Epoch: 1/3 Iteration: 160 Train loss: 0.0000
Epoch: 1/3 Iteration: 165 Train loss: 0.0146
Epoch: 1/3 Iteration: 170 Train loss: 0.0004
Epoch: 1/3 Iteration: 175 Train loss: 0.0000
Val acc: 0.9913
Epoch: 1/3 Iteration: 180 Train loss: 0.0000
Epoch: 1/3 Iteration: 185 Train loss: 0.0005
Epoch: 1/3 Iteration: 190 Train loss: 0.0000
Epoch: 1/3 Iteration: 195 Train loss: 0.0000
Epoch: 1/3 Iteration: 200 Train loss: 0.0010
Val acc: 1.0000
Epoch: 1/3 Iteration: 205 Train loss: 0.0000
Epoch: 1/3 Iteration: 210 Train loss: 0.0000
Val acc for epoch 1 = 1.0000
Epoch: 2/3 Iteration: 215 Train loss: 0.1940
Epoch: 2/3 Iteration: 220 Train loss: 0.0003
Epoch: 2/3 Iteration: 225 Train loss: 0.0001
Val acc: 0.9913
Epoch: 2/3 Iteration: 230 Train loss: 0.0002
Epoch: 2/3 Iteration: 235 Train loss: 0.0000
Epoch: 2/3 Iteration: 240 Train loss: 0.0000
Epoch: 2/3 Iteration: 245 Train loss: 0.0001
Epoch: 2/3 Iteration: 250 Train loss: 0.0004
Val acc: 0.9913
Epoch: 2/3 Iteration: 255 Train loss: 0.0000
Epoch: 2/3 Iteration: 260 Train loss: 0.0000
Epoch: 2/3 Iteration: 265 Train loss: 0.0000
Epoch: 2/3 Iteration: 270 Train loss: 0.0000
Epoch: 2/3 Iteration: 275 Train loss: 0.0000
Val acc: 0.9913
Epoch: 2/3 Iteration: 280 Train loss: 0.0002
Epoch: 2/3 Iteration: 285 Train loss: 0.0001
Epoch: 2/3 Iteration: 290 Train loss: 0.0000
Epoch: 2/3 Iteration: 295 Train loss: 0.0000
Epoch: 2/3 Iteration: 300 Train loss: 0.0000
Val acc: 0.9913
Epoch: 2/3 Iteration: 305 Train loss: 0.0000
Epoch: 2/3 Iteration: 310 Train loss: 0.0000
Epoch: 2/3 Iteration: 315 Train loss: 0.0000
Epoch: 2/3 Iteration: 320 Train loss: 0.1988
Epoch: 2/3 Iteration: 325 Train loss: 0.0001
Val acc: 1.0000
Epoch: 2/3 Iteration: 330 Train loss: 0.0000
Epoch: 2/3 Iteration: 335 Train loss: 0.0000
Epoch: 2/3 Iteration: 340 Train loss: 0.0000
Epoch: 2/3 Iteration: 345 Train loss: 0.0001
Epoch: 2/3 Iteration: 350 Train loss: 0.0000
Val acc: 1.0000
```

```
Epoch: 2/3 Iteration: 355 Train loss: 0.1983
Epoch: 2/3 Iteration: 360 Train loss: 0.0016
Epoch: 2/3 Iteration: 365 Train loss: 0.0002
Epoch: 2/3 Iteration: 370 Train loss: 0.0001
Epoch: 2/3 Iteration: 375 Train loss: 0.0000
Val acc: 0.9739
Epoch: 2/3 Iteration: 380 Train loss: 0.0000
Epoch: 2/3 Iteration: 385 Train loss: 0.0002
Epoch: 2/3 Iteration: 390 Train loss: 0.0000
Epoch: 2/3 Iteration: 395 Train loss: 0.0000
Epoch: 2/3 Iteration: 400 Train loss: 0.0000
Val acc: 0.9913
Epoch: 2/3 Iteration: 405 Train loss: 0.0006
Epoch: 2/3 Iteration: 410 Train loss: 0.0000
Epoch: 2/3 Iteration: 415 Train loss: 0.0000
Epoch: 2/3 Iteration: 420 Train loss: 0.0000
Val acc for epoch 2 = 0.9826
Epoch: 3/3 Iteration: 425 Train loss: 0.3914
Val acc: 0.9739
Epoch: 3/3 Iteration: 430 Train loss: 0.1997
Epoch: 3/3 Iteration: 435 Train loss: 0.0253
Epoch: 3/3 Iteration: 440 Train loss: 0.1994
Epoch: 3/3 Iteration: 445 Train loss: 0.0002
Epoch: 3/3 Iteration: 450 Train loss: 0.0001
Val acc: 0.9826
Epoch: 3/3 Iteration: 455 Train loss: 0.1928
Epoch: 3/3 Iteration: 460 Train loss: 0.0000
Epoch: 3/3 Iteration: 465 Train loss: 0.0000
Epoch: 3/3 Iteration: 470 Train loss: 0.1983
Epoch: 3/3 Iteration: 475 Train loss: 0.0001
Val acc: 0.9826
Epoch: 3/3 Iteration: 480 Train loss: 0.0000
Epoch: 3/3 Iteration: 485 Train loss: 0.0010
Epoch: 3/3 Iteration: 490 Train loss: 0.1995
Epoch: 3/3 Iteration: 495 Train loss: 0.1969
Epoch: 3/3 Iteration: 500 Train loss: 0.0000
Val acc: 0.9913
Epoch: 3/3 Iteration: 505 Train loss: 0.0000
Epoch: 3/3 Iteration: 510 Train loss: 0.0001
Epoch: 3/3 Iteration: 515 Train loss: 0.0000
Epoch: 3/3 Iteration: 520 Train loss: 0.0027
Epoch: 3/3 Iteration: 525 Train loss: 0.0000
Val acc: 0.9913
Epoch: 3/3 Iteration: 530 Train loss: 0.0000
Epoch: 3/3 Iteration: 535 Train loss: 0.0000
Epoch: 3/3 Iteration: 540 Train loss: 0.0000
Epoch: 3/3 Iteration: 545 Train loss: 0.0000
Epoch: 3/3 Iteration: 550 Train loss: 0.0000
```

