Additional results

Navin Keizer

AMLS

/Users/navinkeizer/PycharmProjects/mini-project/venv/bin/python /Users/navinkeizer/PycharmProjects/mini-project/venv/agedetection.py

Using TensorFlow backend.

**eyeglasses**

SVM accuracy :

0.8827586206896552

MLP accuracy :

0.7310344827586207

**smiling**

SVM accuracy :

0.9379310344827586

MLP accuracy :

0.7839080459770115

**young**

SVM accuracy :

0.8080459770114943

MLP accuracy :

0.8068965517241379

**human**

SVM accuracy :

0.9816091954022989

MLP accuracy :

0.5436781609195402

Process finished with exit code 0

*Optimization performed on the x and y test data. Scaling on the x and y train data*

***SVM optima***

*Emotions*:  {'C': 0.01, 'gamma': 0.001, 'kernel': 'linear’}

A = 0.9287356321839081

*Age:* {'C': 0.01, 'gamma': 0.001, 'kernel': 'linear’}

{'C': 0.001, 'gamma': 0.0001, 'kernel': 'linear’}

{'C': 0.0001, 'gamma': 1e-05, 'kernel': 'linear’}

A = 0.8068965517241379

A = 0.8068965517241379

*Human:* {'C': 0.001, 'gamma': 0.001, 'kernel': 'poly’}

A = 0.9908045977011494

*Glasses:* {'C': 0.01, 'gamma': 0.001, 'kernel': 'linear’}

{'C': 0.01, 'gamma': 0.0001, 'kernel': 'linear’}

{'C': 0.01, 'gamma': 1e-05, 'kernel': 'linear'}

A = 0.8954022988505748

A = 0.8954022988505748

***MLP optima***

*Emotions:* {'activation': 'relu', 'alpha': 0.05, 'hidden\_layer\_sizes': (50, 50, 50), 'learning\_rate': 'adaptive', 'solver': 'Adam'}

{'activation': 'identity', 'alpha': 0.0001, 'hidden\_layer\_sizes': (100,), 'learning\_rate': 'constant', 'solver': 'lbfgs’}

{'activation': 'relu', 'alpha': 0.01, 'hidden\_layer\_sizes': (100, 100, 100), 'learning\_rate': 'constant', 'solver': 'lbfgs’}

A = 0.896551724137931

*Age:* {'activation': 'identity', 'alpha': 1, 'hidden\_layer\_sizes': (50, 50, 50), 'learning\_rate': 'constant', 'solver': 'Adam'}

A = 0.8068965517241379

*Human*: {'activation': 'identity', 'alpha': 0.0001, 'hidden\_layer\_sizes': (100,), 'learning\_rate': 'invscaling', 'solver': 'lbfgs’}

A = 0.9712643678160919

*Glasses*: {'activation': 'identity', 'alpha': 0.001, 'hidden\_layer\_sizes': (100, 100, 100), 'learning\_rate': 'adaptive', 'solver': 'lbfgs'}

A = 0.7310344827586207

***With Scaling Data, no optimization, old optimum models***

*Emotions: SVM:*0.9229885057471264

MLP: 0.9356321839080459

*Age: SVM:*0.8068965517241379

MLP:  0.8022988505747126

*Human*: SVM: 0.5436781609195402

MLP: 0.9850574712643678

*Glasses*: SVM: 0.864367816091954

MLP: 0.8827586206896552

***Optima SVM***

Emotions: {'C': 10, 'gamma': 0.01, 'kernel': 'rbf'}

Age:  {'C': 0.1, 'gamma': 0.01, 'kernel': 'sigmoid'}

Human: {'C': 10, 'gamma': 0.01, 'kernel': 'rbf'}

Glasses:  {'C': 0.1, 'gamma': 0.001, 'kernel': 'linear’}

***Optima MLP***

Emotions:  {'activation': 'relu', 'alpha': 1, 'hidden\_layer\_sizes': (100,), 'learning\_rate': 'adaptive', 'solver': 'adam'}

Age:  {'activation': 'identity', 'alpha': 1, 'hidden\_layer\_sizes': (50, 50, 50), 'learning\_rate': 'constant', 'solver': 'Adam'}

{'activation': 'relu', 'alpha': 0.001, 'hidden\_layer\_sizes': (100, 100, 100), 'learning\_rate': 'adaptive', 'solver': 'sgd’}

{'activation': 'tanh', 'alpha': 0.1, 'hidden\_layer\_sizes': (100, 100, 100), 'learning\_rate': 'adaptive', 'solver': 'sgd'}

Human: {'activation': 'relu', 'alpha': 1, 'hidden\_layer\_sizes': (50, 50, 50), 'learning\_rate': 'adaptive', 'solver': 'lbfgs'}

Glasses: {'activation': 'tanh', 'alpha': 1, 'hidden\_layer\_sizes': (50, 100, 50), 'learning\_rate': 'constant', 'solver': ‘adam'}

***With Scaling Data, with optimization***

*Emotions: SVM:*0.9333333333333333

MLP: 0.9471264367816092

*Age: SVM:*0.7402298850574712

MLP:  0.8022988505747126

  0.7873563218390804

          0.7988505747126436

*Human*: SVM: 0.9850574712643678

MLP: 0.9954022988505747

*Glasses*: SVM: 0.8793103448275862

MLP: 0.8747126436781609

***Decision Tree classification***

*Emotions:* 0.8977011494252873

*Age:* 0.7057471264367816

*Human*: 0.9160919540229885

*Glasses*: 0.7885057471264367

END BINARY CLASSIFICATION

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***PRE PROCESSING***

Using image histogram. Fast.

Initial: Isolation forrest accuracy: 0.9125238095238095

Elliptic Envelope accuracy: 0.8364285714285714

One class SVM accuracy: 0.538380952380952

Manual tuning: no improvements

***UNSUPERVISED: different size of image***

**16,16:**

One class SVM accuracy: 0.5677142857142856

Isolation forrest accuracy: 0.6738571428571429

Elliptic Envelope accuracy: 0.8253333333333333

Time:  52.418372786953114

**21,21**

One class SVM accuracy: 0.5633333333333332

Isolation forrest accuracy: 0.6658571428571429

Elliptic Envelope accuracy: 0.8285714285714285

Time:  80.76976588997059

**30,30**

One class SVM accuracy: 0.5640000000000001

Isolation forrest accuracy: 0.6853333333333333

Elliptic Envelope accuracy: 0.816952380952381

Time:  251.23332453600597

**40,40**

One class SVM accuracy: 0.5603809523809524

Isolation forrest accuracy: 0.6644761904761904

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**16,16 - P**

One class SVM accuracy: 0.5526190476190476

Isolation forrest accuracy: 0.7003809523809523

Elliptic Envelope accuracy: 0.815047619047619

Time:  53.449867155984975

**32, 32 - P**

One class SVM accuracy: 0.5566190476190476

Isolation forrest accuracy: 0.7159523809523809

Elliptic Envelope accuracy: 0.8156190476190477

Time:  311.1193923620158

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Task 5

32,32,4

0.2407170294494238

0.24583866837387963

0.18181818181818182

0.2176696542893726

64,64,4

0.22279129321382843

0.23431498079385404

0.19078104993597952

0.22151088348271447

128,128,4

0.23687580025608196

0.20742637644046094

0.19846350832266324

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MLP optimization

0.2560819462227913

{'activation': 'logistic', 'alpha': 1, 'hidden\_layer\_sizes': (50, 50, 50), 'learning\_rate': 'constant', 'solver': 'adam'}

0.26376440460947503

No filtering. Added dropout layers.

Training data shape :  (3200, 256, 256, 1) (3200, 6)

Testing data shape :  (1000, 256, 256, 1) (1000, 6)

Validation data shape :  (800, 256, 256, 1) (800, 6)

Total number of outputs :  2

Output classes :  [0. 1.]

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Layer (type)                 Output Shape              Param #

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conv2d\_1 (Conv2D)            (None, 256, 256, 32)      320

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leaky\_re\_lu\_1 (LeakyReLU)    (None, 256, 256, 32)      0

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max\_pooling2d\_1 (MaxPooling2 (None, 128, 128, 32)      0

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dropout\_1 (Dropout)          (None, 128, 128, 32)      0

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conv2d\_2 (Conv2D)            (None, 128, 128, 64)      18496

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leaky\_re\_lu\_2 (LeakyReLU)    (None, 128, 128, 64)      0

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max\_pooling2d\_2 (MaxPooling2 (None, 64, 64, 64)        0

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dropout\_2 (Dropout)          (None, 64, 64, 64)        0

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conv2d\_3 (Conv2D)            (None, 64, 64, 128)       73856

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leaky\_re\_lu\_3 (LeakyReLU)    (None, 64, 64, 128)       0

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max\_pooling2d\_3 (MaxPooling2 (None, 32, 32, 128)       0

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dropout\_3 (Dropout)          (None, 32, 32, 128)       0

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flatten\_1 (Flatten)          (None, 131072)            0

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dense\_1 (Dense)              (None, 128)               16777344

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leaky\_re\_lu\_4 (LeakyReLU)    (None, 128)               0

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dropout\_4 (Dropout)          (None, 128)               0

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dense\_2 (Dense)              (None, 6)                 774

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Total params: 16,870,790

Trainable params: 16,870,790

Non-trainable params: 0

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Train on 3200 samples, validate on 800 samples

Epoch 1/18

2018-12-31 14:25:37.413572: I tensorflow/core/platform/cpu\_feature\_guard.cc:141] Your CPU supports instructions that this TensorFlow binary was not compiled to use: AVX2 FMA

 200/3200 [>.............................] - ETA: 15:55 - loss: 1.7817 - acc: 0.2200

 400/3200 [==>...........................] - ETA: 13:20 - loss: 4.4438 - acc: 0.2500

 600/3200 [====>.........................] - ETA: 11:38 - loss: 5.6117 - acc: 0.2300

 800/3200 [======>.......................] - ETA: 10:30 - loss: 6.2508 - acc: 0.2087

1000/3200 [========>.....................] - ETA: 9:39 - loss: 5.6704 - acc: 0.2180

1200/3200 [==========>...................] - ETA: 8:43 - loss: 5.0661 - acc: 0.2367

1400/3200 [============>.................] - ETA: 7:47 - loss: 5.2612 - acc: 0.2043

1600/3200 [==============>...............] - ETA: 6:52 - loss: 4.8720 - acc: 0.2038

1800/3200 [===============>..............] - ETA: 5:58 - loss: 4.5507 - acc: 0.2100

2000/3200 [=================>............] - ETA: 5:04 - loss: 4.2653 - acc: 0.2230

2200/3200 [===================>..........] - ETA: 4:11 - loss: 4.0774 - acc: 0.2245

2400/3200 [=====================>........] - ETA: 3:20 - loss: 3.9141 - acc: 0.2296

2600/3200 [=======================>......] - ETA: 2:30 - loss: 3.7700 - acc: 0.2346

2800/3200 [=========================>....] - ETA: 1:40 - loss: 3.6381 - acc: 0.2393

3000/3200 [===========================>..] - ETA: 50s - loss: 3.5101 - acc: 0.2407

3200/3200 [==============================] - 838s 262ms/step - loss: 3.3994 - acc: 0.2444 - val\_loss: 1.6091 - val\_acc: 0.3900

Epoch 2/18

 200/3200 [>.............................] - ETA: 12:34 - loss: 1.6265 - acc: 0.2800

 400/3200 [==>...........................] - ETA: 11:33 - loss: 1.6096 - acc: 0.2875

 600/3200 [====>.........................] - ETA: 10:25 - loss: 1.6129 - acc: 0.2950

 800/3200 [======>.......................] - ETA: 9:32 - loss: 1.6041 - acc: 0.3050

1000/3200 [========>.....................] - ETA: 8:45 - loss: 1.5914 - acc: 0.3050

1200/3200 [==========>...................] - ETA: 7:56 - loss: 1.5834 - acc: 0.3100

1400/3200 [============>.................] - ETA: 7:13 - loss: 1.5809 - acc: 0.3250

1600/3200 [==============>...............] - ETA: 6:25 - loss: 1.5711 - acc: 0.3356

1800/3200 [===============>..............] - ETA: 5:36 - loss: 1.5615 - acc: 0.3450

2000/3200 [=================>............] - ETA: 4:47 - loss: 1.5563 - acc: 0.3510

2200/3200 [===================>..........] - ETA: 4:00 - loss: 1.5486 - acc: 0.3550

2400/3200 [=====================>........] - ETA: 3:11 - loss: 1.5463 - acc: 0.3575

2600/3200 [=======================>......] - ETA: 2:24 - loss: 1.5469 - acc: 0.3585

2800/3200 [=========================>....] - ETA: 1:36 - loss: 1.5439 - acc: 0.3636

3000/3200 [===========================>..] - ETA: 48s - loss: 1.5402 - acc: 0.3633

3200/3200 [==============================] - 809s 253ms/step - loss: 1.5311 - acc: 0.3691 - val\_loss: 1.6619 - val\_acc: 0.3825

Epoch 3/18

 200/3200 [>.............................] - ETA: 12:25 - loss: 1.3768 - acc: 0.4500

 400/3200 [==>...........................] - ETA: 11:21 - loss: 1.3695 - acc: 0.4450

 600/3200 [====>.........................] - ETA: 10:27 - loss: 1.3600 - acc: 0.4433

 800/3200 [======>.......................] - ETA: 9:39 - loss: 1.3536 - acc: 0.4500

1000/3200 [========>.....................] - ETA: 8:52 - loss: 1.3234 - acc: 0.4650

1200/3200 [==========>...................] - ETA: 8:02 - loss: 1.3113 - acc: 0.4617

1400/3200 [============>.................] - ETA: 7:17 - loss: 1.3210 - acc: 0.4586

1600/3200 [==============>...............] - ETA: 6:29 - loss: 1.3098 - acc: 0.4619

1800/3200 [===============>..............] - ETA: 5:41 - loss: 1.2973 - acc: 0.4689

2000/3200 [=================>............] - ETA: 4:52 - loss: 1.2974 - acc: 0.4635

2200/3200 [===================>..........] - ETA: 4:05 - loss: 1.2932 - acc: 0.4664

2400/3200 [=====================>........] - ETA: 3:15 - loss: 1.2900 - acc: 0.4683

2600/3200 [=======================>......] - ETA: 2:26 - loss: 1.2837 - acc: 0.4738

2800/3200 [=========================>....] - ETA: 1:37 - loss: 1.2868 - acc: 0.4732

3000/3200 [===========================>..] - ETA: 48s - loss: 1.2821 - acc: 0.4737

3200/3200 [==============================] - 819s 256ms/step - loss: 1.2820 - acc: 0.4737 - val\_loss: 1.3049 - val\_acc: 0.4275

Epoch 4/18

 200/3200 [>.............................] - ETA: 12:15 - loss: 1.3324 - acc: 0.4650

 400/3200 [==>...........................] - ETA: 11:05 - loss: 1.2202 - acc: 0.4875

 600/3200 [====>.........................] - ETA: 10:14 - loss: 1.2133 - acc: 0.5017

 800/3200 [======>.......................] - ETA: 9:53 - loss: 1.1940 - acc: 0.5087

1000/3200 [========>.....................] - ETA: 9:15 - loss: 1.1684 - acc: 0.5210

1200/3200 [==========>...................] - ETA: 8:33 - loss: 1.1612 - acc: 0.5242

1400/3200 [============>.................] - ETA: 7:38 - loss: 1.1793 - acc: 0.5214

1600/3200 [==============>...............] - ETA: 6:44 - loss: 1.1833 - acc: 0.5175

1800/3200 [===============>..............] - ETA: 5:51 - loss: 1.1772 - acc: 0.5206

2000/3200 [=================>............] - ETA: 4:58 - loss: 1.1751 - acc: 0.5225

2200/3200 [===================>..........] - ETA: 4:08 - loss: 1.1680 - acc: 0.5236

2400/3200 [=====================>........] - ETA: 3:17 - loss: 1.1626 - acc: 0.5267

2600/3200 [=======================>......] - ETA: 2:28 - loss: 1.1654 - acc: 0.5273

2800/3200 [=========================>....] - ETA: 1:38 - loss: 1.1607 - acc: 0.5296

3000/3200 [===========================>..] - ETA: 49s - loss: 1.1581 - acc: 0.5297

3200/3200 [==============================] - 822s 257ms/step - loss: 1.1564 - acc: 0.5269 - val\_loss: 1.6374 - val\_acc: 0.3888

Epoch 5/18

 200/3200 [>.............................] - ETA: 12:11 - loss: 1.1283 - acc: 0.5100

 400/3200 [==>...........................] - ETA: 11:35 - loss: 1.1043 - acc: 0.5175

 600/3200 [====>.........................] - ETA: 10:41 - loss: 1.0792 - acc: 0.5400

 800/3200 [======>.......................] - ETA: 9:47 - loss: 1.0523 - acc: 0.5612

1000/3200 [========>.....................] - ETA: 9:01 - loss: 1.0578 - acc: 0.5600

1200/3200 [==========>...................] - ETA: 8:19 - loss: 1.0819 - acc: 0.5542

1400/3200 [============>.................] - ETA: 7:30 - loss: 1.0752 - acc: 0.5521

1600/3200 [==============>...............] - ETA: 6:36 - loss: 1.0653 - acc: 0.5587

1800/3200 [===============>..............] - ETA: 5:45 - loss: 1.0539 - acc: 0.5611

2000/3200 [=================>............] - ETA: 4:55 - loss: 1.0431 - acc: 0.5655

2200/3200 [===================>..........] - ETA: 4:07 - loss: 1.0316 - acc: 0.5727

2400/3200 [=====================>........] - ETA: 3:17 - loss: 1.0379 - acc: 0.5729

2600/3200 [=======================>......] - ETA: 2:27 - loss: 1.0450 - acc: 0.5727

2800/3200 [=========================>....] - ETA: 1:38 - loss: 1.0520 - acc: 0.5686

3000/3200 [===========================>..] - ETA: 49s - loss: 1.0458 - acc: 0.5703

3200/3200 [==============================] - 819s 256ms/step - loss: 1.0396 - acc: 0.5728 - val\_loss: 1.3378 - val\_acc: 0.4062

Epoch 6/18

 200/3200 [>.............................] - ETA: 13:01 - loss: 1.0244 - acc: 0.5700

 400/3200 [==>...........................] - ETA: 11:30 - loss: 1.0169 - acc: 0.5425

 600/3200 [====>.........................] - ETA: 10:44 - loss: 0.9854 - acc: 0.5567

 800/3200 [======>.......................] - ETA: 9:48 - loss: 0.9879 - acc: 0.5800

1000/3200 [========>.....................] - ETA: 8:58 - loss: 0.9830 - acc: 0.5820

1200/3200 [==========>...................] - ETA: 8:06 - loss: 0.9715 - acc: 0.5875

1400/3200 [============>.................] - ETA: 7:21 - loss: 0.9788 - acc: 0.5921

1600/3200 [==============>...............] - ETA: 6:31 - loss: 0.9844 - acc: 0.5856

1800/3200 [===============>..............] - ETA: 5:40 - loss: 0.9718 - acc: 0.5883

2000/3200 [=================>............] - ETA: 4:51 - loss: 0.9691 - acc: 0.5870

2200/3200 [===================>..........] - ETA: 4:04 - loss: 0.9604 - acc: 0.5923

2400/3200 [=====================>........] - ETA: 3:17 - loss: 0.9663 - acc: 0.5921

2600/3200 [=======================>......] - ETA: 2:28 - loss: 0.9637 - acc: 0.5965

2800/3200 [=========================>....] - ETA: 1:39 - loss: 0.9688 - acc: 0.5961

3000/3200 [===========================>..] - ETA: 49s - loss: 0.9655 - acc: 0.6000

3200/3200 [==============================] - 826s 258ms/step - loss: 0.9631 - acc: 0.6012 - val\_loss: 1.5749 - val\_acc: 0.4162

Epoch 7/18

 200/3200 [>.............................] - ETA: 12:04 - loss: 0.8825 - acc: 0.6050

 400/3200 [==>...........................] - ETA: 10:51 - loss: 0.9464 - acc: 0.5975

 600/3200 [====>.........................] - ETA: 10:17 - loss: 0.9304 - acc: 0.6050

 800/3200 [======>.......................] - ETA: 9:31 - loss: 0.9261 - acc: 0.5962

