Model: "sequential\_1"

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Layer (type) Output Shape Param #

=================================================================

conv2d (Conv2D) (None, 64, 321, 40) 1240

conv2d\_1 (Conv2D) (None, 1, 321, 40) 102440

average\_pooling2d (Average (None, 1, 21, 40) 0

Pooling2D)

flatten (Flatten) (None, 840) 0

dense (Dense) (None, 80) 67280

dense\_1 (Dense) (None, 4) 324

=================================================================

Total params: 171284 (669.08 KB)

Trainable params: 171284 (669.08 KB)

Non-trainable params: 0 (0.00 Byte)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Epoch 1/10

353/353 - 39s - loss: 1.2582 - accuracy: 0.4026 - val\_loss: 1.1496 - val\_accuracy: 0.4926 - 39s/epoch - 111ms/step

Epoch 2/10

353/353 - 37s - loss: 1.1298 - accuracy: 0.5191 - val\_loss: 1.1068 - val\_accuracy: 0.5315 - 37s/epoch - 105ms/step

Epoch 3/10

353/353 - 37s - loss: 1.0937 - accuracy: 0.5453 - val\_loss: 1.1123 - val\_accuracy: 0.5096 - 37s/epoch - 104ms/step

Epoch 4/10

353/353 - 37s - loss: 1.0605 - accuracy: 0.5665 - val\_loss: 1.0488 - val\_accuracy: 0.5606 - 37s/epoch - 104ms/step

Epoch 5/10

353/353 - 37s - loss: 1.0296 - accuracy: 0.5781 - val\_loss: 1.0696 - val\_accuracy: 0.5549 - 37s/epoch - 104ms/step

Epoch 6/10

353/353 - 37s - loss: 0.9962 - accuracy: 0.5929 - val\_loss: 1.0929 - val\_accuracy: 0.5556 - 37s/epoch - 104ms/step

Epoch 7/10

353/353 - 37s - loss: 0.9716 - accuracy: 0.6018 - val\_loss: 1.0676 - val\_accuracy: 0.5656 - 37s/epoch - 105ms/step

Epoch 8/10

353/353 - 37s - loss: 0.9451 - accuracy: 0.6130 - val\_loss: 1.0665 - val\_accuracy: 0.5762 - 37s/epoch - 104ms/step

Epoch 9/10

353/353 - 37s - loss: 0.9132 - accuracy: 0.6309 - val\_loss: 1.0434 - val\_accuracy: 0.5826 - 37s/epoch - 104ms/step

Epoch 10/10

353/353 - 37s - loss: 0.8713 - accuracy: 0.6497 - val\_loss: 1.0646 - val\_accuracy: 0.5613 - 37s/epoch - 105ms/step

56/56 - 2s - loss: 1.0942 - accuracy: 0.5726 - 2s/epoch - 31ms/step

Test loss: 1.0942264795303345

Test accuracy: 0.5725623369216919

56/56 [==============================] - 2s 33ms/step

Model: "sequential\_3"

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Layer (type) Output Shape Param #

=================================================================

conv2d\_2 (Conv2D) (None, 64, 321, 40) 1240

conv2d\_3 (Conv2D) (None, 1, 321, 40) 102440

average\_pooling2d\_1 (Avera (None, 1, 21, 40) 0

gePooling2D)

flatten\_1 (Flatten) (None, 840) 0

dense\_2 (Dense) (None, 80) 67280

dense\_3 (Dense) (None, 4) 324

=================================================================

Total params: 171284 (669.08 KB)

Trainable params: 171284 (669.08 KB)

Non-trainable params: 0 (0.00 Byte)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Epoch 1/10

353/353 - 32s - loss: 1.3011 - accuracy: 0.3569 - val\_loss: 1.1621 - val\_accuracy: 0.4833 - 32s/epoch - 92ms/step

Epoch 2/10

353/353 - 35s - loss: 1.1339 - accuracy: 0.5221 - val\_loss: 1.1098 - val\_accuracy: 0.5400 - 35s/epoch - 100ms/step

Epoch 3/10

353/353 - 36s - loss: 1.0868 - accuracy: 0.5579 - val\_loss: 1.0748 - val\_accuracy: 0.5464 - 36s/epoch - 102ms/step

Epoch 4/10

353/353 - 36s - loss: 1.0618 - accuracy: 0.5676 - val\_loss: 1.0732 - val\_accuracy: 0.5485 - 36s/epoch - 101ms/step

Epoch 5/10

353/353 - 36s - loss: 1.0351 - accuracy: 0.5770 - val\_loss: 1.0388 - val\_accuracy: 0.5748 - 36s/epoch - 102ms/step

Epoch 6/10

353/353 - 36s - loss: 0.9958 - accuracy: 0.5993 - val\_loss: 1.0447 - val\_accuracy: 0.5705 - 36s/epoch - 102ms/step

Epoch 7/10

353/353 - 36s - loss: 0.9604 - accuracy: 0.6137 - val\_loss: 1.0383 - val\_accuracy: 0.5811 - 36s/epoch - 103ms/step

Epoch 8/10

353/353 - 36s - loss: 0.9300 - accuracy: 0.6256 - val\_loss: 1.0578 - val\_accuracy: 0.5783 - 36s/epoch - 102ms/step

Epoch 9/10

353/353 - 36s - loss: 0.9034 - accuracy: 0.6351 - val\_loss: 1.0439 - val\_accuracy: 0.5755 - 36s/epoch - 101ms/step

Epoch 10/10

353/353 - 36s - loss: 0.8804 - accuracy: 0.6452 - val\_loss: 1.0648 - val\_accuracy: 0.5826 - 36s/epoch - 102ms/step

56/56 - 2s - loss: 1.1103 - accuracy: 0.5641 - 2s/epoch - 31ms/step

Test loss: 1.1102832555770874

Test accuracy: 0.5640589594841003

56/56 [==============================] - 2s 31ms/step

Model: "sequential\_5"

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Layer (type) Output Shape Param #

=================================================================

conv2d\_4 (Conv2D) (None, 64, 321, 40) 1240

conv2d\_5 (Conv2D) (None, 1, 321, 40) 102440

average\_pooling2d\_2 (Avera (None, 1, 21, 40) 0

gePooling2D)

flatten\_2 (Flatten) (None, 840) 0

dense\_4 (Dense) (None, 80) 67280

dense\_5 (Dense) (None, 4) 324

=================================================================

Total params: 171284 (669.08 KB)

Trainable params: 171284 (669.08 KB)

Non-trainable params: 0 (0.00 Byte)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Epoch 1/10

353/353 - 37s - loss: 1.2928 - accuracy: 0.3785 - val\_loss: 1.1787 - val\_accuracy: 0.4578 - 37s/epoch - 106ms/step

Epoch 2/10

353/353 - 36s - loss: 1.1598 - accuracy: 0.4864 - val\_loss: 1.1386 - val\_accuracy: 0.5096 - 36s/epoch - 102ms/step

Epoch 3/10

353/353 - 36s - loss: 1.1228 - accuracy: 0.5233 - val\_loss: 1.1361 - val\_accuracy: 0.5053 - 36s/epoch - 101ms/step

Epoch 4/10

353/353 - 36s - loss: 1.0947 - accuracy: 0.5408 - val\_loss: 1.1216 - val\_accuracy: 0.5216 - 36s/epoch - 101ms/step

Epoch 5/10

353/353 - 36s - loss: 1.0744 - accuracy: 0.5540 - val\_loss: 1.1097 - val\_accuracy: 0.5245 - 36s/epoch - 102ms/step

Epoch 6/10

353/353 - 36s - loss: 1.0570 - accuracy: 0.5623 - val\_loss: 1.0947 - val\_accuracy: 0.5471 - 36s/epoch - 102ms/step

Epoch 7/10

353/353 - 36s - loss: 1.0433 - accuracy: 0.5701 - val\_loss: 1.0994 - val\_accuracy: 0.5457 - 36s/epoch - 101ms/step

Epoch 8/10

353/353 - 36s - loss: 1.0242 - accuracy: 0.5772 - val\_loss: 1.1109 - val\_accuracy: 0.5273 - 36s/epoch - 101ms/step

Epoch 9/10

353/353 - 36s - loss: 1.0094 - accuracy: 0.5938 - val\_loss: 1.1108 - val\_accuracy: 0.5294 - 36s/epoch - 102ms/step

Epoch 10/10

353/353 - 36s - loss: 0.9970 - accuracy: 0.5944 - val\_loss: 1.0892 - val\_accuracy: 0.5379 - 36s/epoch - 102ms/step

56/56 - 2s - loss: 1.0129 - accuracy: 0.5867 - 2s/epoch - 31ms/step

Test loss: 1.0128858089447021

Test accuracy: 0.5867347121238708

56/56 [==============================] - 2s 32ms/step

Model: "sequential\_7"

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Layer (type) Output Shape Param #

=================================================================

conv2d\_6 (Conv2D) (None, 64, 321, 40) 1240

conv2d\_7 (Conv2D) (None, 1, 321, 40) 102440

average\_pooling2d\_3 (Avera (None, 1, 21, 40) 0

gePooling2D)

flatten\_3 (Flatten) (None, 840) 0

dense\_6 (Dense) (None, 80) 67280

dense\_7 (Dense) (None, 4) 324

=================================================================

Total params: 171284 (669.08 KB)

Trainable params: 171284 (669.08 KB)

Non-trainable params: 0 (0.00 Byte)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Epoch 1/10

353/353 - 37s - loss: 1.2150 - accuracy: 0.4370 - val\_loss: 1.1575 - val\_accuracy: 0.4784 - 37s/epoch - 105ms/step

Epoch 2/10

353/353 - 36s - loss: 1.0873 - accuracy: 0.5495 - val\_loss: 1.0923 - val\_accuracy: 0.5542 - 36s/epoch - 102ms/step

Epoch 3/10

353/353 - 36s - loss: 1.0406 - accuracy: 0.5717 - val\_loss: 1.1131 - val\_accuracy: 0.5443 - 36s/epoch - 102ms/step

Epoch 4/10

353/353 - 36s - loss: 1.0165 - accuracy: 0.5807 - val\_loss: 1.0667 - val\_accuracy: 0.5691 - 36s/epoch - 103ms/step

Epoch 5/10

353/353 - 36s - loss: 0.9831 - accuracy: 0.5981 - val\_loss: 1.0691 - val\_accuracy: 0.5634 - 36s/epoch - 102ms/step

Epoch 6/10

353/353 - 36s - loss: 0.9606 - accuracy: 0.6165 - val\_loss: 1.0425 - val\_accuracy: 0.5967 - 36s/epoch - 102ms/step

Epoch 7/10

353/353 - 36s - loss: 0.9247 - accuracy: 0.6323 - val\_loss: 1.0458 - val\_accuracy: 0.5847 - 36s/epoch - 102ms/step

Epoch 8/10

353/353 - 36s - loss: 0.8956 - accuracy: 0.6378 - val\_loss: 1.0668 - val\_accuracy: 0.5996 - 36s/epoch - 102ms/step

Epoch 9/10

353/353 - 36s - loss: 0.8706 - accuracy: 0.6537 - val\_loss: 1.0747 - val\_accuracy: 0.5819 - 36s/epoch - 102ms/step

Epoch 10/10

353/353 - 36s - loss: 0.8391 - accuracy: 0.6645 - val\_loss: 1.0913 - val\_accuracy: 0.5755 - 36s/epoch - 102ms/step

56/56 - 2s - loss: 1.2637 - accuracy: 0.5062 - 2s/epoch - 31ms/step

Test loss: 1.2637321949005127

Test accuracy: 0.5062358379364014

56/56 [==============================] - 2s 31ms/step

Model: "sequential\_9"

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Layer (type) Output Shape Param #

=================================================================

conv2d\_8 (Conv2D) (None, 64, 321, 40) 1240

conv2d\_9 (Conv2D) (None, 1, 321, 40) 102440

average\_pooling2d\_4 (Avera (None, 1, 21, 40) 0

gePooling2D)

flatten\_4 (Flatten) (None, 840) 0

dense\_8 (Dense) (None, 80) 67280

dense\_9 (Dense) (None, 4) 324

=================================================================

Total params: 171284 (669.08 KB)

Trainable params: 171284 (669.08 KB)

Non-trainable params: 0 (0.00 Byte)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Epoch 1/10

353/353 - 37s - loss: 1.3044 - accuracy: 0.3492 - val\_loss: 1.1472 - val\_accuracy: 0.5120 - 37s/epoch - 106ms/step

Epoch 2/10

353/353 - 36s - loss: 1.1089 - accuracy: 0.5392 - val\_loss: 1.1064 - val\_accuracy: 0.5439 - 36s/epoch - 103ms/step

Epoch 3/10

353/353 - 36s - loss: 1.0588 - accuracy: 0.5741 - val\_loss: 1.0938 - val\_accuracy: 0.5432 - 36s/epoch - 102ms/step

Epoch 4/10

353/353 - 36s - loss: 1.0196 - accuracy: 0.5840 - val\_loss: 1.0800 - val\_accuracy: 0.5460 - 36s/epoch - 102ms/step

Epoch 5/10

353/353 - 36s - loss: 0.9856 - accuracy: 0.6012 - val\_loss: 1.0642 - val\_accuracy: 0.5524 - 36s/epoch - 102ms/step

Epoch 6/10

353/353 - 36s - loss: 0.9604 - accuracy: 0.6141 - val\_loss: 1.0431 - val\_accuracy: 0.5800 - 36s/epoch - 102ms/step

Epoch 7/10

353/353 - 36s - loss: 0.9324 - accuracy: 0.6256 - val\_loss: 1.0373 - val\_accuracy: 0.5871 - 36s/epoch - 103ms/step

Epoch 8/10

353/353 - 36s - loss: 0.9060 - accuracy: 0.6363 - val\_loss: 1.0284 - val\_accuracy: 0.5814 - 36s/epoch - 102ms/step

Epoch 9/10

353/353 - 36s - loss: 0.8817 - accuracy: 0.6481 - val\_loss: 1.0410 - val\_accuracy: 0.5949 - 36s/epoch - 103ms/step

Epoch 10/10

353/353 - 36s - loss: 0.8542 - accuracy: 0.6607 - val\_loss: 1.0599 - val\_accuracy: 0.5779 - 36s/epoch - 103ms/step

56/56 - 2s - loss: 1.0960 - accuracy: 0.5551 - 2s/epoch - 31ms/step

Test loss: 1.0959758758544922

Test accuracy: 0.5550510883331299

56/56 [==============================] - 2s 30ms/step

Mean loss: 1.1154207229614257

Mean accuracy: 0.5569285869598388