```
Val acc: 1.0000
Epoch: 3/3 Iteration: 555 Train loss: 0.0000
Epoch: 3/3 Iteration: 560 Train loss: 0.0000
Epoch: 3/3 Iteration: 565 Train loss: 0.1992
Epoch: 3/3 Iteration: 570 Train loss: 0.0000
Epoch: 3/3 Iteration: 575 Train loss: 0.0001
Val acc: 0.9913
Epoch: 3/3 Iteration: 580 Train loss: 0.0000
Epoch: 3/3 Iteration: 585 Train loss: 0.0000
Epoch: 3/3 Iteration: 590 Train loss: 0.0001
Epoch: 3/3 Iteration: 595 Train loss: 0.0000
Epoch: 3/3 Iteration: 600 Train loss: 0.0000
Val acc: 0.9913
Epoch: 3/3 Iteration: 605 Train loss: 0.0000
Epoch: 3/3 Iteration: 610 Train loss: 0.0000
Epoch: 3/3 Iteration: 615 Train loss: 0.0000
Epoch: 3/3 Iteration: 620 Train loss: 0.0000
Epoch: 3/3 Iteration: 625 Train loss: 0.0000
Val acc: 0.9913
Epoch: 3/3 Iteration: 630 Train loss: 0.0000
Val acc for epoch 3 = 0.9913
Val acc for fold = 0.9913
--------------

Fold - 10 out of 10 ::
--------------
Training on 1059 samples & validating on 117 samples with batch size 5 .
Epoch: 1/3 Iteration: 5 Train loss: 0.0000
Epoch: 1/3 Iteration: 10 Train loss: 0.1997
Epoch: 1/3 Iteration: 15 Train loss: 0.0001
Epoch: 1/3 Iteration: 20 Train loss: 0.0000
Epoch: 1/3 Iteration: 25 Train loss: 0.1995
Val acc: 1.0000
Epoch: 1/3 Iteration: 30 Train loss: 0.0000
Epoch: 1/3 Iteration: 35 Train loss: 0.0000
Epoch: 1/3 Iteration: 40 Train loss: 0.0000
Epoch: 1/3 Iteration: 45 Train loss: 0.0000
Epoch: 1/3 Iteration: 50 Train loss: 0.0000
Val acc: 1.0000
Epoch: 1/3 Iteration: 55 Train loss: 0.1979
Epoch: 1/3 Iteration: 60 Train loss: 0.0952
Epoch: 1/3 Iteration: 65 Train loss: 0.1313
Epoch: 1/3 Iteration: 70 Train loss: 0.0000
Epoch: 1/3 Iteration: 75 Train loss: 0.0000
Val acc: 1.0000
Epoch: 1/3 Iteration: 80 Train loss: 0.0001
Epoch: 1/3 Iteration: 85 Train loss: 0.0001
Epoch: 1/3 Iteration: 90 Train loss: 0.0003
```