1000/3200 [========>.....................] - ETA: 8:46 - loss: 0.9450 - acc: 0.6010

1200/3200 [==========>...................] - ETA: 7:59 - loss: 0.9393 - acc: 0.6008

1400/3200 [============>.................] - ETA: 7:13 - loss: 0.9357 - acc: 0.6007

1600/3200 [==============>...............] - ETA: 6:23 - loss: 0.9278 - acc: 0.6069

1800/3200 [===============>..............] - ETA: 5:33 - loss: 0.9191 - acc: 0.6117

2000/3200 [=================>............] - ETA: 4:46 - loss: 0.9142 - acc: 0.6155

2200/3200 [===================>..........] - ETA: 3:58 - loss: 0.9052 - acc: 0.6173

2400/3200 [=====================>........] - ETA: 3:11 - loss: 0.9118 - acc: 0.6112

2600/3200 [=======================>......] - ETA: 2:25 - loss: 0.9182 - acc: 0.6042

2800/3200 [=========================>....] - ETA: 1:37 - loss: 0.9232 - acc: 0.6011

3000/3200 [===========================>..] - ETA: 48s - loss: 0.9215 - acc: 0.6037

3200/3200 [==============================] - 808s 253ms/step - loss: 0.9187 - acc: 0.6044 - val\_loss: 1.2579 - val\_acc: 0.4575

Epoch 8/18

 200/3200 [>.............................] - ETA: 12:43 - loss: 0.8794 - acc: 0.6450

 400/3200 [==>...........................] - ETA: 11:34 - loss: 0.8816 - acc: 0.6150

 600/3200 [====>.........................] - ETA: 11:03 - loss: 0.8950 - acc: 0.6117

 800/3200 [======>.......................] - ETA: 10:01 - loss: 0.9023 - acc: 0.6062

1000/3200 [========>.....................] - ETA: 9:06 - loss: 0.8941 - acc: 0.6080

1200/3200 [==========>...................] - ETA: 8:12 - loss: 0.8831 - acc: 0.6133

1400/3200 [============>.................] - ETA: 7:24 - loss: 0.8683 - acc: 0.6243

1600/3200 [==============>...............] - ETA: 6:32 - loss: 0.8714 - acc: 0.6287

1800/3200 [===============>..............] - ETA: 5:43 - loss: 0.8700 - acc: 0.6283

2000/3200 [=================>............] - ETA: 4:55 - loss: 0.8644 - acc: 0.6285

2200/3200 [===================>..........] - ETA: 4:05 - loss: 0.8605 - acc: 0.6300

2400/3200 [=====================>........] - ETA: 3:17 - loss: 0.8610 - acc: 0.6317

2600/3200 [=======================>......] - ETA: 2:27 - loss: 0.8546 - acc: 0.6331

2800/3200 [=========================>....] - ETA: 1:38 - loss: 0.8596 - acc: 0.6321

3000/3200 [===========================>..] - ETA: 49s - loss: 0.8551 - acc: 0.6290

3200/3200 [==============================] - 828s 259ms/step - loss: 0.8573 - acc: 0.6247 - val\_loss: 1.5434 - val\_acc: 0.4375

Epoch 9/18

 200/3200 [>.............................] - ETA: 12:04 - loss: 0.8329 - acc: 0.6250

 400/3200 [==>...........................] - ETA: 11:23 - loss: 0.8103 - acc: 0.6350

 600/3200 [====>.........................] - ETA: 10:44 - loss: 0.8306 - acc: 0.6417

 800/3200 [======>.......................] - ETA: 9:49 - loss: 0.8516 - acc: 0.6362

1000/3200 [========>.....................] - ETA: 8:53 - loss: 0.8244 - acc: 0.6480

1200/3200 [==========>...................] - ETA: 8:03 - loss: 0.8305 - acc: 0.6483

1400/3200 [============>.................] - ETA: 7:29 - loss: 0.8280 - acc: 0.6507

1600/3200 [==============>...............] - ETA: 6:40 - loss: 0.8385 - acc: 0.6425

1800/3200 [===============>..............] - ETA: 5:51 - loss: 0.8370 - acc: 0.6411

2000/3200 [=================>............] - ETA: 5:00 - loss: 0.8340 - acc: 0.6435

2200/3200 [===================>..........] - ETA: 4:08 - loss: 0.8303 - acc: 0.6455

2400/3200 [=====================>........] - ETA: 3:19 - loss: 0.8230 - acc: 0.6483

2600/3200 [=======================>......] - ETA: 2:29 - loss: 0.8222 - acc: 0.6465

2800/3200 [=========================>....] - ETA: 1:39 - loss: 0.8202 - acc: 0.6457

3000/3200 [===========================>..] - ETA: 49s - loss: 0.8152 - acc: 0.6483

3200/3200 [==============================] - 825s 258ms/step - loss: 0.8127 - acc: 0.6481 - val\_loss: 1.1795 - val\_acc: 0.5013

Epoch 10/18

 200/3200 [>.............................] - ETA: 12:54 - loss: 0.8085 - acc: 0.6450

 400/3200 [==>...........................] - ETA: 12:05 - loss: 0.7938 - acc: 0.6700

 600/3200 [====>.........................] - ETA: 10:50 - loss: 0.7937 - acc: 0.6833

 800/3200 [======>.......................] - ETA: 9:46 - loss: 0.7759 - acc: 0.6812

1000/3200 [========>.....................] - ETA: 8:56 - loss: 0.7664 - acc: 0.6850

1200/3200 [==========>...................] - ETA: 8:04 - loss: 0.7787 - acc: 0.6708

1400/3200 [============>.................] - ETA: 7:17 - loss: 0.7798 - acc: 0.6657

1600/3200 [==============>...............] - ETA: 6:27 - loss: 0.7802 - acc: 0.6587

1800/3200 [===============>..............] - ETA: 5:39 - loss: 0.7833 - acc: 0.6550

2000/3200 [=================>............] - ETA: 4:51 - loss: 0.7799 - acc: 0.6585

2200/3200 [===================>..........] - ETA: 4:02 - loss: 0.7763 - acc: 0.6614

2400/3200 [=====================>........] - ETA: 3:12 - loss: 0.7868 - acc: 0.6562

2600/3200 [=======================>......] - ETA: 2:24 - loss: 0.7812 - acc: 0.6550

2800/3200 [=========================>....] - ETA: 1:35 - loss: 0.7792 - acc: 0.6568

3000/3200 [===========================>..] - ETA: 47s - loss: 0.7695 - acc: 0.6620

3200/3200 [==============================] - 798s 249ms/step - loss: 0.7624 - acc: 0.6634 - val\_loss: 1.1188 - val\_acc: 0.5287

Epoch 11/18

 200/3200 [>.............................] - ETA: 11:48 - loss: 0.6836 - acc: 0.7100

 400/3200 [==>...........................] - ETA: 10:52 - loss: 0.6915 - acc: 0.7000

 600/3200 [====>.........................] - ETA: 10:12 - loss: 0.6631 - acc: 0.7133

 800/3200 [======>.......................] - ETA: 9:22 - loss: 0.6811 - acc: 0.7062

1000/3200 [========>.....................] - ETA: 8:34 - loss: 0.6919 - acc: 0.6990

1200/3200 [==========>...................] - ETA: 7:48 - loss: 0.6978 - acc: 0.7042

1400/3200 [============>.................] - ETA: 7:05 - loss: 0.7127 - acc: 0.6957

1600/3200 [==============>...............] - ETA: 6:20 - loss: 0.7116 - acc: 0.6919

1800/3200 [===============>..............] - ETA: 5:34 - loss: 0.7179 - acc: 0.6900

2000/3200 [=================>............] - ETA: 4:50 - loss: 0.7274 - acc: 0.6855

2200/3200 [===================>..........] - ETA: 4:02 - loss: 0.7290 - acc: 0.6809

2400/3200 [=====================>........] - ETA: 3:13 - loss: 0.7332 - acc: 0.6796

2600/3200 [=======================>......] - ETA: 2:26 - loss: 0.7328 - acc: 0.6808

2800/3200 [=========================>....] - ETA: 1:37 - loss: 0.7336 - acc: 0.6804

3000/3200 [===========================>..] - ETA: 48s - loss: 0.7294 - acc: 0.6840

3200/3200 [==============================] - 818s 256ms/step - loss: 0.7293 - acc: 0.6881 - val\_loss: 0.9710 - val\_acc: 0.5725

Epoch 12/18

 200/3200 [>.............................] - ETA: 13:50 - loss: 0.7515 - acc: 0.6500

 400/3200 [==>...........................] - ETA: 12:15 - loss: 0.6868 - acc: 0.6875

 600/3200 [====>.........................] - ETA: 10:49 - loss: 0.6843 - acc: 0.6867

 800/3200 [======>.......................] - ETA: 9:45 - loss: 0.6910 - acc: 0.6750

1000/3200 [========>.....................] - ETA: 8:51 - loss: 0.6952 - acc: 0.6770

1200/3200 [==========>...................] - ETA: 8:02 - loss: 0.7011 - acc: 0.6783

1400/3200 [============>.................] - ETA: 7:15 - loss: 0.6958 - acc: 0.6829

1600/3200 [==============>...............] - ETA: 6:29 - loss: 0.7009 - acc: 0.6862

1800/3200 [===============>..............] - ETA: 5:47 - loss: 0.6971 - acc: 0.6894

2000/3200 [=================>............] - ETA: 4:59 - loss: 0.6973 - acc: 0.6900

2200/3200 [===================>..........] - ETA: 4:15 - loss: 0.6916 - acc: 0.6941

2400/3200 [=====================>........] - ETA: 3:25 - loss: 0.6991 - acc: 0.6921

2600/3200 [=======================>......] - ETA: 2:34 - loss: 0.6973 - acc: 0.6919

2800/3200 [=========================>....] - ETA: 1:42 - loss: 0.6949 - acc: 0.6936

3000/3200 [===========================>..] - ETA: 51s - loss: 0.6963 - acc: 0.6917

3200/3200 [==============================] - 860s 269ms/step - loss: 0.6941 - acc: 0.6919 - val\_loss: 1.2399 - val\_acc: 0.4988

Epoch 13/18

 200/3200 [>.............................] - ETA: 12:15 - loss: 0.6832 - acc: 0.7150

 400/3200 [==>...........................] - ETA: 11:20 - loss: 0.6660 - acc: 0.7075

 600/3200 [====>.........................] - ETA: 10:28 - loss: 0.6937 - acc: 0.6883

 800/3200 [======>.......................] - ETA: 9:38 - loss: 0.6985 - acc: 0.6875

1000/3200 [========>.....................] - ETA: 8:49 - loss: 0.7071 - acc: 0.6860

1200/3200 [==========>...................] - ETA: 8:02 - loss: 0.6936 - acc: 0.6950

1400/3200 [============>.................] - ETA: 7:12 - loss: 0.6927 - acc: 0.6943

1600/3200 [==============>...............] - ETA: 6:22 - loss: 0.6895 - acc: 0.6950

1800/3200 [===============>..............] - ETA: 5:32 - loss: 0.6842 - acc: 0.6972

2000/3200 [=================>............] - ETA: 4:44 - loss: 0.6791 - acc: 0.6965

2200/3200 [===================>..........] - ETA: 3:56 - loss: 0.6731 - acc: 0.7005

2400/3200 [=====================>........] - ETA: 3:09 - loss: 0.6807 - acc: 0.6958

2600/3200 [=======================>......] - ETA: 2:22 - loss: 0.6732 - acc: 0.7008

2800/3200 [=========================>....] - ETA: 1:34 - loss: 0.6640 - acc: 0.7064

3000/3200 [===========================>..] - ETA: 47s - loss: 0.6706 - acc: 0.7057

3200/3200 [==============================] - 788s 246ms/step - loss: 0.6692 - acc: 0.7066 - val\_loss: 1.2362 - val\_acc: 0.5288

Epoch 14/18

 200/3200 [>.............................] - ETA: 12:28 - loss: 0.7692 - acc: 0.6450

 400/3200 [==>...........................] - ETA: 11:32 - loss: 0.7317 - acc: 0.6850

 600/3200 [====>.........................] - ETA: 10:30 - loss: 0.7017 - acc: 0.6950

 800/3200 [======>.......................] - ETA: 9:35 - loss: 0.7135 - acc: 0.6962

1000/3200 [========>.....................] - ETA: 8:45 - loss: 0.7041 - acc: 0.6960

1200/3200 [==========>...................] - ETA: 7:55 - loss: 0.7053 - acc: 0.6875

1400/3200 [============>.................] - ETA: 7:13 - loss: 0.6976 - acc: 0.6900

1600/3200 [==============>...............] - ETA: 6:29 - loss: 0.6972 - acc: 0.6906

1800/3200 [===============>..............] - ETA: 5:41 - loss: 0.6917 - acc: 0.6933

2000/3200 [=================>............] - ETA: 4:51 - loss: 0.6892 - acc: 0.6965

2200/3200 [===================>..........] - ETA: 4:02 - loss: 0.6798 - acc: 0.7005

2400/3200 [=====================>........] - ETA: 3:14 - loss: 0.6816 - acc: 0.6987

2600/3200 [=======================>......] - ETA: 2:25 - loss: 0.6778 - acc: 0.7031

2800/3200 [=========================>....] - ETA: 1:37 - loss: 0.6760 - acc: 0.7032

3000/3200 [===========================>..] - ETA: 48s - loss: 0.6713 - acc: 0.7047

3200/3200 [==============================] - 812s 254ms/step - loss: 0.6682 - acc: 0.7062 - val\_loss: 1.1827 - val\_acc: 0.5638

Epoch 15/18

 200/3200 [>.............................] - ETA: 12:19 - loss: 0.5877 - acc: 0.7650

 400/3200 [==>...........................] - ETA: 11:34 - loss: 0.6310 - acc: 0.7350

 600/3200 [====>.........................] - ETA: 10:43 - loss: 0.6235 - acc: 0.7317

 800/3200 [======>.......................] - ETA: 9:44 - loss: 0.6126 - acc: 0.7325

1000/3200 [========>.....................] - ETA: 8:53 - loss: 0.6287 - acc: 0.7310

1200/3200 [==========>...................] - ETA: 8:00 - loss: 0.6278 - acc: 0.7300

1400/3200 [============>.................] - ETA: 7:10 - loss: 0.6288 - acc: 0.7329

1600/3200 [==============>...............] - ETA: 6:26 - loss: 0.6249 - acc: 0.7356

1800/3200 [===============>..............] - ETA: 5:37 - loss: 0.6201 - acc: 0.7383

2000/3200 [=================>............] - ETA: 4:49 - loss: 0.6158 - acc: 0.7405

2200/3200 [===================>..........] - ETA: 4:02 - loss: 0.6153 - acc: 0.7368

2400/3200 [=====================>........] - ETA: 3:14 - loss: 0.6104 - acc: 0.7383

2600/3200 [=======================>......] - ETA: 2:24 - loss: 0.6033 - acc: 0.7385

2800/3200 [=========================>....] - ETA: 1:36 - loss: 0.6016 - acc: 0.7379

3000/3200 [===========================>..] - ETA: 48s - loss: 0.6015 - acc: 0.7373

3200/3200 [==============================] - 803s 251ms/step - loss: 0.6069 - acc: 0.7344 - val\_loss: 0.9928 - val\_acc: 0.5738

Epoch 16/18

 200/3200 [>.............................] - ETA: 12:19 - loss: 0.6080 - acc: 0.7400

 400/3200 [==>...........................] - ETA: 10:54 - loss: 0.5968 - acc: 0.7375

 600/3200 [====>.........................] - ETA: 10:08 - loss: 0.5850 - acc: 0.7450

 800/3200 [======>.......................] - ETA: 9:24 - loss: 0.5947 - acc: 0.7325

1000/3200 [========>.....................] - ETA: 8:38 - loss: 0.5986 - acc: 0.7250

1200/3200 [==========>...................] - ETA: 7:53 - loss: 0.5876 - acc: 0.7358

1400/3200 [============>.................] - ETA: 7:09 - loss: 0.5943 - acc: 0.7350

1600/3200 [==============>...............] - ETA: 6:23 - loss: 0.6011 - acc: 0.7350

1800/3200 [===============>..............] - ETA: 5:37 - loss: 0.6048 - acc: 0.7322

2000/3200 [=================>............] - ETA: 4:52 - loss: 0.6047 - acc: 0.7350

2200/3200 [===================>..........] - ETA: 4:05 - loss: 0.6013 - acc: 0.7364

2400/3200 [=====================>........] - ETA: 3:17 - loss: 0.5999 - acc: 0.7350

2600/3200 [=======================>......] - ETA: 2:28 - loss: 0.6009 - acc: 0.7346

2800/3200 [=========================>....] - ETA: 1:38 - loss: 0.6032 - acc: 0.7336

3000/3200 [===========================>..] - ETA: 48s - loss: 0.6005 - acc: 0.7353

3200/3200 [==============================] - 817s 255ms/step - loss: 0.5954 - acc: 0.7384 - val\_loss: 0.9809 - val\_acc: 0.5587

Epoch 17/18

 200/3200 [>.............................] - ETA: 14:06 - loss: 0.5311 - acc: 0.7900

 400/3200 [==>...........................] - ETA: 12:00 - loss: 0.5275 - acc: 0.8050

 600/3200 [====>.........................] - ETA: 11:02 - loss: 0.5385 - acc: 0.7883

 800/3200 [======>.......................] - ETA: 10:18 - loss: 0.5638 - acc: 0.7625

1000/3200 [========>.....................] - ETA: 9:27 - loss: 0.5658 - acc: 0.7620

1200/3200 [==========>...................] - ETA: 8:32 - loss: 0.5619 - acc: 0.7592

1400/3200 [============>.................] - ETA: 7:33 - loss: 0.5601 - acc: 0.7536

1600/3200 [==============>...............] - ETA: 6:38 - loss: 0.5581 - acc: 0.7563

1800/3200 [===============>..............] - ETA: 5:45 - loss: 0.5653 - acc: 0.7539

2000/3200 [=================>............] - ETA: 4:55 - loss: 0.5810 - acc: 0.7460

2200/3200 [===================>..........] - ETA: 4:05 - loss: 0.5708 - acc: 0.7514

2400/3200 [=====================>........] - ETA: 3:15 - loss: 0.5687 - acc: 0.7542

2600/3200 [=======================>......] - ETA: 2:26 - loss: 0.5739 - acc: 0.7519

2800/3200 [=========================>....] - ETA: 1:37 - loss: 0.5689 - acc: 0.7514

3000/3200 [===========================>..] - ETA: 48s - loss: 0.5699 - acc: 0.7507

3200/3200 [==============================] - 815s 255ms/step - loss: 0.5744 - acc: 0.7475 - val\_loss: 1.0371 - val\_acc: 0.5537

Epoch 18/18

 200/3200 [>.............................] - ETA: 11:47 - loss: 0.6114 - acc: 0.7150

 400/3200 [==>...........................] - ETA: 10:59 - loss: 0.5787 - acc: 0.7250

 600/3200 [====>.........................] - ETA: 10:15 - loss: 0.5606 - acc: 0.7400

 800/3200 [======>.......................] - ETA: 9:29 - loss: 0.5447 - acc: 0.7500

1000/3200 [========>.....................] - ETA: 9:06 - loss: 0.5343 - acc: 0.7590

1200/3200 [==========>...................] - ETA: 8:12 - loss: 0.5280 - acc: 0.7642

1400/3200 [============>.................] - ETA: 7:23 - loss: 0.5200 - acc: 0.7664

1600/3200 [==============>...............] - ETA: 6:33 - loss: 0.5228 - acc: 0.7669

1800/3200 [===============>..............] - ETA: 5:43 - loss: 0.5227 - acc: 0.7683

2000/3200 [=================>............] - ETA: 4:55 - loss: 0.5250 - acc: 0.7680

2200/3200 [===================>..........] - ETA: 4:05 - loss: 0.5318 - acc: 0.7623

2400/3200 [=====================>........] - ETA: 3:16 - loss: 0.5276 - acc: 0.7633

2600/3200 [=======================>......] - ETA: 2:27 - loss: 0.5256 - acc: 0.7631

2800/3200 [=========================>....] - ETA: 1:38 - loss: 0.5243 - acc: 0.7646

3000/3200 [===========================>..] - ETA: 49s - loss: 0.5271 - acc: 0.7630

3200/3200 [==============================] - 831s 260ms/step - loss: 0.5302 - acc: 0.7612 - val\_loss: 1.0375 - val\_acc: 0.5712

objc[64856]: Class FIFinderSyncExtensionHost is implemented in both /System/Library/PrivateFrameworks/FinderKit.framework/FinderKit (0x151092c90) and /System/Library/PrivateFrameworks/FileProvider.framework/OverrideBundles/FinderSyncCollaborationFileProviderOverride.bundle/Contents/MacOS/FinderSyncCollaborationFileProviderOverride (0x15d285cd8). One of the two will be used. Which one is undefined.

(0.598, 0.9853311414718628)

0.598 0.9853311414718628

[[  7   0   0   1   0   9]

 [ 26 125   0   0   0  51]

 [ 31   1  23  22   0  20]

 [ 23   4  11  97   6  51]

 [ 12   0   0   7  78  50]

 [ 30  62   1  11   9 232]]

0.598 0.9853311414718628

              precision    recall  f1-score   support

     Class 0       0.05      0.41      0.10        17

     Class 1       0.65      0.62      0.63       202

     Class 2       0.66      0.24      0.35        97

     Class 3       0.70      0.51      0.59       192

     Class 4       0.84      0.53      0.65       147

     Class 5       0.56      0.67      0.61       345

   micro avg       0.56      0.56      0.56      1000

   macro avg       0.58      0.50      0.49      1000

weighted avg       0.65      0.56      0.58      1000

[[  7   0   0   1   0   9]

 [ 26 125   0   0   0  51]

 [ 31   1  23  22   0  20]

 [ 23   4  11  97   6  51]

 [ 12   0   0   7  78  50]

 [ 30  62   1  11   9 232]]

DECISION TREE

0.6728

CONFUSION MATRIX

array([[190,   7,  23,   1,  28,  41,   3],

       [  6,   1,   4,   3,   2,   0,   2],

       [ 19,  12, 181,   0,  14,   4,  15],

       [  2,   1,   3, 103,  11,   1,   1],

       [ 45,   1,   9,  15, 137,  26,   9],

       [ 32,   1,  10,   2,  21, 125,   4],

       [  4,   2,  19,   2,   1,   3, 104]])

print(train\_decision\_tree(a,b,c,d))

print(train\_knn\_classifier(a,b,c,d))

ACCURACY

0.676

0.285

precision recall f1-score support

0 0.66 0.62 0.64 293

1 0.05 0.06 0.05 18

2 0.72 0.76 0.74 245

3 0.84 0.82 0.83 122

4 0.63 0.60 0.61 242

5 0.63 0.64 0.63 195

6 0.70 0.77 0.73 135

micro avg 0.67 0.67 0.67 1250

macro avg 0.60 0.61 0.61 1250

weighted avg 0.67 0.67 0.67 1250

Filtering. Taken -1 out.

/Users/navinkeizer/PycharmProjects/mini-project/venv/bin/python /Users/navinkeizer/PycharmProjects/mini-project/venv/5\_hair\_2.py

Using TensorFlow backend.

Training data shape :  (3121, 256, 256, 1) (3121, 6)

Testing data shape :  (781, 256, 256, 1) (781, 6)

Total number of outputs :  2

Output classes :  [0. 1.]

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

Layer (type)                 Output Shape              Param #

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

conv2d\_1 (Conv2D)            (None, 256, 256, 32)      320

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

leaky\_re\_lu\_1 (LeakyReLU)    (None, 256, 256, 32)      0

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

max\_pooling2d\_1 (MaxPooling2 (None, 128, 128, 32)      0

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

conv2d\_2 (Conv2D)            (None, 128, 128, 64)      18496

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

leaky\_re\_lu\_2 (LeakyReLU)    (None, 128, 128, 64)      0

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

max\_pooling2d\_2 (MaxPooling2 (None, 64, 64, 64)        0

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

conv2d\_3 (Conv2D)            (None, 64, 64, 128)       73856

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

leaky\_re\_lu\_3 (LeakyReLU)    (None, 64, 64, 128)       0

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

max\_pooling2d\_3 (MaxPooling2 (None, 32, 32, 128)       0

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

flatten\_1 (Flatten)          (None, 131072)            0

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

dense\_1 (Dense)              (None, 128)               16777344

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

leaky\_re\_lu\_4 (LeakyReLU)    (None, 128)               0

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

dense\_2 (Dense)              (None, 6)                 774

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

Total params: 16,870,790

Trainable params: 16,870,790

Non-trainable params: 0

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

None

Train on 3121 samples, validate on 625 samples

Epoch 1/15

2018-12-30 14:54:33.060326: I tensorflow/core/platform/cpu\_feature\_guard.cc:141] Your CPU supports instructions that this TensorFlow binary was not compiled to use: AVX2 FMA

  70/3121 [..............................] - ETA: 9:42 - loss: 1.7975 - acc: 0.1429

 140/3121 [>.............................] - ETA: 8:41 - loss: 3.3222 - acc: 0.2500

 210/3121 [=>............................] - ETA: 8:06 - loss: 3.9224 - acc: 0.2286

 280/3121 [=>............................] - ETA: 7:42 - loss: 3.5833 - acc: 0.2286

 350/3121 [==>...........................] - ETA: 7:22 - loss: 3.3820 - acc: 0.2200

 420/3121 [===>..........................] - ETA: 7:06 - loss: 3.1943 - acc: 0.2286

 490/3121 [===>..........................] - ETA: 7:05 - loss: 2.9747 - acc: 0.2367

 560/3121 [====>.........................] - ETA: 7:08 - loss: 2.8281 - acc: 0.2321

 630/3121 [=====>........................] - ETA: 7:05 - loss: 2.7094 - acc: 0.2333

 700/3121 [=====>........................] - ETA: 6:54 - loss: 2.6190 - acc: 0.2414

 770/3121 [======>.......................] - ETA: 6:41 - loss: 2.5403 - acc: 0.2455

 840/3121 [=======>......................] - ETA: 6:29 - loss: 2.4705 - acc: 0.2452

 910/3121 [=======>......................] - ETA: 6:18 - loss: 2.4126 - acc: 0.2527

 980/3121 [========>.....................] - ETA: 6:06 - loss: 2.3674 - acc: 0.2439

1050/3121 [=========>....................] - ETA: 5:55 - loss: 2.3206 - acc: 0.2467

1120/3121 [=========>....................] - ETA: 5:42 - loss: 2.2756 - acc: 0.2464

1190/3121 [==========>...................] - ETA: 5:35 - loss: 2.2434 - acc: 0.2445

1260/3121 [===========>..................] - ETA: 5:22 - loss: 2.2087 - acc: 0.2484

1330/3121 [===========>..................] - ETA: 5:08 - loss: 2.1865 - acc: 0.2489

1400/3121 [============>.................] - ETA: 4:55 - loss: 2.1584 - acc: 0.2500

1470/3121 [=============>................] - ETA: 4:42 - loss: 2.1326 - acc: 0.2497

1540/3121 [=============>................] - ETA: 4:28 - loss: 2.1099 - acc: 0.2494

1610/3121 [==============>...............] - ETA: 4:16 - loss: 2.0939 - acc: 0.2472

1680/3121 [===============>..............] - ETA: 4:05 - loss: 2.0819 - acc: 0.2464

1750/3121 [===============>..............] - ETA: 3:56 - loss: 2.0634 - acc: 0.2469

1820/3121 [================>.............] - ETA: 3:46 - loss: 2.0499 - acc: 0.2451

1890/3121 [=================>............] - ETA: 3:34 - loss: 2.0343 - acc: 0.2450

1960/3121 [=================>............] - ETA: 3:22 - loss: 2.0207 - acc: 0.2459

2030/3121 [==================>...........] - ETA: 3:10 - loss: 2.0077 - acc: 0.2488

2100/3121 [===================>..........] - ETA: 2:58 - loss: 1.9955 - acc: 0.2467

2170/3121 [===================>..........] - ETA: 2:47 - loss: 1.9876 - acc: 0.2456

2240/3121 [====================>.........] - ETA: 2:35 - loss: 1.9769 - acc: 0.2460

2310/3121 [=====================>........] - ETA: 2:23 - loss: 1.9661 - acc: 0.2468

2380/3121 [=====================>........] - ETA: 2:11 - loss: 1.9591 - acc: 0.2458

2450/3121 [======================>.......] - ETA: 1:58 - loss: 1.9511 - acc: 0.2453

2520/3121 [=======================>......] - ETA: 1:46 - loss: 1.9432 - acc: 0.2440

2590/3121 [=======================>......] - ETA: 1:34 - loss: 1.9356 - acc: 0.2432

2660/3121 [========================>.....] - ETA: 1:22 - loss: 1.9299 - acc: 0.2432

2730/3121 [=========================>....] - ETA: 1:10 - loss: 1.9226 - acc: 0.2443

2800/3121 [=========================>....] - ETA: 58s - loss: 1.9166 - acc: 0.2439

2870/3121 [==========================>...] - ETA: 45s - loss: 1.9112 - acc: 0.2418

2940/3121 [===========================>..] - ETA: 33s - loss: 1.9066 - acc: 0.2415

3010/3121 [===========================>..] - ETA: 20s - loss: 1.9003 - acc: 0.2422

3080/3121 [============================>.] - ETA: 7s - loss: 1.8948 - acc: 0.2425

3121/3121 [==============================] - 599s 192ms/step - loss: 1.8909 - acc: 0.2426 - val\_loss: 1.6635 - val\_acc: 0.2496

Epoch 2/15

  70/3121 [..............................] - ETA: 9:02 - loss: 1.6509 - acc: 0.3143

 140/3121 [>.............................] - ETA: 8:56 - loss: 1.6498 - acc: 0.2857

 210/3121 [=>............................] - ETA: 8:49 - loss: 1.6345 - acc: 0.2810

 280/3121 [=>............................] - ETA: 8:30 - loss: 1.6595 - acc: 0.2750

 350/3121 [==>...........................] - ETA: 8:23 - loss: 1.6531 - acc: 0.2857

 420/3121 [===>..........................] - ETA: 8:09 - loss: 1.6633 - acc: 0.2643

 490/3121 [===>..........................] - ETA: 7:46 - loss: 1.6682 - acc: 0.2612

 560/3121 [====>.........................] - ETA: 7:25 - loss: 1.6617 - acc: 0.2625

 630/3121 [=====>........................] - ETA: 7:15 - loss: 1.6607 - acc: 0.2635

 700/3121 [=====>........................] - ETA: 6:57 - loss: 1.6519 - acc: 0.2557

 770/3121 [======>.......................] - ETA: 6:47 - loss: 1.6501 - acc: 0.2481

 840/3121 [=======>......................] - ETA: 6:36 - loss: 1.6577 - acc: 0.2452

 910/3121 [=======>......................] - ETA: 6:21 - loss: 1.6511 - acc: 0.2495

 980/3121 [========>.....................] - ETA: 6:10 - loss: 1.6533 - acc: 0.2459

1050/3121 [=========>....................] - ETA: 5:54 - loss: 1.6504 - acc: 0.2448

1120/3121 [=========>....................] - ETA: 5:40 - loss: 1.6504 - acc: 0.2455

1190/3121 [==========>...................] - ETA: 5:28 - loss: 1.6535 - acc: 0.2445

1260/3121 [===========>..................] - ETA: 5:14 - loss: 1.6513 - acc: 0.2421

1330/3121 [===========>..................] - ETA: 5:01 - loss: 1.6522 - acc: 0.2429

1400/3121 [============>.................] - ETA: 4:49 - loss: 1.6528 - acc: 0.2429

1470/3121 [=============>................] - ETA: 4:36 - loss: 1.6564 - acc: 0.2456

1540/3121 [=============>................] - ETA: 4:23 - loss: 1.6573 - acc: 0.2429

1610/3121 [==============>...............] - ETA: 4:11 - loss: 1.6590 - acc: 0.2422

1680/3121 [===============>..............] - ETA: 3:59 - loss: 1.6598 - acc: 0.2435

1750/3121 [===============>..............] - ETA: 3:47 - loss: 1.6591 - acc: 0.2474

1820/3121 [================>.............] - ETA: 3:35 - loss: 1.6596 - acc: 0.2478

1890/3121 [=================>............] - ETA: 3:22 - loss: 1.6591 - acc: 0.2476

1960/3121 [=================>............] - ETA: 3:10 - loss: 1.6583 - acc: 0.2485

2030/3121 [==================>...........] - ETA: 2:58 - loss: 1.6586 - acc: 0.2478

2100/3121 [===================>..........] - ETA: 2:45 - loss: 1.6604 - acc: 0.2495

2170/3121 [===================>..........] - ETA: 2:34 - loss: 1.6592 - acc: 0.2493

2240/3121 [====================>.........] - ETA: 2:22 - loss: 1.6622 - acc: 0.2455

2310/3121 [=====================>........] - ETA: 2:10 - loss: 1.6618 - acc: 0.2446

2380/3121 [=====================>........] - ETA: 1:59 - loss: 1.6613 - acc: 0.2458

2450/3121 [======================>.......] - ETA: 1:47 - loss: 1.6624 - acc: 0.2457

2520/3121 [=======================>......] - ETA: 1:36 - loss: 1.6618 - acc: 0.2444

2590/3121 [=======================>......] - ETA: 1:24 - loss: 1.6627 - acc: 0.2444

2660/3121 [========================>.....] - ETA: 1:13 - loss: 1.6615 - acc: 0.2470

2730/3121 [=========================>....] - ETA: 1:02 - loss: 1.6599 - acc: 0.2476

2800/3121 [=========================>....] - ETA: 50s - loss: 1.6618 - acc: 0.2468

2870/3121 [==========================>...] - ETA: 39s - loss: 1.6626 - acc: 0.2456

2940/3121 [===========================>..] - ETA: 28s - loss: 1.6645 - acc: 0.2446

3010/3121 [===========================>..] - ETA: 17s - loss: 1.6623 - acc: 0.2458

3080/3121 [============================>.] - ETA: 6s - loss: 1.6617 - acc: 0.2455

3121/3121 [==============================] - 519s 166ms/step - loss: 1.6619 - acc: 0.2464 - val\_loss: 1.6490 - val\_acc: 0.2544

Epoch 3/15

  70/3121 [..............................] - ETA: 8:56 - loss: 1.7544 - acc: 0.1857

 140/3121 [>.............................] - ETA: 7:54 - loss: 1.6795 - acc: 0.2357

 210/3121 [=>............................] - ETA: 7:31 - loss: 1.6797 - acc: 0.2333

 280/3121 [=>............................] - ETA: 7:10 - loss: 1.6848 - acc: 0.2429

 350/3121 [==>...........................] - ETA: 6:56 - loss: 1.6619 - acc: 0.2486

 420/3121 [===>..........................] - ETA: 6:43 - loss: 1.6621 - acc: 0.2357

 490/3121 [===>..........................] - ETA: 6:31 - loss: 1.6476 - acc: 0.2490

 560/3121 [====>.........................] - ETA: 6:19 - loss: 1.6563 - acc: 0.2500

 630/3121 [=====>........................] - ETA: 6:08 - loss: 1.6532 - acc: 0.2476

 700/3121 [=====>........................] - ETA: 5:58 - loss: 1.6556 - acc: 0.2371

 770/3121 [======>.......................] - ETA: 5:48 - loss: 1.6488 - acc: 0.2468

 840/3121 [=======>......................] - ETA: 5:37 - loss: 1.6495 - acc: 0.2429

 910/3121 [=======>......................] - ETA: 5:27 - loss: 1.6457 - acc: 0.2440

 980/3121 [========>.....................] - ETA: 5:17 - loss: 1.6390 - acc: 0.2480

1050/3121 [=========>....................] - ETA: 5:06 - loss: 1.6389 - acc: 0.2514

1120/3121 [=========>....................] - ETA: 4:55 - loss: 1.6383 - acc: 0.2518

1190/3121 [==========>...................] - ETA: 4:44 - loss: 1.6383 - acc: 0.2546

1260/3121 [===========>..................] - ETA: 4:33 - loss: 1.6460 - acc: 0.2524

1330/3121 [===========>..................] - ETA: 4:23 - loss: 1.6441 - acc: 0.2504

1400/3121 [============>.................] - ETA: 4:12 - loss: 1.6407 - acc: 0.2557

1470/3121 [=============>................] - ETA: 4:02 - loss: 1.6451 - acc: 0.2558

1540/3121 [=============>................] - ETA: 3:51 - loss: 1.6497 - acc: 0.2558

1610/3121 [==============>...............] - ETA: 3:41 - loss: 1.6535 - acc: 0.2547

1680/3121 [===============>..............] - ETA: 3:30 - loss: 1.6550 - acc: 0.2536

1750/3121 [===============>..............] - ETA: 3:20 - loss: 1.6547 - acc: 0.2549

1820/3121 [================>.............] - ETA: 3:11 - loss: 1.6561 - acc: 0.2522

1890/3121 [=================>............] - ETA: 3:01 - loss: 1.6551 - acc: 0.2513

1960/3121 [=================>............] - ETA: 2:50 - loss: 1.6541 - acc: 0.2520

2030/3121 [==================>...........] - ETA: 2:40 - loss: 1.6545 - acc: 0.2542

2100/3121 [===================>..........] - ETA: 2:30 - loss: 1.6532 - acc: 0.2562

2170/3121 [===================>..........] - ETA: 2:20 - loss: 1.6528 - acc: 0.2576

2240/3121 [====================>.........] - ETA: 2:09 - loss: 1.6524 - acc: 0.2576

2310/3121 [=====================>........] - ETA: 1:59 - loss: 1.6511 - acc: 0.2576

2380/3121 [=====================>........] - ETA: 1:49 - loss: 1.6503 - acc: 0.2571

2450/3121 [======================>.......] - ETA: 1:38 - loss: 1.6503 - acc: 0.2571

2520/3121 [=======================>......] - ETA: 1:28 - loss: 1.6516 - acc: 0.2560

2590/3121 [=======================>......] - ETA: 1:18 - loss: 1.6515 - acc: 0.2564

2660/3121 [========================>.....] - ETA: 1:07 - loss: 1.6529 - acc: 0.2556

2730/3121 [=========================>....] - ETA: 57s - loss: 1.6531 - acc: 0.2546

2800/3121 [=========================>....] - ETA: 47s - loss: 1.6523 - acc: 0.2557

2870/3121 [==========================>...] - ETA: 36s - loss: 1.6547 - acc: 0.2551

2940/3121 [===========================>..] - ETA: 26s - loss: 1.6552 - acc: 0.2544

3010/3121 [===========================>..] - ETA: 16s - loss: 1.6545 - acc: 0.2535

3080/3121 [============================>.] - ETA: 6s - loss: 1.6555 - acc: 0.2532

3121/3121 [==============================] - 483s 155ms/step - loss: 1.6556 - acc: 0.2538 - val\_loss: 1.6555 - val\_acc: 0.2432

Epoch 4/15

  70/3121 [..............................] - ETA: 8:51 - loss: 1.7092 - acc: 0.2714

 140/3121 [>.............................] - ETA: 7:57 - loss: 1.6634 - acc: 0.2500

 210/3121 [=>............................] - ETA: 7:41 - loss: 1.6730 - acc: 0.2905

 280/3121 [=>............................] - ETA: 7:32 - loss: 1.6705 - acc: 0.2607

 350/3121 [==>...........................] - ETA: 7:21 - loss: 1.6582 - acc: 0.2800

 420/3121 [===>..........................] - ETA: 7:05 - loss: 1.6546 - acc: 0.2619

 490/3121 [===>..........................] - ETA: 6:50 - loss: 1.6633 - acc: 0.2469

 560/3121 [====>.........................] - ETA: 6:36 - loss: 1.6609 - acc: 0.2411

 630/3121 [=====>........................] - ETA: 6:24 - loss: 1.6611 - acc: 0.2429

 700/3121 [=====>........................] - ETA: 6:12 - loss: 1.6623 - acc: 0.2386

 770/3121 [======>.......................] - ETA: 6:01 - loss: 1.6586 - acc: 0.2416

 840/3121 [=======>......................] - ETA: 5:48 - loss: 1.6618 - acc: 0.2429

 910/3121 [=======>......................] - ETA: 5:37 - loss: 1.6596 - acc: 0.2473

 980/3121 [========>.....................] - ETA: 5:26 - loss: 1.6634 - acc: 0.2480

1050/3121 [=========>....................] - ETA: 5:14 - loss: 1.6600 - acc: 0.2562

1120/3121 [=========>....................] - ETA: 5:03 - loss: 1.6548 - acc: 0.2634

1190/3121 [==========>...................] - ETA: 4:52 - loss: 1.6594 - acc: 0.2597

1260/3121 [===========>..................] - ETA: 4:41 - loss: 1.6647 - acc: 0.2571

1330/3121 [===========>..................] - ETA: 4:31 - loss: 1.6626 - acc: 0.2564

1400/3121 [============>.................] - ETA: 4:19 - loss: 1.6611 - acc: 0.2536

1470/3121 [=============>................] - ETA: 4:09 - loss: 1.6604 - acc: 0.2537

1540/3121 [=============>................] - ETA: 3:59 - loss: 1.6586 - acc: 0.2558

1610/3121 [==============>...............] - ETA: 3:48 - loss: 1.6598 - acc: 0.2547

1680/3121 [===============>..............] - ETA: 3:37 - loss: 1.6559 - acc: 0.2554

1750/3121 [===============>..............] - ETA: 3:27 - loss: 1.6537 - acc: 0.2577

1820/3121 [================>.............] - ETA: 3:16 - loss: 1.6542 - acc: 0.2593

1890/3121 [=================>............] - ETA: 3:05 - loss: 1.6550 - acc: 0.2556

1960/3121 [=================>............] - ETA: 2:54 - loss: 1.6544 - acc: 0.2556

2030/3121 [==================>...........] - ETA: 2:43 - loss: 1.6511 - acc: 0.2571

2100/3121 [===================>..........] - ETA: 2:32 - loss: 1.6493 - acc: 0.2586

2170/3121 [===================>..........] - ETA: 2:21 - loss: 1.6503 - acc: 0.2571

2240/3121 [====================>.........] - ETA: 2:11 - loss: 1.6475 - acc: 0.2607

2310/3121 [=====================>........] - ETA: 2:00 - loss: 1.6482 - acc: 0.2602

2380/3121 [=====================>........] - ETA: 1:50 - loss: 1.6457 - acc: 0.2605

2450/3121 [======================>.......] - ETA: 1:39 - loss: 1.6466 - acc: 0.2624

2520/3121 [=======================>......] - ETA: 1:29 - loss: 1.6466 - acc: 0.2603

2590/3121 [=======================>......] - ETA: 1:19 - loss: 1.6464 - acc: 0.2618

2660/3121 [========================>.....] - ETA: 1:08 - loss: 1.6464 - acc: 0.2617

2730/3121 [=========================>....] - ETA: 58s - loss: 1.6465 - acc: 0.2608

2800/3121 [=========================>....] - ETA: 1:08 - loss: 1.6482 - acc: 0.2579

2870/3121 [==========================>...] - ETA: 53s - loss: 1.6477 - acc: 0.2585

2940/3121 [===========================>..] - ETA: 38s - loss: 1.6467 - acc: 0.2585

3010/3121 [===========================>..] - ETA: 23s - loss: 1.6470 - acc: 0.2578

3080/3121 [============================>.] - ETA: 8s - loss: 1.6477 - acc: 0.2581

3121/3121 [==============================] - 673s 216ms/step - loss: 1.6492 - acc: 0.2573 - val\_loss: 1.6404 - val\_acc: 0.2672

Epoch 5/15

  70/3121 [..............................] - ETA: 9:07 - loss: 1.6368 - acc: 0.2571

 140/3121 [>.............................] - ETA: 8:05 - loss: 1.6201 - acc: 0.2429

 210/3121 [=>............................] - ETA: 7:45 - loss: 1.6206 - acc: 0.2524

 280/3121 [=>............................] - ETA: 7:26 - loss: 1.6208 - acc: 0.2786

 350/3121 [==>...........................] - ETA: 7:11 - loss: 1.6296 - acc: 0.2800

 420/3121 [===>..........................] - ETA: 6:55 - loss: 1.6314 - acc: 0.2690

 490/3121 [===>..........................] - ETA: 6:42 - loss: 1.6323 - acc: 0.2633

 560/3121 [====>.........................] - ETA: 6:31 - loss: 1.6455 - acc: 0.2500

 630/3121 [=====>........................] - ETA: 6:18 - loss: 1.6413 - acc: 0.2540

 700/3121 [=====>........................] - ETA: 6:03 - loss: 1.6382 - acc: 0.2543

 770/3121 [======>.......................] - ETA: 5:52 - loss: 1.6348 - acc: 0.2649

 840/3121 [=======>......................] - ETA: 5:41 - loss: 1.6299 - acc: 0.2655

 910/3121 [=======>......................] - ETA: 5:29 - loss: 1.6274 - acc: 0.2637

 980/3121 [========>.....................] - ETA: 5:19 - loss: 1.6266 - acc: 0.2673

1050/3121 [=========>....................] - ETA: 5:08 - loss: 1.6305 - acc: 0.2610

1120/3121 [=========>....................] - ETA: 4:58 - loss: 1.6324 - acc: 0.2625

1190/3121 [==========>...................] - ETA: 4:47 - loss: 1.6334 - acc: 0.2622

1260/3121 [===========>..................] - ETA: 4:35 - loss: 1.6316 - acc: 0.2651

1330/3121 [===========>..................] - ETA: 4:25 - loss: 1.6274 - acc: 0.2722

1400/3121 [============>.................] - ETA: 4:15 - loss: 1.6302 - acc: 0.2671

1470/3121 [=============>................] - ETA: 4:04 - loss: 1.6290 - acc: 0.2667

1540/3121 [=============>................] - ETA: 3:53 - loss: 1.6286 - acc: 0.2656

1610/3121 [==============>...............] - ETA: 3:43 - loss: 1.6283 - acc: 0.2652

1680/3121 [===============>..............] - ETA: 3:33 - loss: 1.6292 - acc: 0.2661

1750/3121 [===============>..............] - ETA: 3:24 - loss: 1.6311 - acc: 0.2646

1820/3121 [================>.............] - ETA: 3:14 - loss: 1.6334 - acc: 0.2676

1890/3121 [=================>............] - ETA: 3:03 - loss: 1.6350 - acc: 0.2667

1960/3121 [=================>............] - ETA: 2:52 - loss: 1.6341 - acc: 0.2653

2030/3121 [==================>...........] - ETA: 2:42 - loss: 1.6346 - acc: 0.2650

2100/3121 [===================>..........] - ETA: 2:32 - loss: 1.6321 - acc: 0.2676

2170/3121 [===================>..........] - ETA: 2:21 - loss: 1.6316 - acc: 0.2687

2240/3121 [====================>.........] - ETA: 2:11 - loss: 1.6331 - acc: 0.2728

2310/3121 [=====================>........] - ETA: 2:01 - loss: 1.6323 - acc: 0.2740

2380/3121 [=====================>........] - ETA: 1:50 - loss: 1.6320 - acc: 0.2727

2450/3121 [======================>.......] - ETA: 1:40 - loss: 1.6345 - acc: 0.2727

2520/3121 [=======================>......] - ETA: 1:29 - loss: 1.6397 - acc: 0.2698

2590/3121 [=======================>......] - ETA: 1:19 - loss: 1.6384 - acc: 0.2722

2660/3121 [========================>.....] - ETA: 1:08 - loss: 1.6369 - acc: 0.2722

2730/3121 [=========================>....] - ETA: 58s - loss: 1.6356 - acc: 0.2740

2800/3121 [=========================>....] - ETA: 47s - loss: 1.6368 - acc: 0.2721

2870/3121 [==========================>...] - ETA: 37s - loss: 1.6364 - acc: 0.2718

2940/3121 [===========================>..] - ETA: 27s - loss: 1.6378 - acc: 0.2711

3010/3121 [===========================>..] - ETA: 16s - loss: 1.6352 - acc: 0.2728

3080/3121 [============================>.] - ETA: 6s - loss: 1.6357 - acc: 0.2705

3121/3121 [==============================] - 491s 157ms/step - loss: 1.6356 - acc: 0.2698 - val\_loss: 1.6134 - val\_acc: 0.2752

Epoch 6/15

  70/3121 [..............................] - ETA: 8:56 - loss: 1.6120 - acc: 0.3000

 140/3121 [>.............................] - ETA: 8:02 - loss: 1.6017 - acc: 0.3071

 210/3121 [=>............................] - ETA: 7:39 - loss: 1.6150 - acc: 0.2762

 280/3121 [=>............................] - ETA: 7:28 - loss: 1.6027 - acc: 0.2893

 350/3121 [==>...........................] - ETA: 7:16 - loss: 1.6104 - acc: 0.2714

 420/3121 [===>..........................] - ETA: 7:13 - loss: 1.6058 - acc: 0.2810

 490/3121 [===>..........................] - ETA: 6:58 - loss: 1.5969 - acc: 0.2837

 560/3121 [====>.........................] - ETA: 12:27 - loss: 1.5920 - acc: 0.2839

 630/3121 [=====>........................] - ETA: 11:32 - loss: 1.6020 - acc: 0.2762

 700/3121 [=====>........................] - ETA: 10:41 - loss: 1.6081 - acc: 0.2800

 770/3121 [======>.......................] - ETA: 9:56 - loss: 1.6012 - acc: 0.2766

 840/3121 [=======>......................] - ETA: 9:17 - loss: 1.5977 - acc: 0.2798

 910/3121 [=======>......................] - ETA: 8:43 - loss: 1.5936 - acc: 0.2835

 980/3121 [========>.....................] - ETA: 8:13 - loss: 1.5901 - acc: 0.2857

1050/3121 [=========>....................] - ETA: 7:44 - loss: 1.5879 - acc: 0.2933

1120/3121 [=========>....................] - ETA: 7:18 - loss: 1.5870 - acc: 0.2964

1190/3121 [==========>...................] - ETA: 6:54 - loss: 1.5827 - acc: 0.2958

1260/3121 [===========>..................] - ETA: 6:32 - loss: 1.5842 - acc: 0.2929

1330/3121 [===========>..................] - ETA: 6:11 - loss: 1.5832 - acc: 0.2955

1400/3121 [============>.................] - ETA: 5:50 - loss: 1.5821 - acc: 0.2921

1470/3121 [=============>................] - ETA: 5:31 - loss: 1.5869 - acc: 0.2905

1540/3121 [=============>................] - ETA: 5:13 - loss: 1.5918 - acc: 0.2890

1610/3121 [==============>...............] - ETA: 4:54 - loss: 1.5895 - acc: 0.2944

1680/3121 [===============>..............] - ETA: 4:38 - loss: 1.5883 - acc: 0.2994

1750/3121 [===============>..............] - ETA: 4:21 - loss: 1.5861 - acc: 0.3011

1820/3121 [================>.............] - ETA: 4:06 - loss: 1.5832 - acc: 0.3055

1890/3121 [=================>............] - ETA: 3:50 - loss: 1.5852 - acc: 0.3037

1960/3121 [=================>............] - ETA: 3:35 - loss: 1.5819 - acc: 0.3071

2030/3121 [==================>...........] - ETA: 3:21 - loss: 1.5848 - acc: 0.3054

2100/3121 [===================>..........] - ETA: 3:06 - loss: 1.5857 - acc: 0.3038

2170/3121 [===================>..........] - ETA: 2:52 - loss: 1.5851 - acc: 0.3041

2240/3121 [====================>.........] - ETA: 2:39 - loss: 1.5872 - acc: 0.3067

2310/3121 [=====================>........] - ETA: 2:25 - loss: 1.5892 - acc: 0.3065

2380/3121 [=====================>........] - ETA: 2:12 - loss: 1.5925 - acc: 0.3042

2450/3121 [======================>.......] - ETA: 1:58 - loss: 1.5936 - acc: 0.3029

2520/3121 [=======================>......] - ETA: 1:45 - loss: 1.5940 - acc: 0.3012

2590/3121 [=======================>......] - ETA: 1:33 - loss: 1.5919 - acc: 0.3008

2660/3121 [========================>.....] - ETA: 1:20 - loss: 1.5958 - acc: 0.3008

2730/3121 [=========================>....] - ETA: 1:07 - loss: 1.5978 - acc: 0.3004

2800/3121 [=========================>....] - ETA: 55s - loss: 1.6012 - acc: 0.2982

2870/3121 [==========================>...] - ETA: 43s - loss: 1.6008 - acc: 0.3000

2940/3121 [===========================>..] - ETA: 31s - loss: 1.6032 - acc: 0.2986

3010/3121 [===========================>..] - ETA: 19s - loss: 1.6021 - acc: 0.2987

3080/3121 [============================>.] - ETA: 7s - loss: 1.6034 - acc: 0.2971

3121/3121 [==============================] - 557s 178ms/step - loss: 1.6040 - acc: 0.2980 - val\_loss: 1.6251 - val\_acc: 0.3008

Epoch 7/15

  70/3121 [..............................] - ETA: 9:00 - loss: 1.6173 - acc: 0.3286

 140/3121 [>.............................] - ETA: 8:11 - loss: 1.6598 - acc: 0.2929

 210/3121 [=>............................] - ETA: 7:39 - loss: 1.6460 - acc: 0.2857

 280/3121 [=>............................] - ETA: 7:19 - loss: 1.6272 - acc: 0.2893

 350/3121 [==>...........................] - ETA: 7:01 - loss: 1.6136 - acc: 0.2857

 420/3121 [===>..........................] - ETA: 6:48 - loss: 1.6231 - acc: 0.2714

 490/3121 [===>..........................] - ETA: 6:34 - loss: 1.6181 - acc: 0.2755

 560/3121 [====>.........................] - ETA: 6:21 - loss: 1.6086 - acc: 0.2821

 630/3121 [=====>........................] - ETA: 6:09 - loss: 1.5941 - acc: 0.2984

 700/3121 [=====>........................] - ETA: 5:57 - loss: 1.5860 - acc: 0.3071

 770/3121 [======>.......................] - ETA: 5:46 - loss: 1.5796 - acc: 0.3091

 840/3121 [=======>......................] - ETA: 5:35 - loss: 1.5735 - acc: 0.3119

 910/3121 [=======>......................] - ETA: 5:24 - loss: 1.5708 - acc: 0.3110

 980/3121 [========>.....................] - ETA: 5:13 - loss: 1.5734 - acc: 0.3092

1050/3121 [=========>....................] - ETA: 5:02 - loss: 1.5639 - acc: 0.3152

1120/3121 [=========>....................] - ETA: 4:51 - loss: 1.5617 - acc: 0.3170

1190/3121 [==========>...................] - ETA: 4:41 - loss: 1.5636 - acc: 0.3193

1260/3121 [===========>..................] - ETA: 4:31 - loss: 1.5594 - acc: 0.3254

1330/3121 [===========>..................] - ETA: 4:20 - loss: 1.5621 - acc: 0.3286

1400/3121 [============>.................] - ETA: 4:09 - loss: 1.5642 - acc: 0.3243

1470/3121 [=============>................] - ETA: 3:59 - loss: 1.5577 - acc: 0.3299

1540/3121 [=============>................] - ETA: 3:49 - loss: 1.5617 - acc: 0.3286

1610/3121 [==============>...............] - ETA: 3:40 - loss: 1.5637 - acc: 0.3261

1680/3121 [===============>..............] - ETA: 3:30 - loss: 1.5610 - acc: 0.3262

1750/3121 [===============>..............] - ETA: 3:44 - loss: 1.5623 - acc: 0.3251

1820/3121 [================>.............] - ETA: 3:33 - loss: 1.5637 - acc: 0.3214

1890/3121 [=================>............] - ETA: 3:21 - loss: 1.5623 - acc: 0.3243

1960/3121 [=================>............] - ETA: 3:09 - loss: 1.5684 - acc: 0.3199

2030/3121 [==================>...........] - ETA: 2:57 - loss: 1.5655 - acc: 0.3236

2100/3121 [===================>..........] - ETA: 2:45 - loss: 1.5643 - acc: 0.3252

2170/3121 [===================>..........] - ETA: 2:33 - loss: 1.5629 - acc: 0.3249

2240/3121 [====================>.........] - ETA: 2:22 - loss: 1.5620 - acc: 0.3263

2310/3121 [=====================>........] - ETA: 2:10 - loss: 1.5581 - acc: 0.3316

2380/3121 [=====================>........] - ETA: 1:58 - loss: 1.5575 - acc: 0.3332

2450/3121 [======================>.......] - ETA: 1:47 - loss: 1.5556 - acc: 0.3335

2520/3121 [=======================>......] - ETA: 1:35 - loss: 1.5523 - acc: 0.3353

2590/3121 [=======================>......] - ETA: 1:24 - loss: 1.5536 - acc: 0.3347

2660/3121 [========================>.....] - ETA: 1:13 - loss: 1.5560 - acc: 0.3331

2730/3121 [=========================>....] - ETA: 1:02 - loss: 1.5575 - acc: 0.3330

2800/3121 [=========================>....] - ETA: 50s - loss: 1.5571 - acc: 0.3318

2870/3121 [==========================>...] - ETA: 39s - loss: 1.5544 - acc: 0.3338

2940/3121 [===========================>..] - ETA: 28s - loss: 1.5522 - acc: 0.3340

3010/3121 [===========================>..] - ETA: 17s - loss: 1.5540 - acc: 0.3346

3080/3121 [============================>.] - ETA: 6s - loss: 1.5494 - acc: 0.3377

3121/3121 [==============================] - 523s 168ms/step - loss: 1.5499 - acc: 0.3361 - val\_loss: 1.4599 - val\_acc: 0.3904

Epoch 8/15

  70/3121 [..............................] - ETA: 9:56 - loss: 1.4434 - acc: 0.3714

 140/3121 [>.............................] - ETA: 8:35 - loss: 1.5033 - acc: 0.3643

 210/3121 [=>............................] - ETA: 7:55 - loss: 1.4722 - acc: 0.3619

 280/3121 [=>............................] - ETA: 8:04 - loss: 1.4596 - acc: 0.3786

 350/3121 [==>...........................] - ETA: 7:48 - loss: 1.4380 - acc: 0.3886

 420/3121 [===>..........................] - ETA: 7:45 - loss: 1.4371 - acc: 0.3881

 490/3121 [===>..........................] - ETA: 7:35 - loss: 1.4211 - acc: 0.3980

 560/3121 [====>.........................] - ETA: 7:27 - loss: 1.4109 - acc: 0.4071

 630/3121 [=====>........................] - ETA: 7:28 - loss: 1.4114 - acc: 0.4095

 700/3121 [=====>........................] - ETA: 7:17 - loss: 1.4244 - acc: 0.4071

 770/3121 [======>.......................] - ETA: 6:59 - loss: 1.4414 - acc: 0.4000

 840/3121 [=======>......................] - ETA: 6:40 - loss: 1.4374 - acc: 0.4048

 910/3121 [=======>......................] - ETA: 6:27 - loss: 1.4449 - acc: 0.4055

 980/3121 [========>.....................] - ETA: 6:12 - loss: 1.4428 - acc: 0.4071

1050/3121 [=========>....................] - ETA: 5:59 - loss: 1.4433 - acc: 0.4029

1120/3121 [=========>....................] - ETA: 5:47 - loss: 1.4452 - acc: 0.4009

1190/3121 [==========>...................] - ETA: 5:33 - loss: 1.4491 - acc: 0.3983

1260/3121 [===========>..................] - ETA: 5:20 - loss: 1.4428 - acc: 0.4016

1330/3121 [===========>..................] - ETA: 5:12 - loss: 1.4420 - acc: 0.4015

1400/3121 [============>.................] - ETA: 5:03 - loss: 1.4463 - acc: 0.3979

1470/3121 [=============>................] - ETA: 4:51 - loss: 1.4474 - acc: 0.3973

1540/3121 [=============>................] - ETA: 4:39 - loss: 1.4425 - acc: 0.4006

1610/3121 [==============>...............] - ETA: 4:26 - loss: 1.4433 - acc: 0.4006

1680/3121 [===============>..............] - ETA: 4:12 - loss: 1.4416 - acc: 0.4048

1750/3121 [===============>..............] - ETA: 3:59 - loss: 1.4465 - acc: 0.4017

1820/3121 [================>.............] - ETA: 3:46 - loss: 1.4474 - acc: 0.3995

1890/3121 [=================>............] - ETA: 3:32 - loss: 1.4496 - acc: 0.3942

1960/3121 [=================>............] - ETA: 3:18 - loss: 1.4466 - acc: 0.3944

2030/3121 [==================>...........] - ETA: 3:05 - loss: 1.4479 - acc: 0.3926

2100/3121 [===================>..........] - ETA: 2:53 - loss: 1.4467 - acc: 0.3929

2170/3121 [===================>..........] - ETA: 2:40 - loss: 1.4437 - acc: 0.3954

2240/3121 [====================>.........] - ETA: 2:28 - loss: 1.4413 - acc: 0.3955

2310/3121 [=====================>........] - ETA: 2:16 - loss: 1.4395 - acc: 0.3970

2380/3121 [=====================>........] - ETA: 2:03 - loss: 1.4358 - acc: 0.3987

2450/3121 [======================>.......] - ETA: 1:51 - loss: 1.4367 - acc: 0.4004

2520/3121 [=======================>......] - ETA: 1:39 - loss: 1.4369 - acc: 0.4012

2590/3121 [=======================>......] - ETA: 1:27 - loss: 1.4395 - acc: 0.3988

2660/3121 [========================>.....] - ETA: 1:15 - loss: 1.4395 - acc: 0.3974

2730/3121 [=========================>....] - ETA: 1:04 - loss: 1.4399 - acc: 0.3971

2800/3121 [=========================>....] - ETA: 52s - loss: 1.4401 - acc: 0.3968

2870/3121 [==========================>...] - ETA: 41s - loss: 1.4380 - acc: 0.3983

2940/3121 [===========================>..] - ETA: 29s - loss: 1.4372 - acc: 0.3993

3010/3121 [===========================>..] - ETA: 18s - loss: 1.4371 - acc: 0.3997

3080/3121 [============================>.] - ETA: 6s - loss: 1.4387 - acc: 0.3977

3121/3121 [==============================] - 532s 170ms/step - loss: 1.4395 - acc: 0.3983 - val\_loss: 1.3376 - val\_acc: 0.4400

Epoch 9/15

  70/3121 [..............................] - ETA: 9:18 - loss: 1.4950 - acc: 0.3571

 140/3121 [>.............................] - ETA: 8:14 - loss: 1.4424 - acc: 0.4071

 210/3121 [=>............................] - ETA: 7:43 - loss: 1.3800 - acc: 0.4476

 280/3121 [=>............................] - ETA: 7:24 - loss: 1.4102 - acc: 0.4429

 350/3121 [==>...........................] - ETA: 7:03 - loss: 1.3949 - acc: 0.4600

 420/3121 [===>..........................] - ETA: 7:00 - loss: 1.3775 - acc: 0.4667

 490/3121 [===>..........................] - ETA: 6:46 - loss: 1.3672 - acc: 0.4735

 560/3121 [====>.........................] - ETA: 6:33 - loss: 1.3594 - acc: 0.4696

 630/3121 [=====>........................] - ETA: 6:17 - loss: 1.3553 - acc: 0.4683

 700/3121 [=====>........................] - ETA: 6:04 - loss: 1.3580 - acc: 0.4614

 770/3121 [======>.......................] - ETA: 5:52 - loss: 1.3544 - acc: 0.4610

 840/3121 [=======>......................] - ETA: 5:41 - loss: 1.3427 - acc: 0.4607

 910/3121 [=======>......................] - ETA: 5:29 - loss: 1.3291 - acc: 0.4681

 980/3121 [========>.....................] - ETA: 5:21 - loss: 1.3168 - acc: 0.4724

1050/3121 [=========>....................] - ETA: 5:10 - loss: 1.3132 - acc: 0.4695

1120/3121 [=========>....................] - ETA: 4:59 - loss: 1.3031 - acc: 0.4750

1190/3121 [==========>...................] - ETA: 4:50 - loss: 1.2944 - acc: 0.4807

1260/3121 [===========>..................] - ETA: 4:39 - loss: 1.2809 - acc: 0.4889

1330/3121 [===========>..................] - ETA: 4:27 - loss: 1.2830 - acc: 0.4872

1400/3121 [============>.................] - ETA: 4:16 - loss: 1.2788 - acc: 0.4893

1470/3121 [=============>................] - ETA: 4:05 - loss: 1.2783 - acc: 0.4864

1540/3121 [=============>................] - ETA: 3:54 - loss: 1.2758 - acc: 0.4857

1610/3121 [==============>...............] - ETA: 3:44 - loss: 1.2758 - acc: 0.4863

1680/3121 [===============>..............] - ETA: 3:34 - loss: 1.2737 - acc: 0.4899

1750/3121 [===============>..............] - ETA: 3:23 - loss: 1.2694 - acc: 0.4914

1820/3121 [================>.............] - ETA: 3:13 - loss: 1.2661 - acc: 0.4907

1890/3121 [=================>............] - ETA: 3:02 - loss: 1.2668 - acc: 0.4899

1960/3121 [=================>............] - ETA: 2:51 - loss: 1.2672 - acc: 0.4883

2030/3121 [==================>...........] - ETA: 2:41 - loss: 1.2698 - acc: 0.4862

2100/3121 [===================>..........] - ETA: 2:31 - loss: 1.2735 - acc: 0.4838

2170/3121 [===================>..........] - ETA: 2:20 - loss: 1.2731 - acc: 0.4853

2240/3121 [====================>.........] - ETA: 2:10 - loss: 1.2761 - acc: 0.4857

2310/3121 [=====================>........] - ETA: 1:59 - loss: 1.2763 - acc: 0.4848

2380/3121 [=====================>........] - ETA: 1:49 - loss: 1.2730 - acc: 0.4861

2450/3121 [======================>.......] - ETA: 1:39 - loss: 1.2769 - acc: 0.4853

2520/3121 [=======================>......] - ETA: 1:29 - loss: 1.2743 - acc: 0.4857

2590/3121 [=======================>......] - ETA: 1:18 - loss: 1.2727 - acc: 0.4857

2660/3121 [========================>.....] - ETA: 1:08 - loss: 1.2752 - acc: 0.4846

2730/3121 [=========================>....] - ETA: 57s - loss: 1.2746 - acc: 0.4857

2800/3121 [=========================>....] - ETA: 47s - loss: 1.2762 - acc: 0.4843

2870/3121 [==========================>...] - ETA: 37s - loss: 1.2801 - acc: 0.4829

2940/3121 [===========================>..] - ETA: 26s - loss: 1.2843 - acc: 0.4816

3010/3121 [===========================>..] - ETA: 16s - loss: 1.2846 - acc: 0.4814

3080/3121 [============================>.] - ETA: 6s - loss: 1.2837 - acc: 0.4812

3121/3121 [==============================] - 485s 156ms/step - loss: 1.2860 - acc: 0.4797 - val\_loss: 1.1106 - val\_acc: 0.5552

Epoch 10/15

  70/3121 [..............................] - ETA: 8:45 - loss: 1.1208 - acc: 0.6143

 140/3121 [>.............................] - ETA: 7:56 - loss: 1.0607 - acc: 0.6357

 210/3121 [=>............................] - ETA: 7:33 - loss: 1.0802 - acc: 0.6143

 280/3121 [=>............................] - ETA: 7:14 - loss: 1.0611 - acc: 0.6214

 350/3121 [==>...........................] - ETA: 7:00 - loss: 1.0189 - acc: 0.6371

 420/3121 [===>..........................] - ETA: 6:46 - loss: 1.0220 - acc: 0.6357

 490/3121 [===>..........................] - ETA: 6:34 - loss: 1.0434 - acc: 0.6286

 560/3121 [====>.........................] - ETA: 6:22 - loss: 1.0344 - acc: 0.6321

 630/3121 [=====>........................] - ETA: 6:10 - loss: 1.0319 - acc: 0.6333

 700/3121 [=====>........................] - ETA: 5:56 - loss: 1.0387 - acc: 0.6257

 770/3121 [======>.......................] - ETA: 5:44 - loss: 1.0288 - acc: 0.6351

 840/3121 [=======>......................] - ETA: 5:33 - loss: 1.0236 - acc: 0.6345

 910/3121 [=======>......................] - ETA: 5:23 - loss: 1.0257 - acc: 0.6297

 980/3121 [========>.....................] - ETA: 5:12 - loss: 1.0270 - acc: 0.6235

1050/3121 [=========>....................] - ETA: 5:02 - loss: 1.0291 - acc: 0.6190

1120/3121 [=========>....................] - ETA: 4:52 - loss: 1.0266 - acc: 0.6125

1190/3121 [==========>...................] - ETA: 4:41 - loss: 1.0205 - acc: 0.6151

1260/3121 [===========>..................] - ETA: 4:31 - loss: 1.0203 - acc: 0.6167

1330/3121 [===========>..................] - ETA: 4:20 - loss: 1.0256 - acc: 0.6150

1400/3121 [============>.................] - ETA: 4:10 - loss: 1.0346 - acc: 0.6093

1470/3121 [=============>................] - ETA: 4:00 - loss: 1.0283 - acc: 0.6116

1540/3121 [=============>................] - ETA: 3:50 - loss: 1.0320 - acc: 0.6084

1610/3121 [==============>...............] - ETA: 3:40 - loss: 1.0300 - acc: 0.6099

1680/3121 [===============>..............] - ETA: 3:30 - loss: 1.0337 - acc: 0.6065

1750/3121 [===============>..............] - ETA: 3:20 - loss: 1.0317 - acc: 0.6080

1820/3121 [================>.............] - ETA: 3:10 - loss: 1.0336 - acc: 0.6071

1890/3121 [=================>............] - ETA: 3:00 - loss: 1.0330 - acc: 0.6037

1960/3121 [=================>............] - ETA: 2:50 - loss: 1.0409 - acc: 0.6015

2030/3121 [==================>...........] - ETA: 2:40 - loss: 1.0407 - acc: 0.6025

2100/3121 [===================>..........] - ETA: 2:29 - loss: 1.0396 - acc: 0.6014

2170/3121 [===================>..........] - ETA: 2:19 - loss: 1.0408 - acc: 0.6023

2240/3121 [====================>.........] - ETA: 2:09 - loss: 1.0480 - acc: 0.5978

2310/3121 [=====================>........] - ETA: 1:58 - loss: 1.0556 - acc: 0.5952

2380/3121 [=====================>........] - ETA: 1:48 - loss: 1.0525 - acc: 0.5950

2450/3121 [======================>.......] - ETA: 1:38 - loss: 1.0551 - acc: 0.5943

2520/3121 [=======================>......] - ETA: 1:28 - loss: 1.0572 - acc: 0.5925

2590/3121 [=======================>......] - ETA: 1:18 - loss: 1.0614 - acc: 0.5919

2660/3121 [========================>.....] - ETA: 1:07 - loss: 1.0631 - acc: 0.5898

2730/3121 [=========================>....] - ETA: 57s - loss: 1.0627 - acc: 0.5908

2800/3121 [=========================>....] - ETA: 47s - loss: 1.0624 - acc: 0.5907

2870/3121 [==========================>...] - ETA: 36s - loss: 1.0651 - acc: 0.5878

2940/3121 [===========================>..] - ETA: 26s - loss: 1.0654 - acc: 0.5874

3010/3121 [===========================>..] - ETA: 16s - loss: 1.0681 - acc: 0.5841

3080/3121 [============================>.] - ETA: 6s - loss: 1.0693 - acc: 0.5838

3121/3121 [==============================] - 482s 154ms/step - loss: 1.0686 - acc: 0.5835 - val\_loss: 0.8124 - val\_acc: 0.7136

Epoch 11/15

  70/3121 [..............................] - ETA: 9:10 - loss: 0.7915 - acc: 0.6571

 140/3121 [>.............................] - ETA: 8:12 - loss: 0.7247 - acc: 0.7357

 210/3121 [=>............................] - ETA: 7:40 - loss: 0.7361 - acc: 0.7238

 280/3121 [=>............................] - ETA: 7:23 - loss: 0.7370 - acc: 0.7357

 350/3121 [==>...........................] - ETA: 7:04 - loss: 0.7037 - acc: 0.7486

 420/3121 [===>..........................] - ETA: 6:50 - loss: 0.7281 - acc: 0.7381

 490/3121 [===>..........................] - ETA: 6:39 - loss: 0.7344 - acc: 0.7327

 560/3121 [====>.........................] - ETA: 6:30 - loss: 0.7617 - acc: 0.7143

 630/3121 [=====>........................] - ETA: 6:17 - loss: 0.7648 - acc: 0.7143

 700/3121 [=====>........................] - ETA: 6:04 - loss: 0.7697 - acc: 0.7157

 770/3121 [======>.......................] - ETA: 5:51 - loss: 0.7818 - acc: 0.7130

 840/3121 [=======>......................] - ETA: 5:40 - loss: 0.7984 - acc: 0.7036

 910/3121 [=======>......................] - ETA: 5:27 - loss: 0.7875 - acc: 0.7055

 980/3121 [========>.....................] - ETA: 5:16 - loss: 0.7827 - acc: 0.7041

1050/3121 [=========>....................] - ETA: 5:05 - loss: 0.7822 - acc: 0.7086

1120/3121 [=========>....................] - ETA: 4:54 - loss: 0.7885 - acc: 0.7071

1190/3121 [==========>...................] - ETA: 4:43 - loss: 0.7896 - acc: 0.7059

1260/3121 [===========>..................] - ETA: 4:32 - loss: 0.7885 - acc: 0.7056

1330/3121 [===========>..................] - ETA: 4:21 - loss: 0.7872 - acc: 0.7068

1400/3121 [============>.................] - ETA: 4:09 - loss: 0.7855 - acc: 0.7050

1470/3121 [=============>................] - ETA: 3:59 - loss: 0.7879 - acc: 0.7048

1540/3121 [=============>................] - ETA: 3:48 - loss: 0.7896 - acc: 0.7013

1610/3121 [==============>...............] - ETA: 3:38 - loss: 0.7862 - acc: 0.7012

1680/3121 [===============>..............] - ETA: 3:28 - loss: 0.7817 - acc: 0.7036

1750/3121 [===============>..............] - ETA: 3:17 - loss: 0.7871 - acc: 0.7023

1820/3121 [================>.............] - ETA: 3:07 - loss: 0.7909 - acc: 0.7016

1890/3121 [=================>............] - ETA: 2:56 - loss: 0.7921 - acc: 0.7021

1960/3121 [=================>............] - ETA: 2:46 - loss: 0.7880 - acc: 0.7020

2030/3121 [==================>...........] - ETA: 2:36 - loss: 0.7948 - acc: 0.6995

2100/3121 [===================>..........] - ETA: 2:26 - loss: 0.7981 - acc: 0.6990

2170/3121 [===================>..........] - ETA: 2:15 - loss: 0.7942 - acc: 0.7018

2240/3121 [====================>.........] - ETA: 2:05 - loss: 0.7999 - acc: 0.7000

2310/3121 [=====================>........] - ETA: 1:55 - loss: 0.8078 - acc: 0.6970

2380/3121 [=====================>........] - ETA: 1:45 - loss: 0.8093 - acc: 0.6954

2450/3121 [======================>.......] - ETA: 1:35 - loss: 0.8130 - acc: 0.6943

2520/3121 [=======================>......] - ETA: 1:25 - loss: 0.8142 - acc: 0.6925

2590/3121 [=======================>......] - ETA: 1:15 - loss: 0.8129 - acc: 0.6919

2660/3121 [========================>.....] - ETA: 1:05 - loss: 0.8133 - acc: 0.6917

2730/3121 [=========================>....] - ETA: 55s - loss: 0.8164 - acc: 0.6919

2800/3121 [=========================>....] - ETA: 45s - loss: 0.8166 - acc: 0.6929

2870/3121 [==========================>...] - ETA: 35s - loss: 0.8218 - acc: 0.6899

2940/3121 [===========================>..] - ETA: 25s - loss: 0.8265 - acc: 0.6881

3010/3121 [===========================>..] - ETA: 15s - loss: 0.8319 - acc: 0.6837

3080/3121 [============================>.] - ETA: 5s - loss: 0.8305 - acc: 0.6834

3121/3121 [==============================] - 468s 150ms/step - loss: 0.8329 - acc: 0.6822 - val\_loss: 0.6451 - val\_acc: 0.7952

Epoch 12/15

  70/3121 [..............................] - ETA: 7:52 - loss: 0.5794 - acc: 0.7714

 140/3121 [>.............................] - ETA: 7:23 - loss: 0.6917 - acc: 0.7429

 210/3121 [=>............................] - ETA: 7:15 - loss: 0.6851 - acc: 0.7571

 280/3121 [=>............................] - ETA: 7:04 - loss: 0.6565 - acc: 0.7607

 350/3121 [==>...........................] - ETA: 6:53 - loss: 0.6200 - acc: 0.7857

 420/3121 [===>..........................] - ETA: 6:40 - loss: 0.6330 - acc: 0.7738

 490/3121 [===>..........................] - ETA: 6:29 - loss: 0.6219 - acc: 0.7735

 560/3121 [====>.........................] - ETA: 6:14 - loss: 0.6402 - acc: 0.7643

 630/3121 [=====>........................] - ETA: 6:04 - loss: 0.6259 - acc: 0.7698

 700/3121 [=====>........................] - ETA: 5:54 - loss: 0.6125 - acc: 0.7786

 770/3121 [======>.......................] - ETA: 5:43 - loss: 0.6068 - acc: 0.7792

 840/3121 [=======>......................] - ETA: 5:33 - loss: 0.6059 - acc: 0.7750

 910/3121 [=======>......................] - ETA: 5:23 - loss: 0.6126 - acc: 0.7747

 980/3121 [========>.....................] - ETA: 5:12 - loss: 0.6227 - acc: 0.7714

1050/3121 [=========>....................] - ETA: 5:02 - loss: 0.6198 - acc: 0.7752

1120/3121 [=========>....................] - ETA: 4:51 - loss: 0.6142 - acc: 0.7777

1190/3121 [==========>...................] - ETA: 4:41 - loss: 0.6162 - acc: 0.7756

1260/3121 [===========>..................] - ETA: 4:30 - loss: 0.6147 - acc: 0.7786

1330/3121 [===========>..................] - ETA: 4:19 - loss: 0.6142 - acc: 0.7774

1400/3121 [============>.................] - ETA: 4:09 - loss: 0.6053 - acc: 0.7807

1470/3121 [=============>................] - ETA: 3:59 - loss: 0.5990 - acc: 0.7844

1540/3121 [=============>................] - ETA: 3:48 - loss: 0.5953 - acc: 0.7870

1610/3121 [==============>...............] - ETA: 3:38 - loss: 0.5983 - acc: 0.7857

1680/3121 [===============>..............] - ETA: 3:28 - loss: 0.5955 - acc: 0.7857

1750/3121 [===============>..............] - ETA: 3:17 - loss: 0.6005 - acc: 0.7840

1820/3121 [================>.............] - ETA: 3:07 - loss: 0.5972 - acc: 0.7857

1890/3121 [=================>............] - ETA: 2:57 - loss: 0.5978 - acc: 0.7862

1960/3121 [=================>............] - ETA: 2:47 - loss: 0.5951 - acc: 0.7862

2030/3121 [==================>...........] - ETA: 2:36 - loss: 0.5955 - acc: 0.7842

2100/3121 [===================>..........] - ETA: 2:26 - loss: 0.5964 - acc: 0.7829

2170/3121 [===================>..........] - ETA: 2:16 - loss: 0.5966 - acc: 0.7816

2240/3121 [====================>.........] - ETA: 2:06 - loss: 0.5954 - acc: 0.7821

2310/3121 [=====================>........] - ETA: 1:56 - loss: 0.5908 - acc: 0.7840

2380/3121 [=====================>........] - ETA: 1:46 - loss: 0.5930 - acc: 0.7819

2450/3121 [======================>.......] - ETA: 1:36 - loss: 0.5923 - acc: 0.7829

2520/3121 [=======================>......] - ETA: 1:26 - loss: 0.5965 - acc: 0.7810

2590/3121 [=======================>......] - ETA: 1:17 - loss: 0.5966 - acc: 0.7811

2660/3121 [========================>.....] - ETA: 1:07 - loss: 0.5927 - acc: 0.7831

2730/3121 [=========================>....] - ETA: 57s - loss: 0.5950 - acc: 0.7824

2800/3121 [=========================>....] - ETA: 47s - loss: 0.5966 - acc: 0.7818

2870/3121 [==========================>...] - ETA: 36s - loss: 0.6063 - acc: 0.7794

2940/3121 [===========================>..] - ETA: 26s - loss: 0.6059 - acc: 0.7796

3010/3121 [===========================>..] - ETA: 16s - loss: 0.6093 - acc: 0.7791

3080/3121 [============================>.] - ETA: 6s - loss: 0.6148 - acc: 0.7769

3121/3121 [==============================] - 484s 155ms/step - loss: 0.6160 - acc: 0.7760 - val\_loss: 0.4653 - val\_acc: 0.8560

Epoch 13/15

  70/3121 [..............................] - ETA: 8:49 - loss: 0.4618 - acc: 0.8714

 140/3121 [>.............................] - ETA: 8:00 - loss: 0.4859 - acc: 0.8643

 210/3121 [=>............................] - ETA: 7:33 - loss: 0.4646 - acc: 0.8714

 280/3121 [=>............................] - ETA: 7:21 - loss: 0.4697 - acc: 0.8679

 350/3121 [==>...........................] - ETA: 7:08 - loss: 0.4586 - acc: 0.8714

 420/3121 [===>..........................] - ETA: 6:53 - loss: 0.4571 - acc: 0.8667

 490/3121 [===>..........................] - ETA: 6:40 - loss: 0.4579 - acc: 0.8633

 560/3121 [====>.........................] - ETA: 6:26 - loss: 0.4480 - acc: 0.8625

 630/3121 [=====>........................] - ETA: 6:13 - loss: 0.4362 - acc: 0.8667

 700/3121 [=====>........................] - ETA: 6:02 - loss: 0.4365 - acc: 0.8671

 770/3121 [======>.......................] - ETA: 5:50 - loss: 0.4417 - acc: 0.8610

 840/3121 [=======>......................] - ETA: 5:39 - loss: 0.4317 - acc: 0.8667

 910/3121 [=======>......................] - ETA: 5:29 - loss: 0.4366 - acc: 0.8615

 980/3121 [========>.....................] - ETA: 5:20 - loss: 0.4408 - acc: 0.8602

1050/3121 [=========>....................] - ETA: 5:09 - loss: 0.4460 - acc: 0.8543

1120/3121 [=========>....................] - ETA: 4:59 - loss: 0.4419 - acc: 0.8554

1190/3121 [==========>...................] - ETA: 4:48 - loss: 0.4530 - acc: 0.8521

1260/3121 [===========>..................] - ETA: 4:38 - loss: 0.4465 - acc: 0.8540

1330/3121 [===========>..................] - ETA: 4:27 - loss: 0.4603 - acc: 0.8496

1400/3121 [============>.................] - ETA: 4:16 - loss: 0.4557 - acc: 0.8514

1470/3121 [=============>................] - ETA: 4:05 - loss: 0.4500 - acc: 0.8544

1540/3121 [=============>................] - ETA: 3:55 - loss: 0.4634 - acc: 0.8487

1610/3121 [==============>...............] - ETA: 3:44 - loss: 0.4619 - acc: 0.8466

1680/3121 [===============>..............] - ETA: 3:34 - loss: 0.4590 - acc: 0.8458

1750/3121 [===============>..............] - ETA: 3:23 - loss: 0.4555 - acc: 0.8474

1820/3121 [================>.............] - ETA: 3:13 - loss: 0.4560 - acc: 0.8462

1890/3121 [=================>............] - ETA: 3:02 - loss: 0.4584 - acc: 0.8460

1960/3121 [=================>............] - ETA: 2:52 - loss: 0.4540 - acc: 0.8464

2030/3121 [==================>...........] - ETA: 2:42 - loss: 0.4541 - acc: 0.8463

2100/3121 [===================>..........] - ETA: 2:32 - loss: 0.4629 - acc: 0.8433

2170/3121 [===================>..........] - ETA: 2:23 - loss: 0.4642 - acc: 0.8419

2240/3121 [====================>.........] - ETA: 2:13 - loss: 0.4713 - acc: 0.8402

2310/3121 [=====================>........] - ETA: 2:02 - loss: 0.4696 - acc: 0.8398

2380/3121 [=====================>........] - ETA: 1:52 - loss: 0.4756 - acc: 0.8366

2450/3121 [======================>.......] - ETA: 1:41 - loss: 0.4767 - acc: 0.8371

2520/3121 [=======================>......] - ETA: 1:30 - loss: 0.4780 - acc: 0.8357

2590/3121 [=======================>......] - ETA: 1:20 - loss: 0.4807 - acc: 0.8351

2660/3121 [========================>.....] - ETA: 1:09 - loss: 0.4778 - acc: 0.8361

2730/3121 [=========================>....] - ETA: 59s - loss: 0.4758 - acc: 0.8374

2800/3121 [=========================>....] - ETA: 48s - loss: 0.4796 - acc: 0.8354

2870/3121 [==========================>...] - ETA: 38s - loss: 0.4807 - acc: 0.8345

2940/3121 [===========================>..] - ETA: 27s - loss: 0.4780 - acc: 0.8357

3010/3121 [===========================>..] - ETA: 16s - loss: 0.4775 - acc: 0.8365

3080/3121 [============================>.] - ETA: 6s - loss: 0.4786 - acc: 0.8347

3121/3121 [==============================] - 499s 160ms/step - loss: 0.4781 - acc: 0.8356 - val\_loss: 0.2846 - val\_acc: 0.8928

Epoch 14/15

  70/3121 [..............................] - ETA: 9:04 - loss: 0.2492 - acc: 0.9143

 140/3121 [>.............................] - ETA: 8:09 - loss: 0.2794 - acc: 0.8929

 210/3121 [=>............................] - ETA: 7:57 - loss: 0.2787 - acc: 0.8952

 280/3121 [=>............................] - ETA: 7:36 - loss: 0.3434 - acc: 0.8857

 350/3121 [==>...........................] - ETA: 7:17 - loss: 0.3523 - acc: 0.8714

 420/3121 [===>..........................] - ETA: 7:01 - loss: 0.3290 - acc: 0.8833

 490/3121 [===>..........................] - ETA: 6:45 - loss: 0.3120 - acc: 0.8898

 560/3121 [====>.........................] - ETA: 6:32 - loss: 0.3186 - acc: 0.8857

 630/3121 [=====>........................] - ETA: 6:20 - loss: 0.3039 - acc: 0.8937

 700/3121 [=====>........................] - ETA: 6:11 - loss: 0.3048 - acc: 0.8971

 770/3121 [======>.......................] - ETA: 5:59 - loss: 0.3082 - acc: 0.9000

 840/3121 [=======>......................] - ETA: 5:48 - loss: 0.2950 - acc: 0.9048

 910/3121 [=======>......................] - ETA: 5:37 - loss: 0.2943 - acc: 0.9055

 980/3121 [========>.....................] - ETA: 5:25 - loss: 0.2885 - acc: 0.9092

1050/3121 [=========>....................] - ETA: 5:13 - loss: 0.2868 - acc: 0.9067

1120/3121 [=========>....................] - ETA: 5:02 - loss: 0.2916 - acc: 0.9036

1190/3121 [==========>...................] - ETA: 4:50 - loss: 0.2936 - acc: 0.9034

1260/3121 [===========>..................] - ETA: 4:40 - loss: 0.2970 - acc: 0.9008

1330/3121 [===========>..................] - ETA: 4:28 - loss: 0.2952 - acc: 0.9000

1400/3121 [============>.................] - ETA: 4:17 - loss: 0.2905 - acc: 0.9021

1470/3121 [=============>................] - ETA: 4:06 - loss: 0.2930 - acc: 0.9014

1540/3121 [=============>................] - ETA: 3:55 - loss: 0.2925 - acc: 0.9006

1610/3121 [==============>...............] - ETA: 3:45 - loss: 0.2921 - acc: 0.9006

1680/3121 [===============>..............] - ETA: 3:34 - loss: 0.2895 - acc: 0.9018

1750/3121 [===============>..............] - ETA: 3:23 - loss: 0.2911 - acc: 0.9006

1820/3121 [================>.............] - ETA: 3:12 - loss: 0.2868 - acc: 0.9022

1890/3121 [=================>............] - ETA: 3:02 - loss: 0.2905 - acc: 0.9021

1960/3121 [=================>............] - ETA: 2:51 - loss: 0.2947 - acc: 0.9010

2030/3121 [==================>...........] - ETA: 2:41 - loss: 0.2935 - acc: 0.9020

2100/3121 [===================>..........] - ETA: 2:31 - loss: 0.2930 - acc: 0.9010

2170/3121 [===================>..........] - ETA: 2:21 - loss: 0.2914 - acc: 0.9023

2240/3121 [====================>.........] - ETA: 2:10 - loss: 0.2908 - acc: 0.9022

2310/3121 [=====================>........] - ETA: 2:00 - loss: 0.2926 - acc: 0.9004

2380/3121 [=====================>........] - ETA: 1:49 - loss: 0.2935 - acc: 0.9004

2450/3121 [======================>.......] - ETA: 1:39 - loss: 0.2894 - acc: 0.9024

2520/3121 [=======================>......] - ETA: 1:29 - loss: 0.2883 - acc: 0.9028

2590/3121 [=======================>......] - ETA: 1:18 - loss: 0.2951 - acc: 0.9004

2660/3121 [========================>.....] - ETA: 1:08 - loss: 0.2951 - acc: 0.9000

2730/3121 [=========================>....] - ETA: 57s - loss: 0.2962 - acc: 0.8996

2800/3121 [=========================>....] - ETA: 47s - loss: 0.2979 - acc: 0.8982

2870/3121 [==========================>...] - ETA: 37s - loss: 0.3016 - acc: 0.8972

2940/3121 [===========================>..] - ETA: 26s - loss: 0.3023 - acc: 0.8966

3010/3121 [===========================>..] - ETA: 16s - loss: 0.3031 - acc: 0.8960

3080/3121 [============================>.] - ETA: 6s - loss: 0.3024 - acc: 0.8964

3121/3121 [==============================] - 487s 156ms/step - loss: 0.3033 - acc: 0.8968 - val\_loss: 0.1471 - val\_acc: 0.9632

Epoch 15/15

  70/3121 [..............................] - ETA: 8:47 - loss: 0.1230 - acc: 0.9857

 140/3121 [>.............................] - ETA: 7:58 - loss: 0.1736 - acc: 0.9571

 210/3121 [=>............................] - ETA: 7:32 - loss: 0.1688 - acc: 0.9619

 280/3121 [=>............................] - ETA: 7:16 - loss: 0.1886 - acc: 0.9536

 350/3121 [==>...........................] - ETA: 7:00 - loss: 0.1757 - acc: 0.9543

 420/3121 [===>..........................] - ETA: 6:48 - loss: 0.1790 - acc: 0.9524

 490/3121 [===>..........................] - ETA: 6:35 - loss: 0.1789 - acc: 0.9531

 560/3121 [====>.........................] - ETA: 6:22 - loss: 0.1815 - acc: 0.9464

 630/3121 [=====>........................] - ETA: 6:11 - loss: 0.1861 - acc: 0.9429

 700/3121 [=====>........................] - ETA: 6:00 - loss: 0.1847 - acc: 0.9414

 770/3121 [======>.......................] - ETA: 5:48 - loss: 0.1813 - acc: 0.9429

 840/3121 [=======>......................] - ETA: 5:36 - loss: 0.1759 - acc: 0.9464

 910/3121 [=======>......................] - ETA: 5:26 - loss: 0.1752 - acc: 0.9473

 980/3121 [========>.....................] - ETA: 5:20 - loss: 0.1725 - acc: 0.9480

1050/3121 [=========>....................] - ETA: 5:13 - loss: 0.1734 - acc: 0.9495

1120/3121 [=========>....................] - ETA: 5:01 - loss: 0.1766 - acc: 0.9473

1190/3121 [==========>...................] - ETA: 4:51 - loss: 0.1797 - acc: 0.9479

1260/3121 [===========>..................] - ETA: 4:40 - loss: 0.1806 - acc: 0.9468

1330/3121 [===========>..................] - ETA: 4:29 - loss: 0.1860 - acc: 0.9444

1400/3121 [============>.................] - ETA: 4:18 - loss: 0.1846 - acc: 0.9443

1470/3121 [=============>................] - ETA: 4:07 - loss: 0.1890 - acc: 0.9422

1540/3121 [=============>................] - ETA: 3:56 - loss: 0.1874 - acc: 0.9435

1610/3121 [==============>...............] - ETA: 3:45 - loss: 0.1923 - acc: 0.9410

1680/3121 [===============>..............] - ETA: 3:34 - loss: 0.1901 - acc: 0.9423

1750/3121 [===============>..............] - ETA: 3:23 - loss: 0.1865 - acc: 0.9429

1820/3121 [================>.............] - ETA: 3:13 - loss: 0.1874 - acc: 0.9423

1890/3121 [=================>............] - ETA: 3:02 - loss: 0.1860 - acc: 0.9429

1960/3121 [=================>............] - ETA: 2:51 - loss: 0.1833 - acc: 0.9434

2030/3121 [==================>...........] - ETA: 2:41 - loss: 0.1913 - acc: 0.9419

2100/3121 [===================>..........] - ETA: 2:31 - loss: 0.1923 - acc: 0.9410

2170/3121 [===================>..........] - ETA: 2:20 - loss: 0.1894 - acc: 0.9419

2240/3121 [====================>.........] - ETA: 2:10 - loss: 0.1889 - acc: 0.9424

2310/3121 [=====================>........] - ETA: 2:01 - loss: 0.1916 - acc: 0.9411

2380/3121 [=====================>........] - ETA: 1:51 - loss: 0.1910 - acc: 0.9408

2450/3121 [======================>.......] - ETA: 1:40 - loss: 0.1912 - acc: 0.9404

2520/3121 [=======================>......] - ETA: 1:29 - loss: 0.1902 - acc: 0.9409

2590/3121 [=======================>......] - ETA: 1:19 - loss: 0.1911 - acc: 0.9409

2660/3121 [========================>.....] - ETA: 1:08 - loss: 0.1904 - acc: 0.9406

2730/3121 [=========================>....] - ETA: 58s - loss: 0.1940 - acc: 0.9388

2800/3121 [=========================>....] - ETA: 47s - loss: 0.1988 - acc: 0.9371

2870/3121 [==========================>...] - ETA: 37s - loss: 0.1981 - acc: 0.9373

2940/3121 [===========================>..] - ETA: 26s - loss: 0.1971 - acc: 0.9378

3010/3121 [===========================>..] - ETA: 16s - loss: 0.1967 - acc: 0.9379

3080/3121 [============================>.] - ETA: 6s - loss: 0.1976 - acc: 0.9367

3121/3121 [==============================] - 487s 156ms/step - loss: 0.1981 - acc: 0.9359 - val\_loss: 0.0966 - val\_acc: 0.9760

20.23047375350847

/Users/navinkeizer/PycharmProjects/mini-project/venv/bin/python /Users/navinkeizer/PycharmProjects/mini-project/venv/5\_hair\_2.py

Using TensorFlow backend.

Training data shape :  (3121, 256, 256, 1) (3121, 6)

Testing data shape :  (781, 256, 256, 1) (781, 6)

Total number of outputs :  2

Output classes :  [0. 1.]

2019-01-01 21:29:22.606821: I tensorflow/core/platform/cpu\_feature\_guard.cc:141] Your CPU supports instructions that this TensorFlow binary was not compiled to use: AVX2 FMA

0.21382842528682663 1.9310345072752382

   precision    recall  f1-score   support

     Class 0       0.02      0.78      0.04        18

     Class 1       0.28      0.06      0.10       206

     Class 2       0.20      0.01      0.02       101

     Class 3       0.30      0.06      0.09       196

     Class 4       0.16      0.06      0.09       149

     Class 5       0.00      0.00      0.00       111

   micro avg       0.06      0.06      0.06       781

   macro avg       0.16      0.16      0.06       781

weighted avg       0.21      0.06      0.07       781

[[ 14   2   0   0   2   0]

 [166  13   1   8  15   3]

 [ 78   4   1   6  10   2]

 [160  12   0  11  11   2]

 [121  10   2   7   9   0]

 [ 91   5   1   5   9   0]]

Process finished with exit code 0

Only 2 epochs. No filtering

Training data shape :  (3200, 256, 256, 1) (3200, 6)

Testing data shape :  (1000, 256, 256, 1) (1000, 6)

Validation data shape :  (800, 256, 256, 1) (800, 6)

Total number of outputs :  2

Output classes :  [0. 1.]

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Layer (type)                 Output Shape              Param #

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

conv2d\_1 (Conv2D)            (None, 256, 256, 32)      320

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leaky\_re\_lu\_1 (LeakyReLU)    (None, 256, 256, 32)      0

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max\_pooling2d\_1 (MaxPooling2 (None, 128, 128, 32)      0

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conv2d\_2 (Conv2D)            (None, 128, 128, 64)      18496

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leaky\_re\_lu\_2 (LeakyReLU)    (None, 128, 128, 64)      0

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max\_pooling2d\_2 (MaxPooling2 (None, 64, 64, 64)        0

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conv2d\_3 (Conv2D)            (None, 64, 64, 128)       73856

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leaky\_re\_lu\_3 (LeakyReLU)    (None, 64, 64, 128)       0

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max\_pooling2d\_3 (MaxPooling2 (None, 32, 32, 128)       0

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flatten\_1 (Flatten)          (None, 131072)            0

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dense\_1 (Dense)              (None, 128)               16777344

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leaky\_re\_lu\_4 (LeakyReLU)    (None, 128)               0

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dense\_2 (Dense)              (None, 6)                 774

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Total params: 16,870,790

Trainable params: 16,870,790

Non-trainable params: 0

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None

Train on 3200 samples, validate on 800 samples

Epoch 1/2

2018-12-30 18:04:54.294153: I tensorflow/core/platform/cpu\_feature\_guard.cc:141] Your CPU supports instructions that this TensorFlow binary was not compiled to use: AVX2 FMA

  70/3200 [..............................] - ETA: 12:00 - loss: 1.7894 - acc: 0.1857

 140/3200 [>.............................] - ETA: 10:15 - loss: 2.6399 - acc: 0.1857

 210/3200 [>.............................] - ETA: 9:28 - loss: 2.8070 - acc: 0.2190

 280/3200 [=>............................] - ETA: 8:51 - loss: 2.8042 - acc: 0.2000

 350/3200 [==>...........................] - ETA: 8:21 - loss: 2.8542 - acc: 0.1829

 420/3200 [==>...........................] - ETA: 8:01 - loss: 2.6741 - acc: 0.1833

 490/3200 [===>..........................] - ETA: 7:45 - loss: 2.5201 - acc: 0.1898

 560/3200 [====>.........................] - ETA: 7:25 - loss: 2.4149 - acc: 0.2161

 630/3200 [====>.........................] - ETA: 7:09 - loss: 2.3433 - acc: 0.2270

 700/3200 [=====>........................] - ETA: 6:58 - loss: 2.2849 - acc: 0.2386

 770/3200 [======>.......................] - ETA: 6:47 - loss: 2.2248 - acc: 0.2468

 840/3200 [======>.......................] - ETA: 6:53 - loss: 2.1744 - acc: 0.2524

 910/3200 [=======>......................] - ETA: 6:52 - loss: 2.1243 - acc: 0.2549

 980/3200 [========>.....................] - ETA: 6:36 - loss: 2.0795 - acc: 0.2714

1050/3200 [========>.....................] - ETA: 6:20 - loss: 2.0414 - acc: 0.2790

1120/3200 [=========>....................] - ETA: 6:10 - loss: 2.0063 - acc: 0.2848

1190/3200 [==========>...................] - ETA: 6:01 - loss: 1.9758 - acc: 0.2899

1260/3200 [==========>...................] - ETA: 5:47 - loss: 1.9448 - acc: 0.3000

1330/3200 [===========>..................] - ETA: 5:34 - loss: 1.9157 - acc: 0.3053

1400/3200 [============>.................] - ETA: 5:20 - loss: 1.8800 - acc: 0.3207

1470/3200 [============>.................] - ETA: 5:06 - loss: 1.8515 - acc: 0.3272

1540/3200 [=============>................] - ETA: 4:57 - loss: 1.8209 - acc: 0.3383

1610/3200 [==============>...............] - ETA: 4:49 - loss: 1.8030 - acc: 0.3447

1680/3200 [==============>...............] - ETA: 4:39 - loss: 1.7778 - acc: 0.3554

1750/3200 [===============>..............] - ETA: 4:26 - loss: 1.7544 - acc: 0.3594

1820/3200 [================>.............] - ETA: 4:12 - loss: 1.7365 - acc: 0.3659

1890/3200 [================>.............] - ETA: 4:01 - loss: 1.7168 - acc: 0.3730

1960/3200 [=================>............] - ETA: 3:48 - loss: 1.6916 - acc: 0.3811

2030/3200 [==================>...........] - ETA: 3:39 - loss: 1.6729 - acc: 0.3852

2100/3200 [==================>...........] - ETA: 3:30 - loss: 1.6593 - acc: 0.3876

2170/3200 [===================>..........] - ETA: 3:17 - loss: 1.6487 - acc: 0.3899

2240/3200 [====================>.........] - ETA: 3:04 - loss: 1.6305 - acc: 0.3951

2310/3200 [====================>.........] - ETA: 2:49 - loss: 1.6162 - acc: 0.4022

2380/3200 [=====================>........] - ETA: 2:35 - loss: 1.6011 - acc: 0.4042

2450/3200 [=====================>........] - ETA: 2:21 - loss: 1.5856 - acc: 0.4102

2520/3200 [======================>.......] - ETA: 2:07 - loss: 1.5752 - acc: 0.4135

2590/3200 [=======================>......] - ETA: 1:54 - loss: 1.5579 - acc: 0.4193

2660/3200 [=======================>......] - ETA: 1:40 - loss: 1.5478 - acc: 0.4218

2730/3200 [========================>.....] - ETA: 1:27 - loss: 1.5322 - acc: 0.4260

2800/3200 [=========================>....] - ETA: 1:14 - loss: 1.5182 - acc: 0.4286

2870/3200 [=========================>....] - ETA: 1:01 - loss: 1.5093 - acc: 0.4310

2940/3200 [==========================>...] - ETA: 48s - loss: 1.5009 - acc: 0.4337

3010/3200 [===========================>..] - ETA: 35s - loss: 1.4917 - acc: 0.4365

3080/3200 [===========================>..] - ETA: 22s - loss: 1.4801 - acc: 0.4390

3150/3200 [============================>.] - ETA: 9s - loss: 1.4727 - acc: 0.4419

3200/3200 [==============================] - 621s 194ms/step - loss: 1.4639 - acc: 0.4444 - val\_loss: 1.0076 - val\_acc: 0.5187

Epoch 2/2

  70/3200 [..............................] - ETA: 10:15 - loss: 0.9337 - acc: 0.5857

 140/3200 [>.............................] - ETA: 8:57 - loss: 0.9364 - acc: 0.5571

 210/3200 [>.............................] - ETA: 8:19 - loss: 0.9354 - acc: 0.5476

 280/3200 [=>............................] - ETA: 7:47 - loss: 0.9556 - acc: 0.5536

 350/3200 [==>...........................] - ETA: 7:30 - loss: 0.9830 - acc: 0.5486

 420/3200 [==>...........................] - ETA: 7:15 - loss: 0.9537 - acc: 0.5762

 490/3200 [===>..........................] - ETA: 7:03 - loss: 0.9543 - acc: 0.5857

 560/3200 [====>.........................] - ETA: 6:49 - loss: 0.9290 - acc: 0.6000

 630/3200 [====>.........................] - ETA: 6:38 - loss: 0.9460 - acc: 0.6000

 700/3200 [=====>........................] - ETA: 6:25 - loss: 0.9316 - acc: 0.6071

 770/3200 [======>.......................] - ETA: 6:16 - loss: 0.9226 - acc: 0.6143

 840/3200 [======>.......................] - ETA: 6:06 - loss: 0.9210 - acc: 0.6119

 910/3200 [=======>......................] - ETA: 5:52 - loss: 0.9233 - acc: 0.6110

 980/3200 [========>.....................] - ETA: 5:40 - loss: 0.9169 - acc: 0.6153

1050/3200 [========>.....................] - ETA: 5:31 - loss: 0.9227 - acc: 0.6105

1120/3200 [=========>....................] - ETA: 5:19 - loss: 0.9195 - acc: 0.6134

1190/3200 [==========>...................] - ETA: 5:07 - loss: 0.9158 - acc: 0.6126

1260/3200 [==========>...................] - ETA: 4:56 - loss: 0.9147 - acc: 0.6135

1330/3200 [===========>..................] - ETA: 4:44 - loss: 0.9112 - acc: 0.6128

1400/3200 [============>.................] - ETA: 4:33 - loss: 0.9010 - acc: 0.6143

1470/3200 [============>.................] - ETA: 4:22 - loss: 0.8984 - acc: 0.6122

1540/3200 [=============>................] - ETA: 4:11 - loss: 0.8990 - acc: 0.6136

1610/3200 [==============>...............] - ETA: 4:01 - loss: 0.9030 - acc: 0.6124

1680/3200 [==============>...............] - ETA: 3:49 - loss: 0.9151 - acc: 0.6083

1750/3200 [===============>..............] - ETA: 3:39 - loss: 0.9076 - acc: 0.6109

1820/3200 [================>.............] - ETA: 3:28 - loss: 0.9083 - acc: 0.6110

1890/3200 [================>.............] - ETA: 3:18 - loss: 0.9034 - acc: 0.6127

1960/3200 [=================>............] - ETA: 3:07 - loss: 0.9053 - acc: 0.6128

2030/3200 [==================>...........] - ETA: 2:57 - loss: 0.9029 - acc: 0.6143

2100/3200 [==================>...........] - ETA: 2:46 - loss: 0.9025 - acc: 0.6157

2170/3200 [===================>..........] - ETA: 2:35 - loss: 0.9014 - acc: 0.6152

2240/3200 [====================>.........] - ETA: 2:25 - loss: 0.8999 - acc: 0.6161

2310/3200 [====================>.........] - ETA: 2:14 - loss: 0.9087 - acc: 0.6134

2380/3200 [=====================>........] - ETA: 2:03 - loss: 0.9199 - acc: 0.6097

2450/3200 [=====================>........] - ETA: 1:53 - loss: 0.9169 - acc: 0.6118

2520/3200 [======================>.......] - ETA: 1:42 - loss: 0.9161 - acc: 0.6119

2590/3200 [=======================>......] - ETA: 1:32 - loss: 0.9195 - acc: 0.6104

2660/3200 [=======================>......] - ETA: 1:21 - loss: 0.9179 - acc: 0.6109

2730/3200 [========================>.....] - ETA: 1:11 - loss: 0.9167 - acc: 0.6103

2800/3200 [=========================>....] - ETA: 1:00 - loss: 0.9179 - acc: 0.6093

2870/3200 [=========================>....] - ETA: 50s - loss: 0.9158 - acc: 0.6101

2940/3200 [==========================>...] - ETA: 39s - loss: 0.9170 - acc: 0.6095

3010/3200 [===========================>..] - ETA: 28s - loss: 0.9170 - acc: 0.6110

3080/3200 [===========================>..] - ETA: 18s - loss: 0.9140 - acc: 0.6120

3150/3200 [============================>.] - ETA: 7s - loss: 0.9138 - acc: 0.6121

3200/3200 [==============================] - 518s 162ms/step - loss: 0.9143 - acc: 0.6116 - val\_loss: 0.8723 - val\_acc: 0.6138

0.624

Process finished with exit code 0

Without filtering samples.

Training data shape :  (3200, 256, 256, 1) (3200, 6)

Testing data shape :  (1000, 256, 256, 1) (1000, 6)

Validation data shape :  (800, 256, 256, 1) (800, 6)

Total number of outputs :  2

Output classes :  [0. 1.]

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Layer (type)                 Output Shape              Param #

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

conv2d\_1 (Conv2D)            (None, 256, 256, 32)      320

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leaky\_re\_lu\_1 (LeakyReLU)    (None, 256, 256, 32)      0

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max\_pooling2d\_1 (MaxPooling2 (None, 128, 128, 32)      0

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conv2d\_2 (Conv2D)            (None, 128, 128, 64)      18496

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leaky\_re\_lu\_2 (LeakyReLU)    (None, 128, 128, 64)      0

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max\_pooling2d\_2 (MaxPooling2 (None, 64, 64, 64)        0

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conv2d\_3 (Conv2D)            (None, 64, 64, 128)       73856

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leaky\_re\_lu\_3 (LeakyReLU)    (None, 64, 64, 128)       0

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max\_pooling2d\_3 (MaxPooling2 (None, 32, 32, 128)       0

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flatten\_1 (Flatten)          (None, 131072)            0

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dense\_1 (Dense)              (None, 128)               16777344

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leaky\_re\_lu\_4 (LeakyReLU)    (None, 128)               0

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dense\_2 (Dense)              (None, 6)                 774

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

Total params: 16,870,790

Trainable params: 16,870,790

Non-trainable params: 0

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None

Train on 3200 samples, validate on 800 samples

Epoch 1/18

2018-12-30 18:41:11.918017: I tensorflow/core/platform/cpu\_feature\_guard.cc:141] Your CPU supports instructions that this TensorFlow binary was not compiled to use: AVX2 FMA

 200/3200 [>.............................] - ETA: 14:10 - loss: 1.7897 - acc: 0.1800

 400/3200 [==>...........................] - ETA: 11:25 - loss: 5.1051 - acc: 0.2425

 600/3200 [====>.........................] - ETA: 10:06 - loss: 7.1192 - acc: 0.2100

 800/3200 [======>.......................] - ETA: 9:33 - loss: 6.4422 - acc: 0.2000

1000/3200 [========>.....................] - ETA: 8:44 - loss: 5.5409 - acc: 0.2050

1200/3200 [==========>...................] - ETA: 8:02 - loss: 5.1009 - acc: 0.1983

1400/3200 [============>.................] - ETA: 7:24 - loss: 4.6445 - acc: 0.2064

1600/3200 [==============>...............] - ETA: 6:30 - loss: 4.2750 - acc: 0.2113

1800/3200 [===============>..............] - ETA: 5:42 - loss: 3.9994 - acc: 0.2233

2000/3200 [=================>............] - ETA: 4:55 - loss: 3.7780 - acc: 0.2215

2200/3200 [===================>..........] - ETA: 4:06 - loss: 3.5756 - acc: 0.2291

2400/3200 [=====================>........] - ETA: 3:15 - loss: 3.4064 - acc: 0.2388

2600/3200 [=======================>......] - ETA: 2:26 - loss: 3.2580 - acc: 0.2515

2800/3200 [=========================>....] - ETA: 1:38 - loss: 3.1335 - acc: 0.2571

3000/3200 [===========================>..] - ETA: 49s - loss: 3.0201 - acc: 0.2690

3200/3200 [==============================] - 831s 260ms/step - loss: 2.9184 - acc: 0.2841 - val\_loss: 1.3856 - val\_acc: 0.4075

Epoch 2/18

 200/3200 [>.............................] - ETA: 12:39 - loss: 1.4409 - acc: 0.4000

 400/3200 [==>...........................] - ETA: 11:13 - loss: 1.3999 - acc: 0.3775

 600/3200 [====>.........................] - ETA: 10:11 - loss: 1.3876 - acc: 0.3933

 800/3200 [======>.......................] - ETA: 9:38 - loss: 1.4009 - acc: 0.3775

1000/3200 [========>.....................] - ETA: 8:55 - loss: 1.3784 - acc: 0.4010

1200/3200 [==========>...................] - ETA: 8:10 - loss: 1.3673 - acc: 0.4092

1400/3200 [============>.................] - ETA: 7:27 - loss: 1.3457 - acc: 0.4293

1600/3200 [==============>...............] - ETA: 6:40 - loss: 1.3295 - acc: 0.4375

1800/3200 [===============>..............] - ETA: 5:53 - loss: 1.3189 - acc: 0.4383

2000/3200 [=================>............] - ETA: 5:03 - loss: 1.3104 - acc: 0.4385

2200/3200 [===================>..........] - ETA: 4:11 - loss: 1.2874 - acc: 0.4527

2400/3200 [=====================>........] - ETA: 3:20 - loss: 1.2817 - acc: 0.4592

2600/3200 [=======================>......] - ETA: 2:30 - loss: 1.2691 - acc: 0.4677

2800/3200 [=========================>....] - ETA: 1:39 - loss: 1.2613 - acc: 0.4700

3000/3200 [===========================>..] - ETA: 50s - loss: 1.2622 - acc: 0.4733

3200/3200 [==============================] - 843s 263ms/step - loss: 1.2605 - acc: 0.4756 - val\_loss: 1.1151 - val\_acc: 0.5050

Epoch 3/18

 200/3200 [>.............................] - ETA: 11:23 - loss: 1.0892 - acc: 0.5350

 400/3200 [==>...........................] - ETA: 10:28 - loss: 1.0963 - acc: 0.5250

 600/3200 [====>.........................] - ETA: 9:52 - loss: 1.0570 - acc: 0.5467

 800/3200 [======>.......................] - ETA: 9:39 - loss: 1.0654 - acc: 0.5487

1000/3200 [========>.....................] - ETA: 8:50 - loss: 1.0772 - acc: 0.5330

1200/3200 [==========>...................] - ETA: 7:58 - loss: 1.0775 - acc: 0.5400

1400/3200 [============>.................] - ETA: 7:06 - loss: 1.0693 - acc: 0.5429

1600/3200 [==============>...............] - ETA: 6:16 - loss: 1.0610 - acc: 0.5494

1800/3200 [===============>..............] - ETA: 5:30 - loss: 1.0518 - acc: 0.5517

2000/3200 [=================>............] - ETA: 4:41 - loss: 1.0526 - acc: 0.5510

2200/3200 [===================>..........] - ETA: 3:58 - loss: 1.0482 - acc: 0.5555

2400/3200 [=====================>........] - ETA: 3:11 - loss: 1.0442 - acc: 0.5588

2600/3200 [=======================>......] - ETA: 2:25 - loss: 1.0481 - acc: 0.5596

2800/3200 [=========================>....] - ETA: 1:36 - loss: 1.0429 - acc: 0.5600

3000/3200 [===========================>..] - ETA: 48s - loss: 1.0358 - acc: 0.5650

3200/3200 [==============================] - 811s 253ms/step - loss: 1.0319 - acc: 0.5659 - val\_loss: 0.9858 - val\_acc: 0.5875

Epoch 4/18

 200/3200 [>.............................] - ETA: 11:34 - loss: 0.9844 - acc: 0.6250

 400/3200 [==>...........................] - ETA: 10:50 - loss: 0.9564 - acc: 0.6200

 600/3200 [====>.........................] - ETA: 9:51 - loss: 0.9649 - acc: 0.6017

 800/3200 [======>.......................] - ETA: 9:02 - loss: 0.9490 - acc: 0.5950

1000/3200 [========>.....................] - ETA: 8:15 - loss: 0.9584 - acc: 0.5930

1200/3200 [==========>...................] - ETA: 7:28 - loss: 0.9477 - acc: 0.5967

1400/3200 [============>.................] - ETA: 6:51 - loss: 0.9345 - acc: 0.6057

1600/3200 [==============>...............] - ETA: 6:11 - loss: 0.9473 - acc: 0.6056

1800/3200 [===============>..............] - ETA: 5:25 - loss: 0.9518 - acc: 0.6022

2000/3200 [=================>............] - ETA: 4:37 - loss: 0.9440 - acc: 0.6065

2200/3200 [===================>..........] - ETA: 3:49 - loss: 0.9517 - acc: 0.6027

2400/3200 [=====================>........] - ETA: 3:03 - loss: 0.9620 - acc: 0.5975

2600/3200 [=======================>......] - ETA: 2:17 - loss: 0.9538 - acc: 0.6019

2800/3200 [=========================>....] - ETA: 1:31 - loss: 0.9467 - acc: 0.6029

3000/3200 [===========================>..] - ETA: 45s - loss: 0.9426 - acc: 0.6050

3200/3200 [==============================] - 769s 240ms/step - loss: 0.9449 - acc: 0.6047 - val\_loss: 0.9255 - val\_acc: 0.5750

Epoch 5/18

 200/3200 [>.............................] - ETA: 10:42 - loss: 0.8855 - acc: 0.5600

 400/3200 [==>...........................] - ETA: 10:19 - loss: 0.8989 - acc: 0.5625

 600/3200 [====>.........................] - ETA: 9:30 - loss: 0.8520 - acc: 0.6133

 800/3200 [======>.......................] - ETA: 9:06 - loss: 0.8494 - acc: 0.6175

1000/3200 [========>.....................] - ETA: 8:17 - loss: 0.8441 - acc: 0.6220

1200/3200 [==========>...................] - ETA: 7:35 - loss: 0.8397 - acc: 0.6258

1400/3200 [============>.................] - ETA: 6:53 - loss: 0.8465 - acc: 0.6257

1600/3200 [==============>...............] - ETA: 6:04 - loss: 0.8466 - acc: 0.6212

1800/3200 [===============>..............] - ETA: 5:18 - loss: 0.8493 - acc: 0.6183

2000/3200 [=================>............] - ETA: 4:31 - loss: 0.8626 - acc: 0.6165

2200/3200 [===================>..........] - ETA: 3:46 - loss: 0.8634 - acc: 0.6164

2400/3200 [=====================>........] - ETA: 3:00 - loss: 0.8564 - acc: 0.6254

2600/3200 [=======================>......] - ETA: 2:17 - loss: 0.8522 - acc: 0.6304

2800/3200 [=========================>....] - ETA: 1:32 - loss: 0.8578 - acc: 0.6293

3000/3200 [===========================>..] - ETA: 46s - loss: 0.8580 - acc: 0.6280

3200/3200 [==============================] - 787s 246ms/step - loss: 0.8556 - acc: 0.6306 - val\_loss: 0.8993 - val\_acc: 0.6037

Epoch 6/18

 200/3200 [>.............................] - ETA: 11:31 - loss: 0.8545 - acc: 0.6900

 400/3200 [==>...........................] - ETA: 10:40 - loss: 0.8342 - acc: 0.6675

 600/3200 [====>.........................] - ETA: 10:25 - loss: 0.8342 - acc: 0.6583

 800/3200 [======>.......................] - ETA: 9:52 - loss: 0.8109 - acc: 0.6600

1000/3200 [========>.....................] - ETA: 8:51 - loss: 0.8050 - acc: 0.6660

1200/3200 [==========>...................] - ETA: 7:58 - loss: 0.7926 - acc: 0.6675

1400/3200 [============>.................] - ETA: 7:15 - loss: 0.7827 - acc: 0.6700

1600/3200 [==============>...............] - ETA: 6:26 - loss: 0.7839 - acc: 0.6744

1800/3200 [===============>..............] - ETA: 5:36 - loss: 0.7876 - acc: 0.6722

2000/3200 [=================>............] - ETA: 4:47 - loss: 0.7821 - acc: 0.6680

2200/3200 [===================>..........] - ETA: 4:00 - loss: 0.7880 - acc: 0.6614

2400/3200 [=====================>........] - ETA: 3:11 - loss: 0.7914 - acc: 0.6579

2600/3200 [=======================>......] - ETA: 2:23 - loss: 0.7868 - acc: 0.6615

2800/3200 [=========================>....] - ETA: 1:35 - loss: 0.7907 - acc: 0.6571

3000/3200 [===========================>..] - ETA: 47s - loss: 0.7864 - acc: 0.6573

3200/3200 [==============================] - 796s 249ms/step - loss: 0.7823 - acc: 0.6597 - val\_loss: 0.9546 - val\_acc: 0.5800

Epoch 7/18

 200/3200 [>.............................] - ETA: 11:55 - loss: 0.6557 - acc: 0.7550

 400/3200 [==>...........................] - ETA: 10:50 - loss: 0.7000 - acc: 0.7050

 600/3200 [====>.........................] - ETA: 9:36 - loss: 0.6827 - acc: 0.7133

 800/3200 [======>.......................] - ETA: 8:46 - loss: 0.6756 - acc: 0.7150

1000/3200 [========>.....................] - ETA: 7:59 - loss: 0.7128 - acc: 0.7010

1200/3200 [==========>...................] - ETA: 7:52 - loss: 0.7149 - acc: 0.7017

1400/3200 [============>.................] - ETA: 7:08 - loss: 0.7183 - acc: 0.6893

1600/3200 [==============>...............] - ETA: 6:19 - loss: 0.7222 - acc: 0.6850

1800/3200 [===============>..............] - ETA: 5:31 - loss: 0.7214 - acc: 0.6833

2000/3200 [=================>............] - ETA: 4:43 - loss: 0.7265 - acc: 0.6795

2200/3200 [===================>..........] - ETA: 3:54 - loss: 0.7218 - acc: 0.6823

2400/3200 [=====================>........] - ETA: 3:06 - loss: 0.7248 - acc: 0.6812

2600/3200 [=======================>......] - ETA: 2:19 - loss: 0.7271 - acc: 0.6819

2800/3200 [=========================>....] - ETA: 1:33 - loss: 0.7294 - acc: 0.6793

3000/3200 [===========================>..] - ETA: 46s - loss: 0.7276 - acc: 0.6773

3200/3200 [==============================] - 783s 245ms/step - loss: 0.7270 - acc: 0.6762 - val\_loss: 0.9290 - val\_acc: 0.5675

Epoch 8/18

 200/3200 [>.............................] - ETA: 11:17 - loss: 0.7282 - acc: 0.6650

 400/3200 [==>...........................] - ETA: 10:17 - loss: 0.7090 - acc: 0.6725

 600/3200 [====>.........................] - ETA: 9:32 - loss: 0.7131 - acc: 0.6717

 800/3200 [======>.......................] - ETA: 8:55 - loss: 0.6953 - acc: 0.6938

1000/3200 [========>.....................] - ETA: 8:13 - loss: 0.6901 - acc: 0.6960

1200/3200 [==========>...................] - ETA: 7:25 - loss: 0.6860 - acc: 0.7008

1400/3200 [============>.................] - ETA: 6:44 - loss: 0.6857 - acc: 0.7050

1600/3200 [==============>...............] - ETA: 6:03 - loss: 0.6747 - acc: 0.7125

1800/3200 [===============>..............] - ETA: 5:16 - loss: 0.6623 - acc: 0.7183

2000/3200 [=================>............] - ETA: 4:30 - loss: 0.6661 - acc: 0.7130

2200/3200 [===================>..........] - ETA: 3:44 - loss: 0.6629 - acc: 0.7159

2400/3200 [=====================>........] - ETA: 3:00 - loss: 0.6639 - acc: 0.7125

2600/3200 [=======================>......] - ETA: 2:15 - loss: 0.6631 - acc: 0.7108

2800/3200 [=========================>....] - ETA: 1:31 - loss: 0.6663 - acc: 0.7086

3000/3200 [===========================>..] - ETA: 45s - loss: 0.6575 - acc: 0.7150

3200/3200 [==============================] - 769s 240ms/step - loss: 0.6597 - acc: 0.7153 - val\_loss: 0.9630 - val\_acc: 0.6150

Epoch 9/18

 200/3200 [>.............................] - ETA: 11:00 - loss: 0.6037 - acc: 0.7800

 400/3200 [==>...........................] - ETA: 10:27 - loss: 0.6244 - acc: 0.7550

 600/3200 [====>.........................] - ETA: 10:15 - loss: 0.5825 - acc: 0.7817

 800/3200 [======>.......................] - ETA: 9:21 - loss: 0.5761 - acc: 0.7775

1000/3200 [========>.....................] - ETA: 8:27 - loss: 0.5738 - acc: 0.7770

1200/3200 [==========>...................] - ETA: 7:37 - loss: 0.5868 - acc: 0.7575

1400/3200 [============>.................] - ETA: 6:48 - loss: 0.5819 - acc: 0.7579

1600/3200 [==============>...............] - ETA: 6:03 - loss: 0.5760 - acc: 0.7550

1800/3200 [===============>..............] - ETA: 5:16 - loss: 0.5892 - acc: 0.7533

2000/3200 [=================>............] - ETA: 4:31 - loss: 0.5877 - acc: 0.7485

2200/3200 [===================>..........] - ETA: 3:46 - loss: 0.5911 - acc: 0.7468

2400/3200 [=====================>........] - ETA: 3:02 - loss: 0.5942 - acc: 0.7454

2600/3200 [=======================>......] - ETA: 2:17 - loss: 0.5950 - acc: 0.7454

2800/3200 [=========================>....] - ETA: 1:31 - loss: 0.5986 - acc: 0.7439

3000/3200 [===========================>..] - ETA: 45s - loss: 0.5953 - acc: 0.7443

3200/3200 [==============================] - 783s 245ms/step - loss: 0.6007 - acc: 0.7397 - val\_loss: 0.8752 - val\_acc: 0.6112

Epoch 10/18

 200/3200 [>.............................] - ETA: 12:50 - loss: 0.6397 - acc: 0.7200

 400/3200 [==>...........................] - ETA: 11:03 - loss: 0.5829 - acc: 0.7375

 600/3200 [====>.........................] - ETA: 9:59 - loss: 0.5658 - acc: 0.7333

 800/3200 [======>.......................] - ETA: 9:13 - loss: 0.5662 - acc: 0.7413

1000/3200 [========>.....................] - ETA: 8:28 - loss: 0.5473 - acc: 0.7550

1200/3200 [==========>...................] - ETA: 7:44 - loss: 0.5392 - acc: 0.7608

1400/3200 [============>.................] - ETA: 7:36 - loss: 0.5352 - acc: 0.7643

1600/3200 [==============>...............] - ETA: 7:04 - loss: 0.5343 - acc: 0.7688

1800/3200 [===============>..............] - ETA: 6:17 - loss: 0.5307 - acc: 0.7706

2000/3200 [=================>............] - ETA: 5:20 - loss: 0.5260 - acc: 0.7725

2200/3200 [===================>..........] - ETA: 4:23 - loss: 0.5181 - acc: 0.7759

2400/3200 [=====================>........] - ETA: 3:30 - loss: 0.5234 - acc: 0.7721

2600/3200 [=======================>......] - ETA: 2:35 - loss: 0.5317 - acc: 0.7677

2800/3200 [=========================>....] - ETA: 1:43 - loss: 0.5280 - acc: 0.7700

3000/3200 [===========================>..] - ETA: 51s - loss: 0.5237 - acc: 0.7737

3200/3200 [==============================] - 856s 268ms/step - loss: 0.5203 - acc: 0.7763 - val\_loss: 0.9461 - val\_acc: 0.6225

Epoch 11/18

 200/3200 [>.............................] - ETA: 11:09 - loss: 0.4155 - acc: 0.8000

 400/3200 [==>...........................] - ETA: 10:08 - loss: 0.4409 - acc: 0.8075

 600/3200 [====>.........................] - ETA: 9:24 - loss: 0.4446 - acc: 0.8083

 800/3200 [======>.......................] - ETA: 8:37 - loss: 0.4322 - acc: 0.8188

1000/3200 [========>.....................] - ETA: 8:18 - loss: 0.4264 - acc: 0.8250

1200/3200 [==========>...................] - ETA: 7:31 - loss: 0.4396 - acc: 0.8250

1400/3200 [============>.................] - ETA: 6:48 - loss: 0.4499 - acc: 0.8193

1600/3200 [==============>...............] - ETA: 6:03 - loss: 0.4536 - acc: 0.8175

1800/3200 [===============>..............] - ETA: 5:17 - loss: 0.4481 - acc: 0.8183

2000/3200 [=================>............] - ETA: 4:33 - loss: 0.4480 - acc: 0.8165

2200/3200 [===================>..........] - ETA: 3:46 - loss: 0.4474 - acc: 0.8173

2400/3200 [=====================>........] - ETA: 3:03 - loss: 0.4480 - acc: 0.8171

2600/3200 [=======================>......] - ETA: 2:17 - loss: 0.4525 - acc: 0.8142

2800/3200 [=========================>....] - ETA: 1:31 - loss: 0.4530 - acc: 0.8118

3000/3200 [===========================>..] - ETA: 46s - loss: 0.4524 - acc: 0.8123

3200/3200 [==============================] - 771s 241ms/step - loss: 0.4567 - acc: 0.8100 - val\_loss: 0.9465 - val\_acc: 0.6012

Epoch 12/18

 200/3200 [>.............................] - ETA: 11:34 - loss: 0.3322 - acc: 0.8700

 400/3200 [==>...........................] - ETA: 10:09 - loss: 0.3518 - acc: 0.8625

 600/3200 [====>.........................] - ETA: 10:51 - loss: 0.3697 - acc: 0.8550

 800/3200 [======>.......................] - ETA: 10:10 - loss: 0.3895 - acc: 0.8475

1000/3200 [========>.....................] - ETA: 9:09 - loss: 0.3965 - acc: 0.8460

1200/3200 [==========>...................] - ETA: 8:13 - loss: 0.3912 - acc: 0.8475

1400/3200 [============>.................] - ETA: 7:22 - loss: 0.3922 - acc: 0.8450

1600/3200 [==============>...............] - ETA: 6:29 - loss: 0.3907 - acc: 0.8437

1800/3200 [===============>..............] - ETA: 5:39 - loss: 0.3961 - acc: 0.8428

2000/3200 [=================>............] - ETA: 4:50 - loss: 0.3978 - acc: 0.8400

2200/3200 [===================>..........] - ETA: 4:01 - loss: 0.3991 - acc: 0.8386

2400/3200 [=====================>........] - ETA: 3:11 - loss: 0.4019 - acc: 0.8375

2600/3200 [=======================>......] - ETA: 2:22 - loss: 0.4042 - acc: 0.8373

2800/3200 [=========================>....] - ETA: 1:34 - loss: 0.4098 - acc: 0.8346

3000/3200 [===========================>..] - ETA: 47s - loss: 0.4118 - acc: 0.8330

3200/3200 [==============================] - 805s 252ms/step - loss: 0.4143 - acc: 0.8325 - val\_loss: 0.9943 - val\_acc: 0.6125

Epoch 13/18

 200/3200 [>.............................] - ETA: 11:39 - loss: 0.3517 - acc: 0.8550

 400/3200 [==>...........................] - ETA: 10:24 - loss: 0.3553 - acc: 0.8700

 600/3200 [====>.........................] - ETA: 9:36 - loss: 0.3730 - acc: 0.8683

 800/3200 [======>.......................] - ETA: 8:44 - loss: 0.3819 - acc: 0.8513

1000/3200 [========>.....................] - ETA: 7:58 - loss: 0.3711 - acc: 0.8510

1200/3200 [==========>...................] - ETA: 7:17 - loss: 0.3737 - acc: 0.8467

1400/3200 [============>.................] - ETA: 6:29 - loss: 0.3720 - acc: 0.8471

1600/3200 [==============>...............] - ETA: 5:48 - loss: 0.3818 - acc: 0.8406

1800/3200 [===============>..............] - ETA: 5:04 - loss: 0.3886 - acc: 0.8378

2000/3200 [=================>............] - ETA: 4:20 - loss: 0.3856 - acc: 0.8435

2200/3200 [===================>..........] - ETA: 3:39 - loss: 0.3865 - acc: 0.8423

2400/3200 [=====================>........] - ETA: 2:56 - loss: 0.3849 - acc: 0.8429

2600/3200 [=======================>......] - ETA: 2:13 - loss: 0.3833 - acc: 0.8431

2800/3200 [=========================>....] - ETA: 1:30 - loss: 0.3836 - acc: 0.8429

3000/3200 [===========================>..] - ETA: 45s - loss: 0.3800 - acc: 0.8463

3200/3200 [==============================] - 766s 239ms/step - loss: 0.3743 - acc: 0.8497 - val\_loss: 1.0213 - val\_acc: 0.6125

Epoch 14/18

 200/3200 [>.............................] - ETA: 11:22 - loss: 0.2992 - acc: 0.9050

 400/3200 [==>...........................] - ETA: 10:55 - loss: 0.3052 - acc: 0.8900

 600/3200 [====>.........................] - ETA: 9:57 - loss: 0.2915 - acc: 0.8933

 800/3200 [======>.......................] - ETA: 9:05 - loss: 0.2975 - acc: 0.8875

1000/3200 [========>.....................] - ETA: 8:19 - loss: 0.2990 - acc: 0.8850

1200/3200 [==========>...................] - ETA: 7:32 - loss: 0.2880 - acc: 0.8883

1400/3200 [============>.................] - ETA: 6:44 - loss: 0.2819 - acc: 0.8893

1600/3200 [==============>...............] - ETA: 6:00 - loss: 0.2818 - acc: 0.8894

1800/3200 [===============>..............] - ETA: 5:17 - loss: 0.2785 - acc: 0.8911

2000/3200 [=================>............] - ETA: 4:32 - loss: 0.2761 - acc: 0.8910

2200/3200 [===================>..........] - ETA: 3:47 - loss: 0.2762 - acc: 0.8927

2400/3200 [=====================>........] - ETA: 3:05 - loss: 0.2764 - acc: 0.8929

2600/3200 [=======================>......] - ETA: 2:19 - loss: 0.2788 - acc: 0.8915

2800/3200 [=========================>....] - ETA: 1:32 - loss: 0.2833 - acc: 0.8893

3000/3200 [===========================>..] - ETA: 46s - loss: 0.2834 - acc: 0.8897

3200/3200 [==============================] - 777s 243ms/step - loss: 0.2815 - acc: 0.8900 - val\_loss: 1.1637 - val\_acc: 0.6150

Epoch 15/18

 200/3200 [>.............................] - ETA: 11:15 - loss: 0.2162 - acc: 0.9350

 400/3200 [==>...........................] - ETA: 10:57 - loss: 0.2187 - acc: 0.9500

 600/3200 [====>.........................] - ETA: 10:09 - loss: 0.2247 - acc: 0.9433

 800/3200 [======>.......................] - ETA: 9:16 - loss: 0.2205 - acc: 0.9387

1000/3200 [========>.....................] - ETA: 8:32 - loss: 0.2274 - acc: 0.9290

1200/3200 [==========>...................] - ETA: 7:39 - loss: 0.2208 - acc: 0.9308

1400/3200 [============>.................] - ETA: 6:48 - loss: 0.2145 - acc: 0.9321

1600/3200 [==============>...............] - ETA: 6:05 - loss: 0.2152 - acc: 0.9275

1800/3200 [===============>..............] - ETA: 5:20 - loss: 0.2173 - acc: 0.9256

2000/3200 [=================>............] - ETA: 4:37 - loss: 0.2136 - acc: 0.9245

2200/3200 [===================>..........] - ETA: 3:52 - loss: 0.2110 - acc: 0.9264

2400/3200 [=====================>........] - ETA: 3:06 - loss: 0.2107 - acc: 0.9250

2600/3200 [=======================>......] - ETA: 2:19 - loss: 0.2110 - acc: 0.9250

2800/3200 [=========================>....] - ETA: 1:33 - loss: 0.2095 - acc: 0.9254

3000/3200 [===========================>..] - ETA: 46s - loss: 0.2117 - acc: 0.9247

3200/3200 [==============================] - 780s 244ms/step - loss: 0.2107 - acc: 0.9259 - val\_loss: 1.2587 - val\_acc: 0.6062

Epoch 16/18

 200/3200 [>.............................] - ETA: 11:36 - loss: 0.1450 - acc: 0.9650

 400/3200 [==>...........................] - ETA: 10:27 - loss: 0.1588 - acc: 0.9525

 600/3200 [====>.........................] - ETA: 9:45 - loss: 0.1526 - acc: 0.9483

 800/3200 [======>.......................] - ETA: 9:04 - loss: 0.1509 - acc: 0.9487

1000/3200 [========>.....................] - ETA: 8:25 - loss: 0.1628 - acc: 0.9440

1200/3200 [==========>...................] - ETA: 7:45 - loss: 0.1636 - acc: 0.9442

1400/3200 [============>.................] - ETA: 6:57 - loss: 0.1641 - acc: 0.9400

1600/3200 [==============>...............] - ETA: 6:08 - loss: 0.1715 - acc: 0.9331

1800/3200 [===============>..............] - ETA: 5:21 - loss: 0.1771 - acc: 0.9306

2000/3200 [=================>............] - ETA: 4:33 - loss: 0.1845 - acc: 0.9270

2200/3200 [===================>..........] - ETA: 3:47 - loss: 0.1824 - acc: 0.9282

2400/3200 [=====================>........] - ETA: 3:02 - loss: 0.1917 - acc: 0.9242

2600/3200 [=======================>......] - ETA: 2:17 - loss: 0.1907 - acc: 0.9242

2800/3200 [=========================>....] - ETA: 1:31 - loss: 0.1905 - acc: 0.9239

3000/3200 [===========================>..] - ETA: 45s - loss: 0.1962 - acc: 0.9200

3200/3200 [==============================] - 763s 238ms/step - loss: 0.1977 - acc: 0.9200 - val\_loss: 1.4155 - val\_acc: 0.6137

Epoch 17/18

 200/3200 [>.............................] - ETA: 11:03 - loss: 0.1572 - acc: 0.9400

 400/3200 [==>...........................] - ETA: 11:22 - loss: 0.1920 - acc: 0.9225

 600/3200 [====>.........................] - ETA: 10:23 - loss: 0.2093 - acc: 0.9150

 800/3200 [======>.......................] - ETA: 9:22 - loss: 0.1877 - acc: 0.9300

1000/3200 [========>.....................] - ETA: 8:24 - loss: 0.1849 - acc: 0.9290

1200/3200 [==========>...................] - ETA: 7:52 - loss: 0.1964 - acc: 0.9183

1400/3200 [============>.................] - ETA: 7:12 - loss: 0.1897 - acc: 0.9221

1600/3200 [==============>...............] - ETA: 6:19 - loss: 0.1844 - acc: 0.9250

1800/3200 [===============>..............] - ETA: 5:32 - loss: 0.1855 - acc: 0.9250

2000/3200 [=================>............] - ETA: 4:42 - loss: 0.1888 - acc: 0.9240

2200/3200 [===================>..........] - ETA: 3:55 - loss: 0.1824 - acc: 0.9291

2400/3200 [=====================>........] - ETA: 3:06 - loss: 0.1843 - acc: 0.9292

2600/3200 [=======================>......] - ETA: 2:19 - loss: 0.1843 - acc: 0.9281

2800/3200 [=========================>....] - ETA: 1:32 - loss: 0.1802 - acc: 0.9311

3000/3200 [===========================>..] - ETA: 46s - loss: 0.1813 - acc: 0.9310

3200/3200 [==============================] - 781s 244ms/step - loss: 0.1827 - acc: 0.9300 - val\_loss: 1.4986 - val\_acc: 0.5925

Epoch 18/18

 200/3200 [>.............................] - ETA: 11:02 - loss: 0.1198 - acc: 0.9650

 400/3200 [==>...........................] - ETA: 10:40 - loss: 0.1417 - acc: 0.9525

 600/3200 [====>.........................] - ETA: 9:37 - loss: 0.1314 - acc: 0.9583

 800/3200 [======>.......................] - ETA: 8:50 - loss: 0.1214 - acc: 0.9600

1000/3200 [========>.....................] - ETA: 8:08 - loss: 0.1271 - acc: 0.9580

1200/3200 [==========>...................] - ETA: 7:25 - loss: 0.1345 - acc: 0.9575

1400/3200 [============>.................] - ETA: 6:41 - loss: 0.1338 - acc: 0.9571

1600/3200 [==============>...............] - ETA: 5:56 - loss: 0.1358 - acc: 0.9556

1800/3200 [===============>..............] - ETA: 5:19 - loss: 0.1380 - acc: 0.9550

2000/3200 [=================>............] - ETA: 4:38 - loss: 0.1386 - acc: 0.9545

2200/3200 [===================>..........] - ETA: 3:52 - loss: 0.1371 - acc: 0.9550

2400/3200 [=====================>........] - ETA: 3:06 - loss: 0.1336 - acc: 0.9567

2600/3200 [=======================>......] - ETA: 2:20 - loss: 0.1329 - acc: 0.9565

2800/3200 [=========================>....] - ETA: 1:33 - loss: 0.1316 - acc: 0.9564

3000/3200 [===========================>..] - ETA: 46s - loss: 0.1308 - acc: 0.9570

3200/3200 [==============================] - 789s 247ms/step - loss: 0.1329 - acc: 0.9566 - val\_loss: 1.4431 - val\_acc: 0.6112

0.615

              precision    recall  f1-score   support

     Class 0       0.33      0.95      0.49       293

     Class 1       0.25      0.06      0.09        18

     Class 2       0.59      0.34      0.43       245

     Class 3       0.60      0.39      0.48       122

     Class 4       0.98      0.25      0.40       242

     Class 5       0.85      0.53      0.65       195

     Class 6       0.00      0.00      0.00       135

   micro avg       0.46      0.46      0.46      1250

   macro avg       0.51      0.36      0.36      1250

weighted avg       0.58      0.46      0.43      1250