```
Epoch: 1/3 Iteration: 95 Train loss: 0.0079
Epoch: 1/3 Iteration: 100 Train loss: 0.0000
Val acc: 0.9913
Epoch: 1/3 Iteration: 105 Train loss: 0.0002
Epoch: 1/3 Iteration: 110 Train loss: 0.0007
Epoch: 1/3 Iteration: 115 Train loss: 0.0001
Epoch: 1/3 Iteration: 120 Train loss: 0.0326
Epoch: 1/3 Iteration: 125 Train loss: 0.0004
Val acc: 0.9739
Epoch: 1/3 Iteration: 130 Train loss: 0.0000
Epoch: 1/3 Iteration: 135 Train loss: 0.0000
Epoch: 1/3 Iteration: 140 Train loss: 0.0001
Epoch: 1/3 Iteration: 145 Train loss: 0.2757
Epoch: 1/3 Iteration: 150 Train loss: 0.0001
Val acc: 0.9652
Epoch: 1/3 Iteration: 155 Train loss: 0.0668
Epoch: 1/3 Iteration: 160 Train loss: 0.0001
Epoch: 1/3 Iteration: 165 Train loss: 0.0019
Epoch: 1/3 Iteration: 170 Train loss: 0.0083
Epoch: 1/3 Iteration: 175 Train loss: 0.0001
Val acc: 0.9913
Epoch: 1/3 Iteration: 180 Train loss: 0.0000
Epoch: 1/3 Iteration: 185 Train loss: 0.0013
Epoch: 1/3 Iteration: 190 Train loss: 0.0000
Epoch: 1/3 Iteration: 195 Train loss: 0.0001
Epoch: 1/3 Iteration: 200 Train loss: 0.0001
Val acc: 0.9826
Epoch: 1/3 Iteration: 205 Train loss: 0.0002
Epoch: 1/3 Iteration: 210 Train loss: 0.0000
Val acc for epoch 1 = 0.9826
Epoch: 2/3 Iteration: 215 Train loss: 0.2031
Epoch: 2/3 Iteration: 220 Train loss: 0.0013
Epoch: 2/3 Iteration: 225 Train loss: 0.0001
Val acc: 0.9913
Epoch: 2/3 Iteration: 230 Train loss: 0.0011
Epoch: 2/3 Iteration: 235 Train loss: 0.0000
Epoch: 2/3 Iteration: 240 Train loss: 0.0001
Epoch: 2/3 Iteration: 245 Train loss: 0.0002
Epoch: 2/3 Iteration: 250 Train loss: 0.0002
Val acc: 0.9913
Epoch: 2/3 Iteration: 255 Train loss: 0.0001
Epoch: 2/3 Iteration: 260 Train loss: 0.0001
Epoch: 2/3 Iteration: 265 Train loss: 0.0002
Epoch: 2/3 Iteration: 270 Train loss: 0.0001
Epoch: 2/3 Iteration: 275 Train loss: 0.0000
Val acc: 0.9913
Epoch: 2/3 Iteration: 280 Train loss: 0.0001
Epoch: 2/3 Iteration: 285 Train loss: 0.0004
```

```
Epoch: 2/3 Iteration: 290 Train loss: 0.0000
Epoch: 2/3 Iteration: 295 Train loss: 0.0008
Epoch: 2/3 Iteration: 300 Train loss: 0.0009
Val acc: 0.9826
Epoch: 2/3 Iteration: 305 Train loss: 0.0001
Epoch: 2/3 Iteration: 310 Train loss: 0.0000
Epoch: 2/3 Iteration: 315 Train loss: 0.0004
Epoch: 2/3 Iteration: 320 Train loss: 0.0000
Epoch: 2/3 Iteration: 325 Train loss: 0.0000
Val acc: 0.9739
Epoch: 2/3 Iteration: 330 Train loss: 0.1428
Epoch: 2/3 Iteration: 335 Train loss: 0.0001
Epoch: 2/3 Iteration: 340 Train loss: 0.0000
Epoch: 2/3 Iteration: 345 Train loss: 0.0000
Epoch: 2/3 Iteration: 350 Train loss: 0.0000
Val acc: 0.9739
Epoch: 2/3 Iteration: 355 Train loss: 0.1996
Epoch: 2/3 Iteration: 360 Train loss: 0.0956
Epoch: 2/3 Iteration: 365 Train loss: 0.0133
Epoch: 2/3 Iteration: 370 Train loss: 0.0000
Epoch: 2/3 Iteration: 375 Train loss: 0.0000
Val acc: 0.9652
Epoch: 2/3 Iteration: 380 Train loss: 0.0000
Epoch: 2/3 Iteration: 385 Train loss: 0.0006
Epoch: 2/3 Iteration: 390 Train loss: 0.0000
Epoch: 2/3 Iteration: 395 Train loss: 0.0000
Epoch: 2/3 Iteration: 400 Train loss: 0.0000
Val acc: 0.9652
Epoch: 2/3 Iteration: 405 Train loss: 0.0000
Epoch: 2/3 Iteration: 410 Train loss: 0.0000
Epoch: 2/3 Iteration: 415 Train loss: 0.0000
Epoch: 2/3 Iteration: 420 Train loss: 0.0483
Val acc for epoch 2 = 0.9913
Epoch: 3/3 Iteration: 425 Train loss: 0.3988
Val acc: 1.0000
Epoch: 3/3 Iteration: 430 Train loss: 0.1967
Epoch: 3/3 Iteration: 435 Train loss: 0.0000
Epoch: 3/3 Iteration: 440 Train loss: 0.1986
Epoch: 3/3 Iteration: 445 Train loss: 0.0002
Epoch: 3/3 Iteration: 450 Train loss: 0.0000
Val acc: 1.0000
Epoch: 3/3 Iteration: 455 Train loss: 0.0000
Epoch: 3/3 Iteration: 460 Train loss: 0.0001
Epoch: 3/3 Iteration: 465 Train loss: 0.0000
Epoch: 3/3 Iteration: 470 Train loss: 0.1990
Epoch: 3/3 Iteration: 475 Train loss: 0.0000
Val acc: 0.9913
Epoch: 3/3 Iteration: 480 Train loss: 0.0000
```

```
Epoch: 3/3 Iteration: 485 Train loss: 0.0001
Epoch: 3/3 Iteration: 490 Train loss: 0.2002
Epoch: 3/3 Iteration: 495 Train loss: 0.1973
Epoch: 3/3 Iteration: 500 Train loss: 0.0023
Val acc: 0.9652
Epoch: 3/3 Iteration: 505 Train loss: 0.0025
Epoch: 3/3 Iteration: 510 Train loss: 0.0000
Epoch: 3/3 Iteration: 515 Train loss: 0.0001
Epoch: 3/3 Iteration: 520 Train loss: 0.0000
Epoch: 3/3 Iteration: 525 Train loss: 0.0000
Val acc: 0.9739
Epoch: 3/3 Iteration: 530 Train loss: 0.0000
Epoch: 3/3 Iteration: 535 Train loss: 0.0007
Epoch: 3/3 Iteration: 540 Train loss: 0.0000
Epoch: 3/3 Iteration: 545 Train loss: 0.0000
Epoch: 3/3 Iteration: 550 Train loss: 0.0015
Val acc: 0.9826
Epoch: 3/3 Iteration: 555 Train loss: 0.0002
Epoch: 3/3 Iteration: 560 Train loss: 0.0000
Epoch: 3/3 Iteration: 565 Train loss: 0.0000
Epoch: 3/3 Iteration: 570 Train loss: 0.0001
Epoch: 3/3 Iteration: 575 Train loss: 0.0001
Val acc: 0.9826
Epoch: 3/3 Iteration: 580 Train loss: 0.0019
Epoch: 3/3 Iteration: 585 Train loss: 0.0001
Epoch: 3/3 Iteration: 590 Train loss: 0.0001
Epoch: 3/3 Iteration: 595 Train loss: 0.0008
Epoch: 3/3 Iteration: 600 Train loss: 0.0000
Val acc: 0.9826
Epoch: 3/3 Iteration: 605 Train loss: 0.0004
Epoch: 3/3 Iteration: 610 Train loss: 0.0000
Epoch: 3/3 Iteration: 615 Train loss: 0.0000
Epoch: 3/3 Iteration: 620 Train loss: 0.0000
Epoch: 3/3 Iteration: 625 Train loss: 0.0002
Val acc: 0.9826
Epoch: 3/3 Iteration: 630 Train loss: 0.0882
Val acc for epoch 3 = 0.9826
Val acc for fold = 0.9826
--------------

Time elasped = 53868.65268496237 sec(s)
```

```
In [22]: # Testing::
         '''
         test_acc = []
         with tf.Session() as sess:
             saver.restore(sess, checkpointName)
```

```
            test_state = sess.run(cell.zero_state(batch_size, tf.float32))
            for ii, (x, y) in enumerate(get_batches(test_x, test_y, batch_size), 1):
                feed = {inputs_: x,
                        labels_: y[:, None],
                        keep_prob: 1,
                        initial_state: test_state}
                batch_acc, test_state = sess.run([accuracy, final_state], feed_dict=feed)
                test_acc.append(batch_acc)
            print("Test accuracy: {:.3f}".format(np.mean(test_acc)))
        '''
```

Out[22]: '\ntest_acc = []\nwith tf.Session() as sess:\n   saver.restore(sess, checkpointName)'

In [24]:
```
print("Accuracy: {:.3f}".format(np.mean(folds_val_acc)))
```

```
Accuracy: 0.791
```

In [ ]: