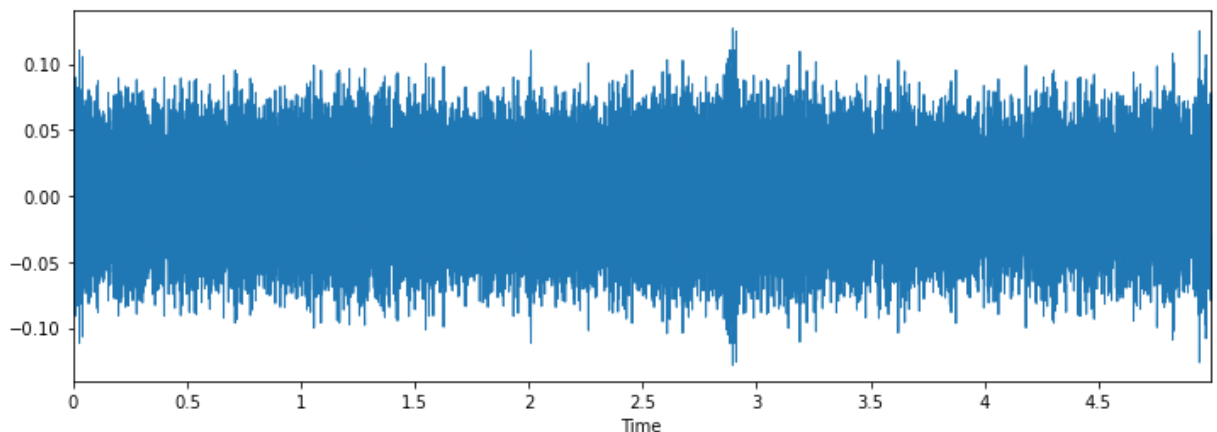


```
In [1]: # Load imports
from scipy.io import wavfile as wav
import numpy as np
import IPython.display as ipd
import librosa
import librosa.display
import matplotlib.pyplot as plt
filename = '/home/ece/file.wav'
plt.figure(figsize=(12,4))
data,sample_rate = librosa.load(filename)
_ = librosa.display.waveplot(data,sr=sample_rate)
ipd.Audio(filename)
```

Out[1]:

0:00 / 0:04



```
In [2]: import pandas as pd
filepath_or_buffer = '/home/ece/Videos/bike 5 class.csv'
pd.read_fwf(filepath_or_buffer, colspecs='infer', widths=None, infer_nrows=10)
```

Out[2]:

	file_name,class_name
0	2008 Kawasaki Ninja 250r.wav,kawasaki
1	Harley.wav,harley
2	Harley-Davidson .wav,harley
3	KTM Duke.wav,ktm
4	KTMRC125o.wav,ktm
...	...
116	3pulsar2.wav,pulsar
117	2pulsar3.wav,pulsar
118	2pulsar4.wav,pulsar
119	2pulsar5.wav,pulsar
120	2pulsar6.wav,pulsar

121 rows × 1 columns

```
In [3]: def extract_features(file_name):

    try:
        audio, sample_rate = librosa.load(file_name, res_type='kaiser_fast')
```

```

mfccs = librosa.feature.mfcc(y=audio, sr=sample_rate, n_mfcc=40)
mfccsscaled = np.mean(mfccs.T,axis=0)

except Exception as e:
    print("Error encountered while parsing file: ", file)
    return None

return mfccsscaled

```

```

In [4]: # Load various imports
import pandas as pd
import os
import librosa

# Set the path to the full UrbanSound dataset
fulldatasetpath = '/home/ece/Videos/bike sp'

metadata = pd.read_csv('/home/ece/Videos/bike 5 class.csv')

features = []

# Iterate through each sound file and extract the features
for index, row in metadata.iterrows():

    file_name = os.path.join(os.path.abspath(fulldatasetpath),str(row["file_r
class_label = row["class_name"]

    data = extract_features(file_name)

    features.append([data, class_label])

# Convert into a Panda dataframe
featuresdf = pd.DataFrame(features, columns=['feature','class_label'])

print('Finished feature extraction from ', len(featuresdf), ' files')

```

Finished feature extraction from 121 files

```

In [5]: print(metadata.class_name.value_counts())

```

```

kawasaki    21
pulsar      20
apache      20
harley      20
enfield     20
ktm         20
Name: class_name, dtype: int64

```

```

In [6]: from sklearn.preprocessing import LabelEncoder
from keras.utils import to_categorical
import numpy as np

# Convert features and corresponding classification labels into numpy arrays
X = np.array(featuresdf.feature.tolist())
y = np.array(featuresdf.class_label.tolist())

# Encode the classification labels
le = LabelEncoder()
yy = to_categorical(le.fit_transform(y))

```

```

In [7]: # split the dataset
from sklearn.model_selection import train_test_split

x_train, x_test, y_train, y_test = train_test_split(X, yy, test_size=0.30, ra

```

```
In [8]: import numpy as np
from keras.models import Sequential
from keras.layers import Dense, Dropout, Activation, Flatten
from keras.layers import Convolution2D, MaxPooling2D
from keras.optimizers import Adam
from keras.utils import np_utils
from sklearn import metrics

num_labels = yy.shape[1]
filter_size = 4

# Construct model
model = Sequential()

model.add(Dense(256, input_shape=(40,)))
model.add(Activation('relu'))
model.add(Dropout(0.5))

model.add(Dense(256))
model.add(Activation('relu'))
model.add(Dropout(0.5))

model.add(Dense(256))
model.add(Activation('relu'))
model.add(Dropout(0.5))

model.add(Dense(256))
model.add(Activation('relu'))
model.add(Dropout(0.5))

model.add(Dense(num_labels))
model.add(Activation('softmax'))
```

```
In [9]: # Compile the model
model.compile(loss='categorical_crossentropy', metrics=['accuracy'], optimizer=Adam)
```

```
In [10]: # Display model architecture summary
model.summary()

# Calculate pre-training accuracy
score = model.evaluate(x_test, y_test, verbose=0)
accuracy = 100*score[1]

print("Pre-training accuracy: %.4f%%" % accuracy)
```

Model: "sequential"

Layer (type)	Output Shape	Param #
dense (Dense)	(None, 256)	10496
activation (Activation)	(None, 256)	0
dropout (Dropout)	(None, 256)	0
dense_1 (Dense)	(None, 256)	65792
activation_1 (Activation)	(None, 256)	0
dropout_1 (Dropout)	(None, 256)	0
dense_2 (Dense)	(None, 256)	65792
activation_2 (Activation)	(None, 256)	0

dropout_2 (Dropout)	(None, 256)	0
dense_3 (Dense)	(None, 256)	65792
activation_3 (Activation)	(None, 256)	0
dropout_3 (Dropout)	(None, 256)	0
dense_4 (Dense)	(None, 6)	1542
activation_4 (Activation)	(None, 6)	0
=====		
Total params: 209,414		
Trainable params: 209,414		
Non-trainable params: 0		
=====		
Pre-training accuracy: 18.9189%		

```
In [11]: from keras.callbacks import ModelCheckpoint
from datetime import datetime

num_epochs = 400
num_batch_size = 32

checkpointer = ModelCheckpoint(filepath='/home/ece/Music/weights.best.basic_n
                                verbose=1, save_best_only=True)
start = datetime.now()

model.fit(x_train, y_train, batch_size=num_batch_size, epochs=num_epochs, val

duration = datetime.now() - start
print("Training completed in time: ", duration)
```

```
Epoch 1/400
3/3 [=====] - 1s 138ms/step - loss: 24.1137 - accuracy: 0.1071 - val_loss: 6.6718 - val_accuracy: 0.0811
```

```
Epoch 00001: val_loss improved from inf to 6.67180, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
```

```
Epoch 2/400
3/3 [=====] - 0s 24ms/step - loss: 18.5496 - accuracy: 0.1667 - val_loss: 7.6783 - val_accuracy: 0.0541
```

```
Epoch 00002: val_loss did not improve from 6.67180
```

```
Epoch 3/400
3/3 [=====] - 0s 40ms/step - loss: 18.2084 - accuracy: 0.1548 - val_loss: 4.5910 - val_accuracy: 0.0811
```

```
Epoch 00003: val_loss improved from 6.67180 to 4.59101, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
```

```
Epoch 4/400
3/3 [=====] - 0s 38ms/step - loss: 12.9495 - accuracy: 0.1548 - val_loss: 3.0620 - val_accuracy: 0.1622
```

```
Epoch 00004: val_loss improved from 4.59101 to 3.06201, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
```

```
Epoch 5/400
3/3 [=====] - 0s 28ms/step - loss: 13.1699 - accuracy: 0.1786 - val_loss: 2.4854 - val_accuracy: 0.2703
```

```
Epoch 00005: val_loss improved from 3.06201 to 2.48544, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
```

```
Epoch 6/400
3/3 [=====] - 0s 25ms/step - loss: 10.5653 - accuracy: 0.1905 - val_loss: 2.3231 - val_accuracy: 0.2703
```

Epoch 00006: val_loss improved from 2.48544 to 2.32307, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 7/400
3/3 [=====] - 0s 37ms/step - loss: 8.2479 - accuracy: 0.2262 - val_loss: 2.2298 - val_accuracy: 0.2703

Epoch 00007: val_loss improved from 2.32307 to 2.22975, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 8/400
3/3 [=====] - 0s 30ms/step - loss: 10.1137 - accuracy: 0.1429 - val_loss: 2.2623 - val_accuracy: 0.2432

Epoch 00008: val_loss did not improve from 2.22975
Epoch 9/400
3/3 [=====] - 0s 38ms/step - loss: 6.7183 - accuracy: 0.2738 - val_loss: 2.2465 - val_accuracy: 0.2162

Epoch 00009: val_loss did not improve from 2.22975
Epoch 10/400
3/3 [=====] - 0s 40ms/step - loss: 6.6810 - accuracy: 0.2619 - val_loss: 2.0726 - val_accuracy: 0.2162

Epoch 00010: val_loss improved from 2.22975 to 2.07259, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 11/400
3/3 [=====] - 0s 25ms/step - loss: 5.9884 - accuracy: 0.1905 - val_loss: 1.9459 - val_accuracy: 0.2162

Epoch 00011: val_loss improved from 2.07259 to 1.94589, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 12/400
3/3 [=====] - 0s 37ms/step - loss: 5.5743 - accuracy: 0.2143 - val_loss: 1.8548 - val_accuracy: 0.3243

Epoch 00012: val_loss improved from 1.94589 to 1.85475, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 13/400
3/3 [=====] - 0s 26ms/step - loss: 5.7705 - accuracy: 0.2857 - val_loss: 1.7804 - val_accuracy: 0.2703

Epoch 00013: val_loss improved from 1.85475 to 1.78038, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 14/400
3/3 [=====] - 0s 26ms/step - loss: 5.1562 - accuracy: 0.1905 - val_loss: 1.7344 - val_accuracy: 0.2973

Epoch 00014: val_loss improved from 1.78038 to 1.73437, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 15/400
3/3 [=====] - 0s 27ms/step - loss: 5.1915 - accuracy: 0.1429 - val_loss: 1.7178 - val_accuracy: 0.2973

Epoch 00015: val_loss improved from 1.73437 to 1.71779, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 16/400
3/3 [=====] - 0s 21ms/step - loss: 4.4986 - accuracy: 0.2262 - val_loss: 1.7111 - val_accuracy: 0.2973

Epoch 00016: val_loss improved from 1.71779 to 1.71108, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 17/400
3/3 [=====] - 0s 42ms/step - loss: 4.5136 - accuracy: 0.2619 - val_loss: 1.6960 - val_accuracy: 0.2973

Epoch 00017: val_loss improved from 1.71108 to 1.69605, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 18/400
3/3 [=====] - 0s 40ms/step - loss: 3.2346 - accuracy: 0.3333 - val_loss: 1.6548 - val_accuracy: 0.2973

Epoch 00018: val_loss improved from 1.69605 to 1.65477, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 19/400
3/3 [=====] - 0s 26ms/step - loss: 3.5830 - accuracy: 0.2976 - val_loss: 1.6269 - val_accuracy: 0.3243

Epoch 00019: val_loss improved from 1.65477 to 1.62693, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 20/400
3/3 [=====] - 0s 36ms/step - loss: 3.2392 - accuracy: 0.2857 - val_loss: 1.6266 - val_accuracy: 0.3784

Epoch 00020: val_loss improved from 1.62693 to 1.62658, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 21/400
3/3 [=====] - 0s 29ms/step - loss: 3.7340 - accuracy: 0.2500 - val_loss: 1.6190 - val_accuracy: 0.3784

Epoch 00021: val_loss improved from 1.62658 to 1.61899, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 22/400
3/3 [=====] - 0s 26ms/step - loss: 3.2906 - accuracy: 0.2619 - val_loss: 1.6135 - val_accuracy: 0.4595

Epoch 00022: val_loss improved from 1.61899 to 1.61354, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 23/400
3/3 [=====] - 0s 25ms/step - loss: 2.9721 - accuracy: 0.2976 - val_loss: 1.6092 - val_accuracy: 0.4595

Epoch 00023: val_loss improved from 1.61354 to 1.60924, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 24/400
3/3 [=====] - 0s 24ms/step - loss: 3.0720 - accuracy: 0.2381 - val_loss: 1.6107 - val_accuracy: 0.4324

Epoch 00024: val_loss did not improve from 1.60924
Epoch 25/400
3/3 [=====] - 0s 22ms/step - loss: 2.5430 - accuracy: 0.3690 - val_loss: 1.6094 - val_accuracy: 0.4324

Epoch 00025: val_loss did not improve from 1.60924
Epoch 26/400
3/3 [=====] - 0s 22ms/step - loss: 3.4285 - accuracy: 0.2262 - val_loss: 1.6076 - val_accuracy: 0.4324

Epoch 00026: val_loss improved from 1.60924 to 1.60761, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 27/400
3/3 [=====] - 0s 28ms/step - loss: 2.6846 - accuracy: 0.2857 - val_loss: 1.6026 - val_accuracy: 0.4595

Epoch 00027: val_loss improved from 1.60761 to 1.60259, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 28/400
3/3 [=====] - 0s 21ms/step - loss: 2.6597 - accuracy: 0.3095 - val_loss: 1.5971 - val_accuracy: 0.4595

Epoch 00028: val_loss improved from 1.60259 to 1.59705, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 29/400
3/3 [=====] - 0s 36ms/step - loss: 2.6366 - accuracy: 0.3214 - val_loss: 1.5974 - val_accuracy: 0.4595

Epoch 00029: val_loss did not improve from 1.59705
Epoch 30/400
3/3 [=====] - 0s 27ms/step - loss: 2.0680 - accuracy: 0.3333 - val_loss: 1.5964 - val_accuracy: 0.5405

Epoch 00030: val_loss improved from 1.59705 to 1.59638, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 31/400
3/3 [=====] - 0s 26ms/step - loss: 2.4941 - accuracy: 0.2738 - val_loss: 1.5920 - val_accuracy: 0.5135

Epoch 00031: val_loss improved from 1.59638 to 1.59202, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 32/400
3/3 [=====] - 0s 20ms/step - loss: 2.8131 - accuracy: 0.2381 - val_loss: 1.5892 - val_accuracy: 0.5405

Epoch 00032: val_loss improved from 1.59202 to 1.58916, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 33/400
3/3 [=====] - 0s 25ms/step - loss: 2.3884 - accuracy: 0.2976 - val_loss: 1.5930 - val_accuracy: 0.5405

Epoch 00033: val_loss did not improve from 1.58916
Epoch 34/400
3/3 [=====] - 0s 40ms/step - loss: 2.4745 - accuracy: 0.2857 - val_loss: 1.6006 - val_accuracy: 0.4595

Epoch 00034: val_loss did not improve from 1.58916
Epoch 35/400
3/3 [=====] - 0s 29ms/step - loss: 2.0606 - accuracy: 0.2738 - val_loss: 1.6037 - val_accuracy: 0.4595

Epoch 00035: val_loss did not improve from 1.58916
Epoch 36/400
3/3 [=====] - 0s 35ms/step - loss: 2.5195 - accuracy: 0.2738 - val_loss: 1.6087 - val_accuracy: 0.4595

Epoch 00036: val_loss did not improve from 1.58916
Epoch 37/400
3/3 [=====] - 0s 34ms/step - loss: 2.4294 - accuracy: 0.2976 - val_loss: 1.6096 - val_accuracy: 0.4865

Epoch 00037: val_loss did not improve from 1.58916
Epoch 38/400
3/3 [=====] - 0s 26ms/step - loss: 2.7267 - accuracy: 0.2619 - val_loss: 1.6138 - val_accuracy: 0.4865

Epoch 00038: val_loss did not improve from 1.58916
Epoch 39/400
3/3 [=====] - 0s 31ms/step - loss: 2.0616 - accuracy: 0.3452 - val_loss: 1.6165 - val_accuracy: 0.5405

Epoch 00039: val_loss did not improve from 1.58916
Epoch 40/400
3/3 [=====] - 0s 32ms/step - loss: 2.0681 - accuracy: 0.3333 - val_loss: 1.6191 - val_accuracy: 0.5135

Epoch 00040: val_loss did not improve from 1.58916
Epoch 41/400
3/3 [=====] - 0s 29ms/step - loss: 2.1808 - accuracy: 0.2976 - val_loss: 1.6227 - val_accuracy: 0.5405

Epoch 00041: val_loss did not improve from 1.58916
Epoch 42/400
3/3 [=====] - 0s 28ms/step - loss: 2.2812 - accuracy: 0.2500 - val_loss: 1.6214 - val_accuracy: 0.5946

Epoch 00042: val_loss did not improve from 1.58916
Epoch 43/400
3/3 [=====] - 0s 26ms/step - loss: 1.8800 - accuracy: 0.3333 - val_loss: 1.6212 - val_accuracy: 0.5946

Epoch 00043: val_loss did not improve from 1.58916
Epoch 44/400
3/3 [=====] - 0s 24ms/step - loss: 1.8765 - accuracy: 0.2976 - val_loss: 1.6196 - val_accuracy: 0.6757

Epoch 00044: val_loss did not improve from 1.58916
Epoch 45/400
3/3 [=====] - 0s 29ms/step - loss: 2.4578 - accuracy: 0.2262 - val_loss: 1.6187 - val_accuracy: 0.7027

Epoch 00045: val_loss did not improve from 1.58916
Epoch 46/400
3/3 [=====] - 0s 24ms/step - loss: 2.3257 - accuracy: 0.2262 - val_loss: 1.6213 - val_accuracy: 0.6216

Epoch 00046: val_loss did not improve from 1.58916
Epoch 47/400
3/3 [=====] - 0s 34ms/step - loss: 2.2856 - accuracy: 0.2738 - val_loss: 1.6214 - val_accuracy: 0.6486

Epoch 00047: val_loss did not improve from 1.58916
Epoch 48/400
3/3 [=====] - 0s 25ms/step - loss: 2.0959 - accuracy: 0.3095 - val_loss: 1.6180 - val_accuracy: 0.5135

Epoch 00048: val_loss did not improve from 1.58916
Epoch 49/400
3/3 [=====] - 0s 27ms/step - loss: 1.8950 - accuracy: 0.2857 - val_loss: 1.6143 - val_accuracy: 0.5135

Epoch 00049: val_loss did not improve from 1.58916
Epoch 50/400
3/3 [=====] - 0s 28ms/step - loss: 2.0670 - accuracy: 0.2857 - val_loss: 1.6136 - val_accuracy: 0.4595

Epoch 00050: val_loss did not improve from 1.58916
Epoch 51/400
3/3 [=====] - 0s 30ms/step - loss: 2.1748 - accuracy: 0.2738 - val_loss: 1.6132 - val_accuracy: 0.4595

Epoch 00051: val_loss did not improve from 1.58916
Epoch 52/400
3/3 [=====] - 0s 25ms/step - loss: 2.0924 - accuracy: 0.2976 - val_loss: 1.6144 - val_accuracy: 0.4054

Epoch 00052: val_loss did not improve from 1.58916
Epoch 53/400
3/3 [=====] - 0s 25ms/step - loss: 1.5720 - accuracy: 0.4524 - val_loss: 1.6179 - val_accuracy: 0.4595

Epoch 00053: val_loss did not improve from 1.58916
Epoch 54/400
3/3 [=====] - 0s 24ms/step - loss: 1.7939 - accuracy: 0.3333 - val_loss: 1.6194 - val_accuracy: 0.4595

Epoch 00054: val_loss did not improve from 1.58916
Epoch 55/400
3/3 [=====] - 0s 25ms/step - loss: 1.7834 - accuracy: 0.2857 - val_loss: 1.6194 - val_accuracy: 0.4865

Epoch 00055: val_loss did not improve from 1.58916
Epoch 56/400
3/3 [=====] - 0s 24ms/step - loss: 1.7457 - accuracy: 0.3929 - val_loss: 1.6184 - val_accuracy: 0.5405

Epoch 00056: val_loss did not improve from 1.58916
Epoch 57/400
3/3 [=====] - 0s 29ms/step - loss: 1.7057 - accuracy: 0.4167 - val_loss: 1.6122 - val_accuracy: 0.5676

Epoch 00057: val_loss did not improve from 1.58916
Epoch 58/400
3/3 [=====] - 0s 24ms/step - loss: 1.7544 - accuracy: 0.3452 - val_loss: 1.6092 - val_accuracy: 0.5676

Epoch 00058: val_loss did not improve from 1.58916
Epoch 59/400
3/3 [=====] - 0s 25ms/step - loss: 1.8742 - accuracy: 0.3571 - val_loss: 1.6076 - val_accuracy: 0.5676

Epoch 00059: val_loss did not improve from 1.58916
Epoch 60/400
3/3 [=====] - 0s 24ms/step - loss: 1.7888 - accuracy: 0.2857 - val_loss: 1.6040 - val_accuracy: 0.5676

Epoch 00060: val_loss did not improve from 1.58916
Epoch 61/400
3/3 [=====] - 0s 24ms/step - loss: 1.6708 - accuracy: 0.3810 - val_loss: 1.6027 - val_accuracy: 0.5946

Epoch 00061: val_loss did not improve from 1.58916
Epoch 62/400
3/3 [=====] - 0s 27ms/step - loss: 1.7721 - accuracy: 0.3214 - val_loss: 1.5989 - val_accuracy: 0.5676

Epoch 00062: val_loss did not improve from 1.58916
Epoch 63/400
3/3 [=====] - 0s 25ms/step - loss: 1.6794 - accuracy: 0.3571 - val_loss: 1.5921 - val_accuracy: 0.5405

Epoch 00063: val_loss did not improve from 1.58916
Epoch 64/400
3/3 [=====] - 0s 27ms/step - loss: 1.7314 - accuracy: 0.3452 - val_loss: 1.5852 - val_accuracy: 0.5946

Epoch 00064: val_loss improved from 1.58916 to 1.58517, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 65/400
3/3 [=====] - 0s 24ms/step - loss: 1.6836 - accuracy: 0.3333 - val_loss: 1.5801 - val_accuracy: 0.5946

Epoch 00065: val_loss improved from 1.58517 to 1.58013, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 66/400
3/3 [=====] - 0s 25ms/step - loss: 1.6802 - accuracy: 0.3452 - val_loss: 1.5763 - val_accuracy: 0.5676

Epoch 00066: val_loss improved from 1.58013 to 1.57627, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 67/400
3/3 [=====] - 0s 28ms/step - loss: 1.7214 - accuracy: 0.3810 - val_loss: 1.5718 - val_accuracy: 0.6216

Epoch 00067: val_loss improved from 1.57627 to 1.57184, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 68/400
3/3 [=====] - 0s 24ms/step - loss: 1.5515 - accuracy: 0.4048 - val_loss: 1.5651 - val_accuracy: 0.6216

Epoch 00068: val_loss improved from 1.57184 to 1.56511, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 69/400
3/3 [=====] - 0s 26ms/step - loss: 1.9164 - accuracy: 0.3690 - val_loss: 1.5621 - val_accuracy: 0.5946

Epoch 00069: val_loss improved from 1.56511 to 1.56207, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 70/400

3/3 [=====] - 0s 23ms/step - loss: 1.8371 - accuracy: 0.3452 - val_loss: 1.5650 - val_accuracy: 0.5946

Epoch 00070: val_loss did not improve from 1.56207
Epoch 71/400

3/3 [=====] - 0s 23ms/step - loss: 1.4141 - accuracy: 0.4286 - val_loss: 1.5711 - val_accuracy: 0.5405

Epoch 00071: val_loss did not improve from 1.56207
Epoch 72/400

3/3 [=====] - 0s 27ms/step - loss: 1.6121 - accuracy: 0.3214 - val_loss: 1.5804 - val_accuracy: 0.5405

Epoch 00072: val_loss did not improve from 1.56207
Epoch 73/400

3/3 [=====] - 0s 27ms/step - loss: 1.6142 - accuracy: 0.3214 - val_loss: 1.5855 - val_accuracy: 0.5405

Epoch 00073: val_loss did not improve from 1.56207
Epoch 74/400

3/3 [=====] - 0s 28ms/step - loss: 1.6519 - accuracy: 0.3452 - val_loss: 1.5850 - val_accuracy: 0.5405

Epoch 00074: val_loss did not improve from 1.56207
Epoch 75/400

3/3 [=====] - 0s 28ms/step - loss: 1.5952 - accuracy: 0.3690 - val_loss: 1.5816 - val_accuracy: 0.5405

Epoch 00075: val_loss did not improve from 1.56207
Epoch 76/400

3/3 [=====] - 0s 27ms/step - loss: 1.5579 - accuracy: 0.3095 - val_loss: 1.5759 - val_accuracy: 0.5405

Epoch 00076: val_loss did not improve from 1.56207
Epoch 77/400

3/3 [=====] - 0s 29ms/step - loss: 1.4397 - accuracy: 0.4762 - val_loss: 1.5697 - val_accuracy: 0.5405

Epoch 00077: val_loss did not improve from 1.56207
Epoch 78/400

3/3 [=====] - 0s 29ms/step - loss: 1.6455 - accuracy: 0.3810 - val_loss: 1.5638 - val_accuracy: 0.5405

Epoch 00078: val_loss did not improve from 1.56207
Epoch 79/400

3/3 [=====] - 0s 31ms/step - loss: 1.6137 - accuracy: 0.3571 - val_loss: 1.5574 - val_accuracy: 0.5405

Epoch 00079: val_loss improved from 1.56207 to 1.55745, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 80/400

3/3 [=====] - 0s 28ms/step - loss: 1.3797 - accuracy: 0.4167 - val_loss: 1.5484 - val_accuracy: 0.6216

Epoch 00080: val_loss improved from 1.55745 to 1.54844, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 81/400

3/3 [=====] - 0s 24ms/step - loss: 1.5742 - accuracy: 0.4167 - val_loss: 1.5427 - val_accuracy: 0.6216

Epoch 00081: val_loss improved from 1.54844 to 1.54271, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 82/400

3/3 [=====] - 0s 27ms/step - loss: 1.6046 - accuracy: 0.4405 - val_loss: 1.5396 - val_accuracy: 0.6216

Epoch 00082: val_loss improved from 1.54271 to 1.53961, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 83/400

3/3 [=====] - 0s 24ms/step - loss: 1.5276 - accuracy: 0.3452 - val_loss: 1.5334 - val_accuracy: 0.6216

Epoch 00083: val_loss improved from 1.53961 to 1.53340, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 84/400

3/3 [=====] - 0s 25ms/step - loss: 1.7738 - accuracy: 0.3571 - val_loss: 1.5266 - val_accuracy: 0.5946

Epoch 00084: val_loss improved from 1.53340 to 1.52656, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 85/400

3/3 [=====] - 0s 24ms/step - loss: 1.4610 - accuracy: 0.4286 - val_loss: 1.5184 - val_accuracy: 0.5946

Epoch 00085: val_loss improved from 1.52656 to 1.51837, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 86/400

3/3 [=====] - 0s 21ms/step - loss: 1.5833 - accuracy: 0.3214 - val_loss: 1.5125 - val_accuracy: 0.5946

Epoch 00086: val_loss improved from 1.51837 to 1.51255, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 87/400

3/3 [=====] - 0s 26ms/step - loss: 1.4566 - accuracy: 0.4167 - val_loss: 1.5082 - val_accuracy: 0.5946

Epoch 00087: val_loss improved from 1.51255 to 1.50818, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 88/400

3/3 [=====] - 0s 28ms/step - loss: 1.4698 - accuracy: 0.4405 - val_loss: 1.5079 - val_accuracy: 0.5946

Epoch 00088: val_loss improved from 1.50818 to 1.50790, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 89/400

3/3 [=====] - 0s 28ms/step - loss: 1.4521 - accuracy: 0.4167 - val_loss: 1.5065 - val_accuracy: 0.6216

Epoch 00089: val_loss improved from 1.50790 to 1.50650, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 90/400

3/3 [=====] - 0s 27ms/step - loss: 1.5217 - accuracy: 0.3810 - val_loss: 1.5063 - val_accuracy: 0.6486

Epoch 00090: val_loss improved from 1.50650 to 1.50633, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 91/400

3/3 [=====] - 0s 22ms/step - loss: 1.4439 - accuracy: 0.4524 - val_loss: 1.5086 - val_accuracy: 0.6757

Epoch 00091: val_loss did not improve from 1.50633

Epoch 92/400

3/3 [=====] - 0s 23ms/step - loss: 1.4952 - accuracy: 0.4286 - val_loss: 1.5124 - val_accuracy: 0.7027

Epoch 00092: val_loss did not improve from 1.50633

Epoch 93/400

3/3 [=====] - 0s 33ms/step - loss: 1.4301 - accuracy: 0.4286 - val_loss: 1.5125 - val_accuracy: 0.7027

Epoch 00093: val_loss did not improve from 1.50633

Epoch 94/400

3/3 [=====] - 0s 27ms/step - loss: 1.3066 - accuracy: 0.4405 - val_loss: 1.5049 - val_accuracy: 0.6486

Epoch 00094: val_loss improved from 1.50633 to 1.50486, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 95/400

3/3 [=====] - 0s 26ms/step - loss: 1.5390 - accuracy: 0.4405 - val_loss: 1.4898 - val_accuracy: 0.6757

Epoch 00095: val_loss improved from 1.50486 to 1.48983, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 96/400

3/3 [=====] - 0s 24ms/step - loss: 1.5787 - accuracy: 0.3571 - val_loss: 1.4769 - val_accuracy: 0.6757

Epoch 00096: val_loss improved from 1.48983 to 1.47687, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 97/400

3/3 [=====] - 0s 28ms/step - loss: 1.6695 - accuracy: 0.3810 - val_loss: 1.4647 - val_accuracy: 0.6757

Epoch 00097: val_loss improved from 1.47687 to 1.46471, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 98/400

3/3 [=====] - 0s 24ms/step - loss: 1.3601 - accuracy: 0.4881 - val_loss: 1.4536 - val_accuracy: 0.7027

Epoch 00098: val_loss improved from 1.46471 to 1.45358, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 99/400

3/3 [=====] - 0s 24ms/step - loss: 1.4224 - accuracy: 0.4286 - val_loss: 1.4443 - val_accuracy: 0.7027

Epoch 00099: val_loss improved from 1.45358 to 1.44434, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 100/400

3/3 [=====] - 0s 23ms/step - loss: 1.2904 - accuracy: 0.5238 - val_loss: 1.4338 - val_accuracy: 0.6757

Epoch 00100: val_loss improved from 1.44434 to 1.43380, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 101/400

3/3 [=====] - 0s 22ms/step - loss: 1.3281 - accuracy: 0.5119 - val_loss: 1.4173 - val_accuracy: 0.6757

Epoch 00101: val_loss improved from 1.43380 to 1.41726, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 102/400

3/3 [=====] - 0s 29ms/step - loss: 1.5158 - accuracy: 0.3810 - val_loss: 1.4043 - val_accuracy: 0.6757

Epoch 00102: val_loss improved from 1.41726 to 1.40434, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 103/400

3/3 [=====] - 0s 28ms/step - loss: 1.2182 - accuracy: 0.4762 - val_loss: 1.3903 - val_accuracy: 0.6486

Epoch 00103: val_loss improved from 1.40434 to 1.39026, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 104/400

3/3 [=====] - 0s 28ms/step - loss: 1.6473 - accuracy: 0.2738 - val_loss: 1.3796 - val_accuracy: 0.6486

Epoch 00104: val_loss improved from 1.39026 to 1.37957, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 105/400

3/3 [=====] - 0s 22ms/step - loss: 1.3216 - accuracy: 0.4048 - val_loss: 1.3686 - val_accuracy: 0.6486

Epoch 00105: val_loss improved from 1.37957 to 1.36864, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 106/400

3/3 [=====] - 0s 25ms/step - loss: 1.2715 - accuracy: 0.4881 - val_loss: 1.3621 - val_accuracy: 0.6757

Epoch 00106: val_loss improved from 1.36864 to 1.36209, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 107/400

3/3 [=====] - 0s 23ms/step - loss: 1.1811 - accuracy: 0.5476 - val_loss: 1.3560 - val_accuracy: 0.6757

Epoch 00107: val_loss improved from 1.36209 to 1.35596, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 108/400

3/3 [=====] - 0s 32ms/step - loss: 1.2626 - accuracy: 0.4524 - val_loss: 1.3476 - val_accuracy: 0.6757

Epoch 00108: val_loss improved from 1.35596 to 1.34757, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 109/400

3/3 [=====] - 0s 26ms/step - loss: 1.2113 - accuracy: 0.5000 - val_loss: 1.3331 - val_accuracy: 0.6486

Epoch 00109: val_loss improved from 1.34757 to 1.33312, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 110/400

3/3 [=====] - 0s 25ms/step - loss: 1.3437 - accuracy: 0.4524 - val_loss: 1.3134 - val_accuracy: 0.7297

Epoch 00110: val_loss improved from 1.33312 to 1.31342, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 111/400

3/3 [=====] - 0s 30ms/step - loss: 1.2478 - accuracy: 0.5238 - val_loss: 1.2927 - val_accuracy: 0.7568

Epoch 00111: val_loss improved from 1.31342 to 1.29267, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 112/400

3/3 [=====] - 0s 25ms/step - loss: 1.2796 - accuracy: 0.4405 - val_loss: 1.2781 - val_accuracy: 0.7297

Epoch 00112: val_loss improved from 1.29267 to 1.27806, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 113/400

3/3 [=====] - 0s 23ms/step - loss: 1.3681 - accuracy: 0.4286 - val_loss: 1.2617 - val_accuracy: 0.7297

Epoch 00113: val_loss improved from 1.27806 to 1.26169, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 114/400

3/3 [=====] - 0s 24ms/step - loss: 1.1360 - accuracy: 0.5357 - val_loss: 1.2426 - val_accuracy: 0.7027

Epoch 00114: val_loss improved from 1.26169 to 1.24265, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 115/400

3/3 [=====] - 0s 22ms/step - loss: 1.1955 - accuracy: 0.5238 - val_loss: 1.2210 - val_accuracy: 0.6757

Epoch 00115: val_loss improved from 1.24265 to 1.22101, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 116/400

3/3 [=====] - 0s 25ms/step - loss: 1.1808 - accuracy: 0.5238 - val_loss: 1.1962 - val_accuracy: 0.6757

Epoch 00116: val_loss improved from 1.22101 to 1.19625, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 117/400

3/3 [=====] - 0s 21ms/step - loss: 1.3107 - accuracy: 0.4167 - val_loss: 1.1678 - val_accuracy: 0.7027

Epoch 00117: val_loss improved from 1.19625 to 1.16783, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 118/400

3/3 [=====] - 0s 32ms/step - loss: 1.3062 - accuracy: 0.5000 - val_loss: 1.1504 - val_accuracy: 0.6757

Epoch 00118: val_loss improved from 1.16783 to 1.15038, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 119/400

3/3 [=====] - 0s 26ms/step - loss: 1.1472 - accuracy: 0.5238 - val_loss: 1.1314 - val_accuracy: 0.7027

Epoch 00119: val_loss improved from 1.15038 to 1.13136, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 120/400

3/3 [=====] - 0s 26ms/step - loss: 1.2879 - accuracy: 0.4881 - val_loss: 1.1248 - val_accuracy: 0.7027

Epoch 00120: val_loss improved from 1.13136 to 1.12477, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 121/400

3/3 [=====] - 0s 23ms/step - loss: 1.1385 - accuracy: 0.5238 - val_loss: 1.1110 - val_accuracy: 0.7568

Epoch 00121: val_loss improved from 1.12477 to 1.11096, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 122/400

3/3 [=====] - 0s 21ms/step - loss: 1.1008 - accuracy: 0.5833 - val_loss: 1.0906 - val_accuracy: 0.7838

Epoch 00122: val_loss improved from 1.11096 to 1.09060, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 123/400

3/3 [=====] - 0s 36ms/step - loss: 1.2522 - accuracy: 0.5000 - val_loss: 1.0637 - val_accuracy: 0.7568

Epoch 00123: val_loss improved from 1.09060 to 1.06365, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 124/400

3/3 [=====] - 0s 28ms/step - loss: 1.1701 - accuracy: 0.4881 - val_loss: 1.0476 - val_accuracy: 0.7568

Epoch 00124: val_loss improved from 1.06365 to 1.04757, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 125/400

3/3 [=====] - 0s 22ms/step - loss: 1.1097 - accuracy: 0.5476 - val_loss: 1.0331 - val_accuracy: 0.8108

Epoch 00125: val_loss improved from 1.04757 to 1.03305, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 126/400

3/3 [=====] - 0s 21ms/step - loss: 1.3683 - accuracy: 0.4524 - val_loss: 1.0188 - val_accuracy: 0.8378

Epoch 00126: val_loss improved from 1.03305 to 1.01881, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 127/400

3/3 [=====] - 0s 28ms/step - loss: 1.1655 - accuracy: 0.5119 - val_loss: 1.0086 - val_accuracy: 0.8378

Epoch 00127: val_loss improved from 1.01881 to 1.00862, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 128/400

3/3 [=====] - 0s 24ms/step - loss: 1.1683 - accuracy: 0.5238 - val_loss: 1.0072 - val_accuracy: 0.8378

Epoch 00128: val_loss improved from 1.00862 to 1.00722, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 129/400

3/3 [=====] - 0s 28ms/step - loss: 1.0965 - accuracy: 0.5595 - val_loss: 1.0127 - val_accuracy: 0.8108

Epoch 00129: val_loss did not improve from 1.00722
Epoch 130/400
3/3 [=====] - 0s 29ms/step - loss: 1.3590 - accuracy: 0.4762 - val_loss: 1.0149 - val_accuracy: 0.8378

Epoch 00130: val_loss did not improve from 1.00722
Epoch 131/400
3/3 [=====] - 0s 27ms/step - loss: 1.1695 - accuracy: 0.5476 - val_loss: 1.0132 - val_accuracy: 0.8378

Epoch 00131: val_loss did not improve from 1.00722
Epoch 132/400
3/3 [=====] - 0s 25ms/step - loss: 1.0690 - accuracy: 0.6071 - val_loss: 1.0071 - val_accuracy: 0.8378

Epoch 00132: val_loss improved from 1.00722 to 1.00708, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 133/400
3/3 [=====] - 0s 20ms/step - loss: 1.0558 - accuracy: 0.6071 - val_loss: 0.9996 - val_accuracy: 0.8108

Epoch 00133: val_loss improved from 1.00708 to 0.99961, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 134/400
3/3 [=====] - 0s 20ms/step - loss: 1.1506 - accuracy: 0.4881 - val_loss: 0.9912 - val_accuracy: 0.8108

Epoch 00134: val_loss improved from 0.99961 to 0.99125, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 135/400
3/3 [=====] - 0s 20ms/step - loss: 0.9006 - accuracy: 0.6667 - val_loss: 0.9821 - val_accuracy: 0.7838

Epoch 00135: val_loss improved from 0.99125 to 0.98210, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 136/400
3/3 [=====] - 0s 24ms/step - loss: 1.0486 - accuracy: 0.5952 - val_loss: 0.9714 - val_accuracy: 0.7838

Epoch 00136: val_loss improved from 0.98210 to 0.97144, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 137/400
3/3 [=====] - 0s 22ms/step - loss: 1.0677 - accuracy: 0.6190 - val_loss: 0.9615 - val_accuracy: 0.7838

Epoch 00137: val_loss improved from 0.97144 to 0.96149, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 138/400
3/3 [=====] - 0s 21ms/step - loss: 1.1437 - accuracy: 0.5714 - val_loss: 0.9517 - val_accuracy: 0.8108

Epoch 00138: val_loss improved from 0.96149 to 0.95173, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 139/400
3/3 [=====] - 0s 21ms/step - loss: 0.8425 - accuracy: 0.6786 - val_loss: 0.9325 - val_accuracy: 0.8108

Epoch 00139: val_loss improved from 0.95173 to 0.93253, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 140/400
3/3 [=====] - 0s 23ms/step - loss: 1.0665 - accuracy: 0.5119 - val_loss: 0.9114 - val_accuracy: 0.8108

Epoch 00140: val_loss improved from 0.93253 to 0.91137, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 141/400
3/3 [=====] - 0s 27ms/step - loss: 0.9556 - accuracy: 0.6310 - val_loss: 0.8891 - val_accuracy: 0.8108

Epoch 00141: val_loss improved from 0.91137 to 0.88908, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 142/400

3/3 [=====] - 0s 27ms/step - loss: 1.1745 - accuracy: 0.5833 - val_loss: 0.8683 - val_accuracy: 0.8108

Epoch 00142: val_loss improved from 0.88908 to 0.86834, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 143/400

3/3 [=====] - 0s 21ms/step - loss: 1.0388 - accuracy: 0.5357 - val_loss: 0.8508 - val_accuracy: 0.8108

Epoch 00143: val_loss improved from 0.86834 to 0.85079, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 144/400

3/3 [=====] - 0s 22ms/step - loss: 0.9993 - accuracy: 0.6190 - val_loss: 0.8319 - val_accuracy: 0.8108

Epoch 00144: val_loss improved from 0.85079 to 0.83191, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 145/400

3/3 [=====] - 0s 24ms/step - loss: 0.8983 - accuracy: 0.6429 - val_loss: 0.8114 - val_accuracy: 0.8108

Epoch 00145: val_loss improved from 0.83191 to 0.81141, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 146/400

3/3 [=====] - 0s 28ms/step - loss: 0.9189 - accuracy: 0.6071 - val_loss: 0.7922 - val_accuracy: 0.8378

Epoch 00146: val_loss improved from 0.81141 to 0.79224, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 147/400

3/3 [=====] - 0s 33ms/step - loss: 1.2351 - accuracy: 0.5952 - val_loss: 0.7777 - val_accuracy: 0.8378

Epoch 00147: val_loss improved from 0.79224 to 0.77775, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 148/400

3/3 [=====] - 0s 25ms/step - loss: 0.7839 - accuracy: 0.7143 - val_loss: 0.7527 - val_accuracy: 0.8378

Epoch 00148: val_loss improved from 0.77775 to 0.75271, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 149/400

3/3 [=====] - 0s 23ms/step - loss: 0.8646 - accuracy: 0.6905 - val_loss: 0.7235 - val_accuracy: 0.8378

Epoch 00149: val_loss improved from 0.75271 to 0.72353, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 150/400

3/3 [=====] - 0s 23ms/step - loss: 0.9096 - accuracy: 0.6786 - val_loss: 0.7036 - val_accuracy: 0.8378

Epoch 00150: val_loss improved from 0.72353 to 0.70363, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 151/400

3/3 [=====] - 0s 21ms/step - loss: 0.9721 - accuracy: 0.6071 - val_loss: 0.6929 - val_accuracy: 0.8378

Epoch 00151: val_loss improved from 0.70363 to 0.69287, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 152/400

3/3 [=====] - 0s 21ms/step - loss: 0.9796 - accuracy: 0.6548 - val_loss: 0.6907 - val_accuracy: 0.8378

Epoch 00152: val_loss improved from 0.69287 to 0.69073, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 153/400

3/3 [=====] - 0s 21ms/step - loss: 0.8002 - accuracy: 0.7024 - val_loss: 0.6842 - val_accuracy: 0.8378

Epoch 00153: val_loss improved from 0.69073 to 0.68415, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 154/400

3/3 [=====] - 0s 26ms/step - loss: 1.1280 - accuracy: 0.5238 - val_loss: 0.6737 - val_accuracy: 0.8378

Epoch 00154: val_loss improved from 0.68415 to 0.67365, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 155/400

3/3 [=====] - 0s 29ms/step - loss: 0.7685 - accuracy: 0.7262 - val_loss: 0.6576 - val_accuracy: 0.8649

Epoch 00155: val_loss improved from 0.67365 to 0.65760, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 156/400

3/3 [=====] - 0s 24ms/step - loss: 0.9429 - accuracy: 0.6548 - val_loss: 0.6453 - val_accuracy: 0.8649

Epoch 00156: val_loss improved from 0.65760 to 0.64530, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 157/400

3/3 [=====] - 0s 26ms/step - loss: 0.7910 - accuracy: 0.6667 - val_loss: 0.6358 - val_accuracy: 0.8649

Epoch 00157: val_loss improved from 0.64530 to 0.63578, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 158/400

3/3 [=====] - 0s 22ms/step - loss: 0.9626 - accuracy: 0.6071 - val_loss: 0.6322 - val_accuracy: 0.8649

Epoch 00158: val_loss improved from 0.63578 to 0.63223, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 159/400

3/3 [=====] - 0s 26ms/step - loss: 0.8856 - accuracy: 0.6429 - val_loss: 0.6285 - val_accuracy: 0.8649

Epoch 00159: val_loss improved from 0.63223 to 0.62848, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 160/400

3/3 [=====] - 0s 24ms/step - loss: 0.8347 - accuracy: 0.7024 - val_loss: 0.6258 - val_accuracy: 0.8649

Epoch 00160: val_loss improved from 0.62848 to 0.62575, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 161/400

3/3 [=====] - 0s 22ms/step - loss: 1.0134 - accuracy: 0.6667 - val_loss: 0.6316 - val_accuracy: 0.8649

Epoch 00161: val_loss did not improve from 0.62575

Epoch 162/400

3/3 [=====] - 0s 29ms/step - loss: 0.9617 - accuracy: 0.6667 - val_loss: 0.6396 - val_accuracy: 0.8649

Epoch 00162: val_loss did not improve from 0.62575

Epoch 163/400

3/3 [=====] - 0s 36ms/step - loss: 0.8477 - accuracy: 0.6429 - val_loss: 0.6356 - val_accuracy: 0.8649

Epoch 00163: val_loss did not improve from 0.62575

Epoch 164/400

3/3 [=====] - 0s 24ms/step - loss: 0.8959 - accuracy: 0.7262 - val_loss: 0.6214 - val_accuracy: 0.8649

Epoch 00164: val_loss improved from 0.62575 to 0.62141, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 165/400

3/3 [=====] - 0s 22ms/step - loss: 0.7758 - accuracy: 0.7381 - val_loss: 0.6020 - val_accuracy: 0.9189

Epoch 00165: val_loss improved from 0.62141 to 0.60204, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 166/400

3/3 [=====] - 0s 30ms/step - loss: 0.8408 - accuracy: 0.6429 - val_loss: 0.5845 - val_accuracy: 0.9189

Epoch 00166: val_loss improved from 0.60204 to 0.58451, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 167/400

3/3 [=====] - 0s 25ms/step - loss: 0.7698 - accuracy: 0.6905 - val_loss: 0.5736 - val_accuracy: 0.9189

Epoch 00167: val_loss improved from 0.58451 to 0.57362, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 168/400

3/3 [=====] - 0s 25ms/step - loss: 0.9245 - accuracy: 0.6429 - val_loss: 0.5670 - val_accuracy: 0.9189

Epoch 00168: val_loss improved from 0.57362 to 0.56698, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 169/400

3/3 [=====] - 0s 21ms/step - loss: 0.8258 - accuracy: 0.6786 - val_loss: 0.5539 - val_accuracy: 0.9189

Epoch 00169: val_loss improved from 0.56698 to 0.55393, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 170/400

3/3 [=====] - 0s 21ms/step - loss: 0.8801 - accuracy: 0.6786 - val_loss: 0.5464 - val_accuracy: 0.9189

Epoch 00170: val_loss improved from 0.55393 to 0.54641, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 171/400

3/3 [=====] - 0s 26ms/step - loss: 0.7337 - accuracy: 0.7381 - val_loss: 0.5298 - val_accuracy: 0.9189

Epoch 00171: val_loss improved from 0.54641 to 0.52984, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 172/400

3/3 [=====] - 0s 20ms/step - loss: 0.8521 - accuracy: 0.6548 - val_loss: 0.5135 - val_accuracy: 0.9189

Epoch 00172: val_loss improved from 0.52984 to 0.51352, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 173/400

3/3 [=====] - 0s 20ms/step - loss: 0.6989 - accuracy: 0.7381 - val_loss: 0.4976 - val_accuracy: 0.9189

Epoch 00173: val_loss improved from 0.51352 to 0.49758, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 174/400

3/3 [=====] - 0s 34ms/step - loss: 0.8456 - accuracy: 0.7143 - val_loss: 0.4767 - val_accuracy: 0.9189

Epoch 00174: val_loss improved from 0.49758 to 0.47670, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 175/400

3/3 [=====] - 0s 21ms/step - loss: 0.7123 - accuracy: 0.8095 - val_loss: 0.4627 - val_accuracy: 0.9189

Epoch 00175: val_loss improved from 0.47670 to 0.46271, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 176/400

3/3 [=====] - 0s 23ms/step - loss: 0.7923 - accuracy: 0.7738 - val_loss: 0.4556 - val_accuracy: 0.9189

Epoch 00176: val_loss improved from 0.46271 to 0.45559, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 177/400

3/3 [=====] - 0s 28ms/step - loss: 0.8246 - accuracy: 0.7143 - val_loss: 0.4526 - val_accuracy: 0.9189

Epoch 00177: val_loss improved from 0.45559 to 0.45264, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 178/400

3/3 [=====] - 0s 20ms/step - loss: 0.7567 - accuracy: 0.7619 - val_loss: 0.4536 - val_accuracy: 0.9189

Epoch 00178: val_loss did not improve from 0.45264

Epoch 179/400

3/3 [=====] - 0s 22ms/step - loss: 0.6310 - accuracy: 0.8214 - val_loss: 0.4631 - val_accuracy: 0.9189

Epoch 00179: val_loss did not improve from 0.45264

Epoch 180/400

3/3 [=====] - 0s 25ms/step - loss: 0.5765 - accuracy: 0.8690 - val_loss: 0.4695 - val_accuracy: 0.9189

Epoch 00180: val_loss did not improve from 0.45264

Epoch 181/400

3/3 [=====] - 0s 21ms/step - loss: 0.4977 - accuracy: 0.8452 - val_loss: 0.4679 - val_accuracy: 0.9189

Epoch 00181: val_loss did not improve from 0.45264

Epoch 182/400

3/3 [=====] - 0s 24ms/step - loss: 0.8259 - accuracy: 0.6667 - val_loss: 0.4635 - val_accuracy: 0.9189

Epoch 00182: val_loss did not improve from 0.45264

Epoch 183/400

3/3 [=====] - 0s 24ms/step - loss: 0.7506 - accuracy: 0.7024 - val_loss: 0.4577 - val_accuracy: 0.9459

Epoch 00183: val_loss did not improve from 0.45264

Epoch 184/400

3/3 [=====] - 0s 24ms/step - loss: 0.5779 - accuracy: 0.7857 - val_loss: 0.4500 - val_accuracy: 0.9459

Epoch 00184: val_loss improved from 0.45264 to 0.44996, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 185/400

3/3 [=====] - 0s 21ms/step - loss: 0.5150 - accuracy: 0.8095 - val_loss: 0.4404 - val_accuracy: 0.9459

Epoch 00185: val_loss improved from 0.44996 to 0.44038, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 186/400

3/3 [=====] - 0s 22ms/step - loss: 0.6373 - accuracy: 0.8214 - val_loss: 0.4301 - val_accuracy: 0.9459

Epoch 00186: val_loss improved from 0.44038 to 0.43012, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 187/400

3/3 [=====] - 0s 22ms/step - loss: 0.7264 - accuracy: 0.6786 - val_loss: 0.4180 - val_accuracy: 0.9459

Epoch 00187: val_loss improved from 0.43012 to 0.41803, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 188/400

3/3 [=====] - 0s 21ms/step - loss: 0.6375 - accuracy: 0.7500 - val_loss: 0.4104 - val_accuracy: 0.9459

Epoch 00188: val_loss improved from 0.41803 to 0.41042, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 189/400

3/3 [=====] - 0s 25ms/step - loss: 0.6369 - accuracy: 0.7381 - val_loss: 0.4081 - val_accuracy: 0.9459

Epoch 00189: val_loss improved from 0.41042 to 0.40805, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 190/400

3/3 [=====] - 0s 31ms/step - loss: 0.6760 - accuracy: 0.7381 - val_loss: 0.4035 - val_accuracy: 0.9459

Epoch 00190: val_loss improved from 0.40805 to 0.40354, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 191/400

3/3 [=====] - 0s 27ms/step - loss: 0.6522 - accuracy: 0.8095 - val_loss: 0.4065 - val_accuracy: 0.9459

Epoch 00191: val_loss did not improve from 0.40354

Epoch 192/400

3/3 [=====] - 0s 22ms/step - loss: 0.5614 - accuracy: 0.7381 - val_loss: 0.4078 - val_accuracy: 0.9459

Epoch 00192: val_loss did not improve from 0.40354

Epoch 193/400

3/3 [=====] - 0s 24ms/step - loss: 0.5249 - accuracy: 0.8333 - val_loss: 0.4046 - val_accuracy: 0.9189

Epoch 00193: val_loss did not improve from 0.40354

Epoch 194/400

3/3 [=====] - 0s 20ms/step - loss: 0.6076 - accuracy: 0.8095 - val_loss: 0.3968 - val_accuracy: 0.9189

Epoch 00194: val_loss improved from 0.40354 to 0.39685, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 195/400

3/3 [=====] - 0s 23ms/step - loss: 0.4851 - accuracy: 0.8333 - val_loss: 0.3872 - val_accuracy: 0.9189

Epoch 00195: val_loss improved from 0.39685 to 0.38716, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 196/400

3/3 [=====] - 0s 28ms/step - loss: 0.5397 - accuracy: 0.8095 - val_loss: 0.3732 - val_accuracy: 0.9189

Epoch 00196: val_loss improved from 0.38716 to 0.37320, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 197/400

3/3 [=====] - 0s 23ms/step - loss: 0.6192 - accuracy: 0.7976 - val_loss: 0.3586 - val_accuracy: 0.9189

Epoch 00197: val_loss improved from 0.37320 to 0.35859, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 198/400

3/3 [=====] - 0s 24ms/step - loss: 0.6147 - accuracy: 0.8452 - val_loss: 0.3420 - val_accuracy: 0.9189

Epoch 00198: val_loss improved from 0.35859 to 0.34204, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 199/400

3/3 [=====] - 0s 23ms/step - loss: 0.5228 - accuracy: 0.8214 - val_loss: 0.3248 - val_accuracy: 0.9189

Epoch 00199: val_loss improved from 0.34204 to 0.32484, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 200/400

3/3 [=====] - 0s 22ms/step - loss: 0.4289 - accuracy: 0.8571 - val_loss: 0.3165 - val_accuracy: 0.9189

Epoch 00200: val_loss improved from 0.32484 to 0.31655, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 201/400

3/3 [=====] - 0s 27ms/step - loss: 0.7714 - accuracy: 0.7143 - val_loss: 0.3156 - val_accuracy: 0.9189

Epoch 00201: val_loss improved from 0.31655 to 0.31561, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 202/400

3/3 [=====] - 0s 25ms/step - loss: 0.4767 - accuracy: 0.8810 - val_loss: 0.3088 - val_accuracy: 0.9459

Epoch 00202: val_loss improved from 0.31561 to 0.30882, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 203/400

3/3 [=====] - 0s 29ms/step - loss: 0.4323 - accuracy: 0.8452 - val_loss: 0.2975 - val_accuracy: 0.9459

Epoch 00203: val_loss improved from 0.30882 to 0.29754, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 204/400

3/3 [=====] - 0s 29ms/step - loss: 0.5895 - accuracy: 0.8333 - val_loss: 0.2873 - val_accuracy: 0.9459

Epoch 00204: val_loss improved from 0.29754 to 0.28732, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 205/400

3/3 [=====] - 0s 27ms/step - loss: 0.4905 - accuracy: 0.8095 - val_loss: 0.2779 - val_accuracy: 0.9459

Epoch 00205: val_loss improved from 0.28732 to 0.27791, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 206/400

3/3 [=====] - 0s 21ms/step - loss: 0.4473 - accuracy: 0.8452 - val_loss: 0.2695 - val_accuracy: 0.9459

Epoch 00206: val_loss improved from 0.27791 to 0.26948, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 207/400

3/3 [=====] - 0s 23ms/step - loss: 0.5169 - accuracy: 0.7857 - val_loss: 0.2647 - val_accuracy: 0.9459

Epoch 00207: val_loss improved from 0.26948 to 0.26466, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 208/400

3/3 [=====] - 0s 29ms/step - loss: 0.5182 - accuracy: 0.8452 - val_loss: 0.2574 - val_accuracy: 0.9459

Epoch 00208: val_loss improved from 0.26466 to 0.25738, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 209/400

3/3 [=====] - 0s 29ms/step - loss: 0.3117 - accuracy: 0.8810 - val_loss: 0.2537 - val_accuracy: 0.9459

Epoch 00209: val_loss improved from 0.25738 to 0.25367, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 210/400

3/3 [=====] - 0s 28ms/step - loss: 0.4431 - accuracy: 0.7976 - val_loss: 0.2518 - val_accuracy: 0.9459

Epoch 00210: val_loss improved from 0.25367 to 0.25183, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 211/400

3/3 [=====] - 0s 21ms/step - loss: 0.4415 - accuracy: 0.8095 - val_loss: 0.2485 - val_accuracy: 0.9459

Epoch 00211: val_loss improved from 0.25183 to 0.24847, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 212/400

3/3 [=====] - 0s 20ms/step - loss: 0.5871 - accuracy: 0.8571 - val_loss: 0.2447 - val_accuracy: 0.9459

Epoch 00212: val_loss improved from 0.24847 to 0.24469, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 213/400

3/3 [=====] - 0s 21ms/step - loss: 0.4134 - accuracy: 0.8810 - val_loss: 0.2390 - val_accuracy: 0.9459

Epoch 00213: val_loss improved from 0.24469 to 0.23898, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 214/400

3/3 [=====] - 0s 21ms/step - loss: 0.4039 - accuracy: 0.8571 - val_loss: 0.2325 - val_accuracy: 0.9459

Epoch 00214: val_loss improved from 0.23898 to 0.23246, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 215/400

3/3 [=====] - 0s 24ms/step - loss: 0.4056 - accuracy: 0.8333 - val_loss: 0.2322 - val_accuracy: 0.9459

Epoch 00215: val_loss improved from 0.23246 to 0.23225, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 216/400

3/3 [=====] - 0s 22ms/step - loss: 0.3014 - accuracy: 0.8690 - val_loss: 0.2294 - val_accuracy: 0.9459

Epoch 00216: val_loss improved from 0.23225 to 0.22943, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 217/400

3/3 [=====] - 0s 21ms/step - loss: 0.3518 - accuracy: 0.8810 - val_loss: 0.2251 - val_accuracy: 0.9459

Epoch 00217: val_loss improved from 0.22943 to 0.22507, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 218/400

3/3 [=====] - 0s 28ms/step - loss: 0.4680 - accuracy: 0.8690 - val_loss: 0.2252 - val_accuracy: 0.9459

Epoch 00218: val_loss did not improve from 0.22507

Epoch 219/400

3/3 [=====] - 0s 22ms/step - loss: 0.4709 - accuracy: 0.7976 - val_loss: 0.2286 - val_accuracy: 0.9459

Epoch 00219: val_loss did not improve from 0.22507

Epoch 220/400

3/3 [=====] - 0s 23ms/step - loss: 0.4578 - accuracy: 0.8214 - val_loss: 0.2301 - val_accuracy: 0.9189

Epoch 00220: val_loss did not improve from 0.22507

Epoch 221/400

3/3 [=====] - 0s 22ms/step - loss: 0.3339 - accuracy: 0.8571 - val_loss: 0.2274 - val_accuracy: 0.9189

Epoch 00221: val_loss did not improve from 0.22507

Epoch 222/400

3/3 [=====] - 0s 25ms/step - loss: 0.2490 - accuracy: 0.9048 - val_loss: 0.2212 - val_accuracy: 0.9189

Epoch 00222: val_loss improved from 0.22507 to 0.22118, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 223/400

3/3 [=====] - 0s 22ms/step - loss: 0.3103 - accuracy: 0.9286 - val_loss: 0.2143 - val_accuracy: 0.9459

Epoch 00223: val_loss improved from 0.22118 to 0.21426, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 224/400

3/3 [=====] - 0s 22ms/step - loss: 0.1982 - accuracy: 0.9643 - val_loss: 0.2069 - val_accuracy: 0.9459

Epoch 00224: val_loss improved from 0.21426 to 0.20695, saving model to /home

e/ece/Music/weights.best.basic_mlp.hdf5

Epoch 225/400

3/3 [=====] - 0s 20ms/step - loss: 0.4103 - accuracy: 0.8810 - val_loss: 0.2041 - val_accuracy: 0.9459

Epoch 00225: val_loss improved from 0.20695 to 0.20407, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 226/400

3/3 [=====] - 0s 22ms/step - loss: 0.3243 - accuracy: 0.9048 - val_loss: 0.2037 - val_accuracy: 0.9459

Epoch 00226: val_loss improved from 0.20407 to 0.20368, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 227/400

3/3 [=====] - 0s 26ms/step - loss: 0.2652 - accuracy: 0.9286 - val_loss: 0.2043 - val_accuracy: 0.9459

Epoch 00227: val_loss did not improve from 0.20368

Epoch 228/400

3/3 [=====] - 0s 21ms/step - loss: 0.3171 - accuracy: 0.8452 - val_loss: 0.2034 - val_accuracy: 0.9459

Epoch 00228: val_loss improved from 0.20368 to 0.20342, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 229/400

3/3 [=====] - 0s 25ms/step - loss: 0.3519 - accuracy: 0.8452 - val_loss: 0.2034 - val_accuracy: 0.9459

Epoch 00229: val_loss improved from 0.20342 to 0.20340, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 230/400

3/3 [=====] - 0s 27ms/step - loss: 0.2144 - accuracy: 0.9048 - val_loss: 0.2017 - val_accuracy: 0.9459

Epoch 00230: val_loss improved from 0.20340 to 0.20171, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 231/400

3/3 [=====] - 0s 30ms/step - loss: 0.3411 - accuracy: 0.8810 - val_loss: 0.2030 - val_accuracy: 0.9459

Epoch 00231: val_loss did not improve from 0.20171

Epoch 232/400

3/3 [=====] - 0s 29ms/step - loss: 0.3396 - accuracy: 0.8810 - val_loss: 0.2005 - val_accuracy: 0.9459

Epoch 00232: val_loss improved from 0.20171 to 0.20050, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 233/400

3/3 [=====] - 0s 27ms/step - loss: 0.3532 - accuracy: 0.8333 - val_loss: 0.1964 - val_accuracy: 0.9459

Epoch 00233: val_loss improved from 0.20050 to 0.19641, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 234/400

3/3 [=====] - 0s 22ms/step - loss: 0.3454 - accuracy: 0.8810 - val_loss: 0.1930 - val_accuracy: 0.9459

Epoch 00234: val_loss improved from 0.19641 to 0.19301, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 235/400

3/3 [=====] - 0s 26ms/step - loss: 0.4352 - accuracy: 0.8810 - val_loss: 0.1924 - val_accuracy: 0.9459

Epoch 00235: val_loss improved from 0.19301 to 0.19240, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 236/400

3/3 [=====] - 0s 23ms/step - loss: 0.4052 - accuracy: 0.8571 - val_loss: 0.1994 - val_accuracy: 0.9459

Epoch 00236: val_loss did not improve from 0.19240
Epoch 237/400
3/3 [=====] - 0s 27ms/step - loss: 0.4103 - accuracy: 0.8810 - val_loss: 0.2031 - val_accuracy: 0.9459

Epoch 00237: val_loss did not improve from 0.19240
Epoch 238/400
3/3 [=====] - 0s 21ms/step - loss: 0.3306 - accuracy: 0.8571 - val_loss: 0.2006 - val_accuracy: 0.9459

Epoch 00238: val_loss did not improve from 0.19240
Epoch 239/400
3/3 [=====] - 0s 21ms/step - loss: 0.3665 - accuracy: 0.8690 - val_loss: 0.1940 - val_accuracy: 0.9459

Epoch 00239: val_loss did not improve from 0.19240
Epoch 240/400
3/3 [=====] - 0s 22ms/step - loss: 0.4648 - accuracy: 0.8333 - val_loss: 0.1870 - val_accuracy: 0.9459

Epoch 00240: val_loss improved from 0.19240 to 0.18697, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 241/400
3/3 [=====] - 0s 28ms/step - loss: 0.3632 - accuracy: 0.8929 - val_loss: 0.1828 - val_accuracy: 0.9459

Epoch 00241: val_loss improved from 0.18697 to 0.18279, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 242/400
3/3 [=====] - 0s 32ms/step - loss: 0.3267 - accuracy: 0.9286 - val_loss: 0.1787 - val_accuracy: 0.9459

Epoch 00242: val_loss improved from 0.18279 to 0.17872, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 243/400
3/3 [=====] - 0s 21ms/step - loss: 0.3212 - accuracy: 0.9286 - val_loss: 0.1788 - val_accuracy: 0.9459

Epoch 00243: val_loss did not improve from 0.17872
Epoch 244/400
3/3 [=====] - 0s 22ms/step - loss: 0.3048 - accuracy: 0.8810 - val_loss: 0.1819 - val_accuracy: 0.9459

Epoch 00244: val_loss did not improve from 0.17872
Epoch 245/400
3/3 [=====] - 0s 25ms/step - loss: 0.4249 - accuracy: 0.8690 - val_loss: 0.1795 - val_accuracy: 0.9459

Epoch 00245: val_loss did not improve from 0.17872
Epoch 246/400
3/3 [=====] - 0s 26ms/step - loss: 0.2218 - accuracy: 0.9286 - val_loss: 0.1771 - val_accuracy: 0.9459

Epoch 00246: val_loss improved from 0.17872 to 0.17705, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 247/400
3/3 [=====] - 0s 26ms/step - loss: 0.3503 - accuracy: 0.8810 - val_loss: 0.1750 - val_accuracy: 0.9459

Epoch 00247: val_loss improved from 0.17705 to 0.17504, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 248/400
3/3 [=====] - 0s 21ms/step - loss: 0.2492 - accuracy: 0.9167 - val_loss: 0.1728 - val_accuracy: 0.9459

Epoch 00248: val_loss improved from 0.17504 to 0.17284, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 249/400
3/3 [=====] - 0s 23ms/step - loss: 0.1700 - accuracy:

y: 0.9643 - val_loss: 0.1747 - val_accuracy: 0.9459

Epoch 00249: val_loss did not improve from 0.17284
Epoch 250/400
3/3 [=====] - 0s 29ms/step - loss: 0.1690 - accurac
y: 0.9643 - val_loss: 0.1783 - val_accuracy: 0.9459

Epoch 00250: val_loss did not improve from 0.17284
Epoch 251/400
3/3 [=====] - 0s 33ms/step - loss: 0.3446 - accurac
y: 0.8690 - val_loss: 0.1862 - val_accuracy: 0.9189

Epoch 00251: val_loss did not improve from 0.17284
Epoch 252/400
3/3 [=====] - 0s 25ms/step - loss: 0.3244 - accurac
y: 0.8929 - val_loss: 0.1941 - val_accuracy: 0.9189

Epoch 00252: val_loss did not improve from 0.17284
Epoch 253/400
3/3 [=====] - 0s 21ms/step - loss: 0.1521 - accurac
y: 0.9643 - val_loss: 0.2018 - val_accuracy: 0.9189

Epoch 00253: val_loss did not improve from 0.17284
Epoch 254/400
3/3 [=====] - 0s 30ms/step - loss: 0.3115 - accurac
y: 0.9167 - val_loss: 0.2059 - val_accuracy: 0.9189

Epoch 00254: val_loss did not improve from 0.17284
Epoch 255/400
3/3 [=====] - 0s 34ms/step - loss: 0.1932 - accurac
y: 0.9167 - val_loss: 0.1988 - val_accuracy: 0.9189

Epoch 00255: val_loss did not improve from 0.17284
Epoch 256/400
3/3 [=====] - 0s 24ms/step - loss: 0.2678 - accurac
y: 0.9167 - val_loss: 0.1908 - val_accuracy: 0.9459

Epoch 00256: val_loss did not improve from 0.17284
Epoch 257/400
3/3 [=====] - 0s 27ms/step - loss: 0.2507 - accurac
y: 0.8929 - val_loss: 0.1792 - val_accuracy: 0.9459

Epoch 00257: val_loss did not improve from 0.17284
Epoch 258/400
3/3 [=====] - 0s 28ms/step - loss: 0.2162 - accurac
y: 0.9167 - val_loss: 0.1674 - val_accuracy: 0.9459

Epoch 00258: val_loss improved from 0.17284 to 0.16741, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 259/400
3/3 [=====] - 0s 26ms/step - loss: 0.1536 - accurac
y: 0.9524 - val_loss: 0.1573 - val_accuracy: 0.9459

Epoch 00259: val_loss improved from 0.16741 to 0.15729, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 260/400
3/3 [=====] - 0s 27ms/step - loss: 0.3619 - accurac
y: 0.8929 - val_loss: 0.1459 - val_accuracy: 0.9459

Epoch 00260: val_loss improved from 0.15729 to 0.14589, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 261/400
3/3 [=====] - 0s 26ms/step - loss: 0.2977 - accurac
y: 0.9167 - val_loss: 0.1365 - val_accuracy: 0.9459

Epoch 00261: val_loss improved from 0.14589 to 0.13645, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 262/400
3/3 [=====] - 0s 34ms/step - loss: 0.1972 - accurac

y: 0.9524 - val_loss: 0.1372 - val_accuracy: 0.9459

Epoch 00262: val_loss did not improve from 0.13645

Epoch 263/400

3/3 [=====] - 0s 31ms/step - loss: 0.2984 - accurac

y: 0.9048 - val_loss: 0.1406 - val_accuracy: 0.9459

Epoch 00263: val_loss did not improve from 0.13645

Epoch 264/400

3/3 [=====] - 0s 24ms/step - loss: 0.1987 - accurac

y: 0.9405 - val_loss: 0.1480 - val_accuracy: 0.9459

Epoch 00264: val_loss did not improve from 0.13645

Epoch 265/400

3/3 [=====] - 0s 27ms/step - loss: 0.2376 - accurac

y: 0.9048 - val_loss: 0.1585 - val_accuracy: 0.9459

Epoch 00265: val_loss did not improve from 0.13645

Epoch 266/400

3/3 [=====] - 0s 26ms/step - loss: 0.2596 - accurac

y: 0.8929 - val_loss: 0.1668 - val_accuracy: 0.9459

Epoch 00266: val_loss did not improve from 0.13645

Epoch 267/400

3/3 [=====] - 0s 25ms/step - loss: 0.2766 - accurac

y: 0.8929 - val_loss: 0.1724 - val_accuracy: 0.9459

Epoch 00267: val_loss did not improve from 0.13645

Epoch 268/400

3/3 [=====] - 0s 23ms/step - loss: 0.1662 - accurac

y: 0.9405 - val_loss: 0.1718 - val_accuracy: 0.9459

Epoch 00268: val_loss did not improve from 0.13645

Epoch 269/400

3/3 [=====] - 0s 28ms/step - loss: 0.2406 - accurac

y: 0.9167 - val_loss: 0.1668 - val_accuracy: 0.9459

Epoch 00269: val_loss did not improve from 0.13645

Epoch 270/400

3/3 [=====] - 0s 33ms/step - loss: 0.1917 - accurac

y: 0.9405 - val_loss: 0.1581 - val_accuracy: 0.9459

Epoch 00270: val_loss did not improve from 0.13645

Epoch 271/400

3/3 [=====] - 0s 32ms/step - loss: 0.1450 - accurac

y: 0.9524 - val_loss: 0.1505 - val_accuracy: 0.9459

Epoch 00271: val_loss did not improve from 0.13645

Epoch 272/400

3/3 [=====] - 0s 26ms/step - loss: 0.1173 - accurac

y: 0.9643 - val_loss: 0.1456 - val_accuracy: 0.9459

Epoch 00272: val_loss did not improve from 0.13645

Epoch 273/400

3/3 [=====] - 0s 33ms/step - loss: 0.2786 - accurac

y: 0.9167 - val_loss: 0.1423 - val_accuracy: 0.9459

Epoch 00273: val_loss did not improve from 0.13645

Epoch 274/400

3/3 [=====] - 0s 35ms/step - loss: 0.1690 - accurac

y: 0.9405 - val_loss: 0.1390 - val_accuracy: 0.9459

Epoch 00274: val_loss did not improve from 0.13645

Epoch 275/400

3/3 [=====] - 0s 26ms/step - loss: 0.1758 - accurac

y: 0.9524 - val_loss: 0.1397 - val_accuracy: 0.9459

Epoch 00275: val_loss did not improve from 0.13645

Epoch 276/400

3/3 [=====] - 0s 31ms/step - loss: 0.1633 - accuracy: 0.9524 - val_loss: 0.1421 - val_accuracy: 0.9459

Epoch 00276: val_loss did not improve from 0.13645
Epoch 277/400

3/3 [=====] - 0s 23ms/step - loss: 0.2507 - accuracy: 0.9286 - val_loss: 0.1410 - val_accuracy: 0.9459

Epoch 00277: val_loss did not improve from 0.13645
Epoch 278/400

3/3 [=====] - 0s 35ms/step - loss: 0.2270 - accuracy: 0.9286 - val_loss: 0.1448 - val_accuracy: 0.9459

Epoch 00278: val_loss did not improve from 0.13645
Epoch 279/400

3/3 [=====] - 0s 26ms/step - loss: 0.3234 - accuracy: 0.8810 - val_loss: 0.1430 - val_accuracy: 0.9459

Epoch 00279: val_loss did not improve from 0.13645
Epoch 280/400

3/3 [=====] - 0s 25ms/step - loss: 0.1183 - accuracy: 0.9524 - val_loss: 0.1422 - val_accuracy: 0.9459

Epoch 00280: val_loss did not improve from 0.13645
Epoch 281/400

3/3 [=====] - 0s 30ms/step - loss: 0.1936 - accuracy: 0.9048 - val_loss: 0.1395 - val_accuracy: 0.9459

Epoch 00281: val_loss did not improve from 0.13645
Epoch 282/400

3/3 [=====] - 0s 26ms/step - loss: 0.1877 - accuracy: 0.9524 - val_loss: 0.1350 - val_accuracy: 0.9459

Epoch 00282: val_loss improved from 0.13645 to 0.13498, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 283/400

3/3 [=====] - 0s 26ms/step - loss: 0.1428 - accuracy: 0.9524 - val_loss: 0.1318 - val_accuracy: 0.9459

Epoch 00283: val_loss improved from 0.13498 to 0.13184, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 284/400

3/3 [=====] - 0s 23ms/step - loss: 0.3048 - accuracy: 0.9048 - val_loss: 0.1332 - val_accuracy: 0.9459

Epoch 00284: val_loss did not improve from 0.13184
Epoch 285/400

3/3 [=====] - 0s 27ms/step - loss: 0.1556 - accuracy: 0.9286 - val_loss: 0.1348 - val_accuracy: 0.9459

Epoch 00285: val_loss did not improve from 0.13184
Epoch 286/400

3/3 [=====] - 0s 23ms/step - loss: 0.2258 - accuracy: 0.9524 - val_loss: 0.1341 - val_accuracy: 0.9459

Epoch 00286: val_loss did not improve from 0.13184
Epoch 287/400

3/3 [=====] - 0s 25ms/step - loss: 0.3037 - accuracy: 0.8929 - val_loss: 0.1310 - val_accuracy: 0.9459

Epoch 00287: val_loss improved from 0.13184 to 0.13104, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 288/400

3/3 [=====] - 0s 21ms/step - loss: 0.1588 - accuracy: 0.9643 - val_loss: 0.1306 - val_accuracy: 0.9459

Epoch 00288: val_loss improved from 0.13104 to 0.13059, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 289/400

3/3 [=====] - 0s 25ms/step - loss: 0.1298 - accuracy: 0.9524 - val_loss: 0.1310 - val_accuracy: 0.9459

Epoch 00289: val_loss did not improve from 0.13059
Epoch 290/400

3/3 [=====] - 0s 27ms/step - loss: 0.2327 - accuracy: 0.9167 - val_loss: 0.1316 - val_accuracy: 0.9459

Epoch 00290: val_loss did not improve from 0.13059
Epoch 291/400

3/3 [=====] - 0s 23ms/step - loss: 0.2211 - accuracy: 0.8810 - val_loss: 0.1348 - val_accuracy: 0.9459

Epoch 00291: val_loss did not improve from 0.13059
Epoch 292/400

3/3 [=====] - 0s 25ms/step - loss: 0.2474 - accuracy: 0.9048 - val_loss: 0.1380 - val_accuracy: 0.9459

Epoch 00292: val_loss did not improve from 0.13059
Epoch 293/400

3/3 [=====] - 0s 22ms/step - loss: 0.2409 - accuracy: 0.9405 - val_loss: 0.1415 - val_accuracy: 0.9459

Epoch 00293: val_loss did not improve from 0.13059
Epoch 294/400

3/3 [=====] - 0s 23ms/step - loss: 0.2377 - accuracy: 0.9286 - val_loss: 0.1449 - val_accuracy: 0.9459

Epoch 00294: val_loss did not improve from 0.13059
Epoch 295/400

3/3 [=====] - 0s 24ms/step - loss: 0.1474 - accuracy: 0.9524 - val_loss: 0.1519 - val_accuracy: 0.9459

Epoch 00295: val_loss did not improve from 0.13059
Epoch 296/400

3/3 [=====] - 0s 26ms/step - loss: 0.1582 - accuracy: 0.9286 - val_loss: 0.1643 - val_accuracy: 0.9459

Epoch 00296: val_loss did not improve from 0.13059
Epoch 297/400

3/3 [=====] - 0s 23ms/step - loss: 0.1381 - accuracy: 0.9524 - val_loss: 0.1778 - val_accuracy: 0.9459

Epoch 00297: val_loss did not improve from 0.13059
Epoch 298/400

3/3 [=====] - 0s 25ms/step - loss: 0.1023 - accuracy: 0.9881 - val_loss: 0.1866 - val_accuracy: 0.9459

Epoch 00298: val_loss did not improve from 0.13059
Epoch 299/400

3/3 [=====] - 0s 26ms/step - loss: 0.1255 - accuracy: 0.9881 - val_loss: 0.1870 - val_accuracy: 0.9459

Epoch 00299: val_loss did not improve from 0.13059
Epoch 300/400

3/3 [=====] - 0s 25ms/step - loss: 0.2407 - accuracy: 0.9524 - val_loss: 0.1851 - val_accuracy: 0.9459

Epoch 00300: val_loss did not improve from 0.13059
Epoch 301/400

3/3 [=====] - 0s 25ms/step - loss: 0.0838 - accuracy: 0.9643 - val_loss: 0.1815 - val_accuracy: 0.9459

Epoch 00301: val_loss did not improve from 0.13059
Epoch 302/400

3/3 [=====] - 0s 22ms/step - loss: 0.1933 - accuracy: 0.9524 - val_loss: 0.1802 - val_accuracy: 0.9459

Epoch 00302: val_loss did not improve from 0.13059

Epoch 303/400
3/3 [=====] - 0s 23ms/step - loss: 0.1641 - accuracy: 0.9524 - val_loss: 0.1779 - val_accuracy: 0.9459
Epoch 00303: val_loss did not improve from 0.13059
Epoch 304/400
3/3 [=====] - 0s 27ms/step - loss: 0.0789 - accuracy: 0.9643 - val_loss: 0.1759 - val_accuracy: 0.9459
Epoch 00304: val_loss did not improve from 0.13059
Epoch 305/400
3/3 [=====] - 0s 39ms/step - loss: 0.1837 - accuracy: 0.9167 - val_loss: 0.1788 - val_accuracy: 0.9459
Epoch 00305: val_loss did not improve from 0.13059
Epoch 306/400
3/3 [=====] - 0s 23ms/step - loss: 0.1826 - accuracy: 0.9405 - val_loss: 0.1798 - val_accuracy: 0.9459
Epoch 00306: val_loss did not improve from 0.13059
Epoch 307/400
3/3 [=====] - 0s 25ms/step - loss: 0.1809 - accuracy: 0.9643 - val_loss: 0.1788 - val_accuracy: 0.9459
Epoch 00307: val_loss did not improve from 0.13059
Epoch 308/400
3/3 [=====] - 0s 28ms/step - loss: 0.1444 - accuracy: 0.9286 - val_loss: 0.1736 - val_accuracy: 0.9459
Epoch 00308: val_loss did not improve from 0.13059
Epoch 309/400
3/3 [=====] - 0s 25ms/step - loss: 0.1497 - accuracy: 0.9405 - val_loss: 0.1680 - val_accuracy: 0.9459
Epoch 00309: val_loss did not improve from 0.13059
Epoch 310/400
3/3 [=====] - 0s 23ms/step - loss: 0.2174 - accuracy: 0.9167 - val_loss: 0.1687 - val_accuracy: 0.9459
Epoch 00310: val_loss did not improve from 0.13059
Epoch 311/400
3/3 [=====] - 0s 24ms/step - loss: 0.2704 - accuracy: 0.9167 - val_loss: 0.1660 - val_accuracy: 0.9459
Epoch 00311: val_loss did not improve from 0.13059
Epoch 312/400
3/3 [=====] - 0s 25ms/step - loss: 0.1280 - accuracy: 0.9643 - val_loss: 0.1587 - val_accuracy: 0.9459
Epoch 00312: val_loss did not improve from 0.13059
Epoch 313/400
3/3 [=====] - 0s 28ms/step - loss: 0.1219 - accuracy: 0.9524 - val_loss: 0.1558 - val_accuracy: 0.9459
Epoch 00313: val_loss did not improve from 0.13059
Epoch 314/400
3/3 [=====] - 0s 23ms/step - loss: 0.1445 - accuracy: 0.9405 - val_loss: 0.1518 - val_accuracy: 0.9459
Epoch 00314: val_loss did not improve from 0.13059
Epoch 315/400
3/3 [=====] - 0s 26ms/step - loss: 0.2546 - accuracy: 0.9524 - val_loss: 0.1507 - val_accuracy: 0.9459
Epoch 00315: val_loss did not improve from 0.13059
Epoch 316/400
3/3 [=====] - 0s 23ms/step - loss: 0.0849 - accuracy: 0.9643 - val_loss: 0.1508 - val_accuracy: 0.9459

Epoch 00316: val_loss did not improve from 0.13059
Epoch 317/400
3/3 [=====] - 0s 26ms/step - loss: 0.1226 - accuracy: 0.9524 - val_loss: 0.1497 - val_accuracy: 0.9459

Epoch 00317: val_loss did not improve from 0.13059
Epoch 318/400
3/3 [=====] - 0s 22ms/step - loss: 0.1283 - accuracy: 0.9524 - val_loss: 0.1501 - val_accuracy: 0.9459

Epoch 00318: val_loss did not improve from 0.13059
Epoch 319/400
3/3 [=====] - 0s 22ms/step - loss: 0.1027 - accuracy: 0.9405 - val_loss: 0.1538 - val_accuracy: 0.9459

Epoch 00319: val_loss did not improve from 0.13059
Epoch 320/400
3/3 [=====] - 0s 22ms/step - loss: 0.1250 - accuracy: 0.9405 - val_loss: 0.1599 - val_accuracy: 0.9459

Epoch 00320: val_loss did not improve from 0.13059
Epoch 321/400
3/3 [=====] - 0s 22ms/step - loss: 0.1037 - accuracy: 0.9524 - val_loss: 0.1644 - val_accuracy: 0.9459

Epoch 00321: val_loss did not improve from 0.13059
Epoch 322/400
3/3 [=====] - 0s 26ms/step - loss: 0.0820 - accuracy: 0.9881 - val_loss: 0.1669 - val_accuracy: 0.9459

Epoch 00322: val_loss did not improve from 0.13059
Epoch 323/400
3/3 [=====] - 0s 23ms/step - loss: 0.1403 - accuracy: 0.9405 - val_loss: 0.1688 - val_accuracy: 0.9459

Epoch 00323: val_loss did not improve from 0.13059
Epoch 324/400
3/3 [=====] - 0s 27ms/step - loss: 0.1288 - accuracy: 0.9762 - val_loss: 0.1694 - val_accuracy: 0.9459

Epoch 00324: val_loss did not improve from 0.13059
Epoch 325/400
3/3 [=====] - 0s 22ms/step - loss: 0.1666 - accuracy: 0.9405 - val_loss: 0.1713 - val_accuracy: 0.9459

Epoch 00325: val_loss did not improve from 0.13059
Epoch 326/400
3/3 [=====] - 0s 26ms/step - loss: 0.0928 - accuracy: 0.9524 - val_loss: 0.1721 - val_accuracy: 0.9459

Epoch 00326: val_loss did not improve from 0.13059
Epoch 327/400
3/3 [=====] - 0s 27ms/step - loss: 0.1228 - accuracy: 0.9405 - val_loss: 0.1698 - val_accuracy: 0.9459

Epoch 00327: val_loss did not improve from 0.13059
Epoch 328/400
3/3 [=====] - 0s 24ms/step - loss: 0.1387 - accuracy: 0.9405 - val_loss: 0.1620 - val_accuracy: 0.9459

Epoch 00328: val_loss did not improve from 0.13059
Epoch 329/400
3/3 [=====] - 0s 28ms/step - loss: 0.1414 - accuracy: 0.9524 - val_loss: 0.1542 - val_accuracy: 0.9459

Epoch 00329: val_loss did not improve from 0.13059
Epoch 330/400
3/3 [=====] - 0s 26ms/step - loss: 0.0820 - accuracy: 0.9762 - val_loss: 0.1485 - val_accuracy: 0.9459

Epoch 00330: val_loss did not improve from 0.13059
Epoch 331/400
3/3 [=====] - 0s 23ms/step - loss: 0.0693 - accuracy: 0.9762 - val_loss: 0.1470 - val_accuracy: 0.9459

Epoch 00331: val_loss did not improve from 0.13059
Epoch 332/400
3/3 [=====] - 0s 24ms/step - loss: 0.0784 - accuracy: 0.9881 - val_loss: 0.1442 - val_accuracy: 0.9459

Epoch 00332: val_loss did not improve from 0.13059
Epoch 333/400
3/3 [=====] - 0s 29ms/step - loss: 0.0590 - accuracy: 0.9762 - val_loss: 0.1424 - val_accuracy: 0.9459

Epoch 00333: val_loss did not improve from 0.13059
Epoch 334/400
3/3 [=====] - 0s 27ms/step - loss: 0.0755 - accuracy: 0.9643 - val_loss: 0.1396 - val_accuracy: 0.9459

Epoch 00334: val_loss did not improve from 0.13059
Epoch 335/400
3/3 [=====] - 0s 26ms/step - loss: 0.2203 - accuracy: 0.9524 - val_loss: 0.1375 - val_accuracy: 0.9459

Epoch 00335: val_loss did not improve from 0.13059
Epoch 336/400
3/3 [=====] - 0s 24ms/step - loss: 0.0931 - accuracy: 0.9643 - val_loss: 0.1406 - val_accuracy: 0.9459

Epoch 00336: val_loss did not improve from 0.13059
Epoch 337/400
3/3 [=====] - 0s 24ms/step - loss: 0.0717 - accuracy: 0.9643 - val_loss: 0.1430 - val_accuracy: 0.9459

Epoch 00337: val_loss did not improve from 0.13059
Epoch 338/400
3/3 [=====] - 0s 29ms/step - loss: 0.1419 - accuracy: 0.9286 - val_loss: 0.1462 - val_accuracy: 0.9459

Epoch 00338: val_loss did not improve from 0.13059
Epoch 339/400
3/3 [=====] - 0s 29ms/step - loss: 0.0465 - accuracy: 1.0000 - val_loss: 0.1492 - val_accuracy: 0.9459

Epoch 00339: val_loss did not improve from 0.13059
Epoch 340/400
3/3 [=====] - 0s 21ms/step - loss: 0.1131 - accuracy: 0.9405 - val_loss: 0.1530 - val_accuracy: 0.9459

Epoch 00340: val_loss did not improve from 0.13059
Epoch 341/400
3/3 [=====] - 0s 26ms/step - loss: 0.1361 - accuracy: 0.9762 - val_loss: 0.1553 - val_accuracy: 0.9459

Epoch 00341: val_loss did not improve from 0.13059
Epoch 342/400
3/3 [=====] - 0s 29ms/step - loss: 0.0381 - accuracy: 0.9881 - val_loss: 0.1575 - val_accuracy: 0.9459

Epoch 00342: val_loss did not improve from 0.13059
Epoch 343/400
3/3 [=====] - 0s 32ms/step - loss: 0.0817 - accuracy: 0.9643 - val_loss: 0.1630 - val_accuracy: 0.9459

Epoch 00343: val_loss did not improve from 0.13059
Epoch 344/400
3/3 [=====] - 0s 27ms/step - loss: 0.0429 - accuracy:

y: 0.9881 - val_loss: 0.1680 - val_accuracy: 0.9459

Epoch 00344: val_loss did not improve from 0.13059

Epoch 345/400

3/3 [=====] - 0s 25ms/step - loss: 0.1019 - accurac

y: 0.9762 - val_loss: 0.1688 - val_accuracy: 0.9459

Epoch 00345: val_loss did not improve from 0.13059

Epoch 346/400

3/3 [=====] - 0s 25ms/step - loss: 0.2828 - accurac

y: 0.8690 - val_loss: 0.1586 - val_accuracy: 0.9459

Epoch 00346: val_loss did not improve from 0.13059

Epoch 347/400

3/3 [=====] - 0s 22ms/step - loss: 0.1099 - accurac

y: 0.9405 - val_loss: 0.1513 - val_accuracy: 0.9459

Epoch 00347: val_loss did not improve from 0.13059

Epoch 348/400

3/3 [=====] - 0s 25ms/step - loss: 0.0920 - accurac

y: 0.9643 - val_loss: 0.1444 - val_accuracy: 0.9459

Epoch 00348: val_loss did not improve from 0.13059

Epoch 349/400

3/3 [=====] - 0s 35ms/step - loss: 0.1043 - accurac

y: 0.9643 - val_loss: 0.1334 - val_accuracy: 0.9459

Epoch 00349: val_loss did not improve from 0.13059

Epoch 350/400

3/3 [=====] - 0s 24ms/step - loss: 0.1072 - accurac

y: 0.9762 - val_loss: 0.1292 - val_accuracy: 0.9459

Epoch 00350: val_loss improved from 0.13059 to 0.12918, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5

Epoch 351/400

3/3 [=====] - 0s 21ms/step - loss: 0.0941 - accurac

y: 0.9524 - val_loss: 0.1325 - val_accuracy: 0.9459

Epoch 00351: val_loss did not improve from 0.12918

Epoch 352/400

3/3 [=====] - 0s 22ms/step - loss: 0.0563 - accurac

y: 0.9881 - val_loss: 0.1375 - val_accuracy: 0.9459

Epoch 00352: val_loss did not improve from 0.12918

Epoch 353/400

3/3 [=====] - 0s 24ms/step - loss: 0.0417 - accurac

y: 0.9762 - val_loss: 0.1405 - val_accuracy: 0.9459

Epoch 00353: val_loss did not improve from 0.12918

Epoch 354/400

3/3 [=====] - 0s 26ms/step - loss: 0.0607 - accurac

y: 0.9762 - val_loss: 0.1429 - val_accuracy: 0.9459

Epoch 00354: val_loss did not improve from 0.12918

Epoch 355/400

3/3 [=====] - 0s 27ms/step - loss: 0.1072 - accurac

y: 0.9762 - val_loss: 0.1453 - val_accuracy: 0.9459

Epoch 00355: val_loss did not improve from 0.12918

Epoch 356/400

3/3 [=====] - 0s 28ms/step - loss: 0.1265 - accurac

y: 0.9643 - val_loss: 0.1495 - val_accuracy: 0.9459

Epoch 00356: val_loss did not improve from 0.12918

Epoch 357/400

3/3 [=====] - 0s 23ms/step - loss: 0.0746 - accurac

y: 0.9762 - val_loss: 0.1535 - val_accuracy: 0.9459

Epoch 00357: val_loss did not improve from 0.12918

Epoch 358/400
3/3 [=====] - 0s 22ms/step - loss: 0.2177 - accuracy: 0.9405 - val_loss: 0.1535 - val_accuracy: 0.9459

Epoch 00358: val_loss did not improve from 0.12918
Epoch 359/400
3/3 [=====] - 0s 26ms/step - loss: 0.0703 - accuracy: 0.9881 - val_loss: 0.1544 - val_accuracy: 0.9459

Epoch 00359: val_loss did not improve from 0.12918
Epoch 360/400
3/3 [=====] - 0s 32ms/step - loss: 0.0788 - accuracy: 0.9643 - val_loss: 0.1509 - val_accuracy: 0.9459

Epoch 00360: val_loss did not improve from 0.12918
Epoch 361/400
3/3 [=====] - 0s 28ms/step - loss: 0.0604 - accuracy: 0.9762 - val_loss: 0.1493 - val_accuracy: 0.9459

Epoch 00361: val_loss did not improve from 0.12918
Epoch 362/400
3/3 [=====] - 0s 28ms/step - loss: 0.0766 - accuracy: 0.9643 - val_loss: 0.1512 - val_accuracy: 0.9459

Epoch 00362: val_loss did not improve from 0.12918
Epoch 363/400
3/3 [=====] - 0s 22ms/step - loss: 0.2099 - accuracy: 0.9524 - val_loss: 0.1491 - val_accuracy: 0.9459

Epoch 00363: val_loss did not improve from 0.12918
Epoch 364/400
3/3 [=====] - 0s 28ms/step - loss: 0.0465 - accuracy: 0.9762 - val_loss: 0.1453 - val_accuracy: 0.9459

Epoch 00364: val_loss did not improve from 0.12918
Epoch 365/400
3/3 [=====] - 0s 28ms/step - loss: 0.1917 - accuracy: 0.9762 - val_loss: 0.1469 - val_accuracy: 0.9459

Epoch 00365: val_loss did not improve from 0.12918
Epoch 366/400
3/3 [=====] - 0s 23ms/step - loss: 0.0560 - accuracy: 0.9881 - val_loss: 0.1512 - val_accuracy: 0.9459

Epoch 00366: val_loss did not improve from 0.12918
Epoch 367/400
3/3 [=====] - 0s 28ms/step - loss: 0.2083 - accuracy: 0.9643 - val_loss: 0.1530 - val_accuracy: 0.9459

Epoch 00367: val_loss did not improve from 0.12918
Epoch 368/400
3/3 [=====] - 0s 26ms/step - loss: 0.0223 - accuracy: 1.0000 - val_loss: 0.1495 - val_accuracy: 0.9459

Epoch 00368: val_loss did not improve from 0.12918
Epoch 369/400
3/3 [=====] - 0s 24ms/step - loss: 0.0932 - accuracy: 0.9524 - val_loss: 0.1528 - val_accuracy: 0.9459

Epoch 00369: val_loss did not improve from 0.12918
Epoch 370/400
3/3 [=====] - 0s 23ms/step - loss: 0.0662 - accuracy: 0.9881 - val_loss: 0.1613 - val_accuracy: 0.9459

Epoch 00370: val_loss did not improve from 0.12918
Epoch 371/400
3/3 [=====] - 0s 23ms/step - loss: 0.0877 - accuracy: 0.9762 - val_loss: 0.1614 - val_accuracy: 0.9459

Epoch 00371: val_loss did not improve from 0.12918
Epoch 372/400
3/3 [=====] - 0s 24ms/step - loss: 0.0930 - accuracy: 0.9762 - val_loss: 0.1517 - val_accuracy: 0.9459

Epoch 00372: val_loss did not improve from 0.12918
Epoch 373/400
3/3 [=====] - 0s 29ms/step - loss: 0.1421 - accuracy: 0.9643 - val_loss: 0.1413 - val_accuracy: 0.9459

Epoch 00373: val_loss did not improve from 0.12918
Epoch 374/400
3/3 [=====] - 0s 28ms/step - loss: 0.0941 - accuracy: 0.9643 - val_loss: 0.1346 - val_accuracy: 0.9459

Epoch 00374: val_loss did not improve from 0.12918
Epoch 375/400
3/3 [=====] - 0s 28ms/step - loss: 0.0420 - accuracy: 0.9762 - val_loss: 0.1331 - val_accuracy: 0.9459

Epoch 00375: val_loss did not improve from 0.12918
Epoch 376/400
3/3 [=====] - 0s 27ms/step - loss: 0.0674 - accuracy: 0.9762 - val_loss: 0.1345 - val_accuracy: 0.9459

Epoch 00376: val_loss did not improve from 0.12918
Epoch 377/400
3/3 [=====] - 0s 23ms/step - loss: 0.0615 - accuracy: 0.9881 - val_loss: 0.1375 - val_accuracy: 0.9459

Epoch 00377: val_loss did not improve from 0.12918
Epoch 378/400
3/3 [=====] - 0s 24ms/step - loss: 0.1155 - accuracy: 0.9762 - val_loss: 0.1377 - val_accuracy: 0.9459

Epoch 00378: val_loss did not improve from 0.12918
Epoch 379/400
3/3 [=====] - 0s 23ms/step - loss: 0.0607 - accuracy: 0.9762 - val_loss: 0.1389 - val_accuracy: 0.9459

Epoch 00379: val_loss did not improve from 0.12918
Epoch 380/400
3/3 [=====] - 0s 26ms/step - loss: 0.0633 - accuracy: 0.9762 - val_loss: 0.1411 - val_accuracy: 0.9459

Epoch 00380: val_loss did not improve from 0.12918
Epoch 381/400
3/3 [=====] - 0s 26ms/step - loss: 0.1071 - accuracy: 0.9524 - val_loss: 0.1401 - val_accuracy: 0.9459

Epoch 00381: val_loss did not improve from 0.12918
Epoch 382/400
3/3 [=====] - 0s 27ms/step - loss: 0.0503 - accuracy: 0.9881 - val_loss: 0.1343 - val_accuracy: 0.9459

Epoch 00382: val_loss did not improve from 0.12918
Epoch 383/400
3/3 [=====] - 0s 26ms/step - loss: 0.0247 - accuracy: 0.9881 - val_loss: 0.1309 - val_accuracy: 0.9459

Epoch 00383: val_loss did not improve from 0.12918
Epoch 384/400
3/3 [=====] - 0s 26ms/step - loss: 0.0583 - accuracy: 0.9762 - val_loss: 0.1295 - val_accuracy: 0.9459

Epoch 00384: val_loss did not improve from 0.12918
Epoch 385/400
3/3 [=====] - 0s 24ms/step - loss: 0.0907 - accuracy: 0.9762 - val_loss: 0.1294 - val_accuracy: 0.9459

Epoch 00385: val_loss did not improve from 0.12918
Epoch 386/400
3/3 [=====] - 0s 27ms/step - loss: 0.0462 - accuracy: 1.0000 - val_loss: 0.1294 - val_accuracy: 0.9459

Epoch 00386: val_loss did not improve from 0.12918
Epoch 387/400
3/3 [=====] - 0s 26ms/step - loss: 0.0929 - accuracy: 0.9643 - val_loss: 0.1279 - val_accuracy: 0.9459

Epoch 00387: val_loss improved from 0.12918 to 0.12786, saving model to /home/ece/Music/weights.best.basic_mlp.hdf5
Epoch 388/400
3/3 [=====] - 0s 26ms/step - loss: 0.1420 - accuracy: 0.9643 - val_loss: 0.1279 - val_accuracy: 0.9459

Epoch 00388: val_loss did not improve from 0.12786
Epoch 389/400
3/3 [=====] - 0s 26ms/step - loss: 0.0403 - accuracy: 0.9881 - val_loss: 0.1302 - val_accuracy: 0.9459

Epoch 00389: val_loss did not improve from 0.12786
Epoch 390/400
3/3 [=====] - 0s 21ms/step - loss: 0.0334 - accuracy: 1.0000 - val_loss: 0.1356 - val_accuracy: 0.9459

Epoch 00390: val_loss did not improve from 0.12786
Epoch 391/400
3/3 [=====] - 0s 26ms/step - loss: 0.1692 - accuracy: 0.9524 - val_loss: 0.1475 - val_accuracy: 0.9459

Epoch 00391: val_loss did not improve from 0.12786
Epoch 392/400
3/3 [=====] - 0s 24ms/step - loss: 0.0778 - accuracy: 0.9643 - val_loss: 0.1551 - val_accuracy: 0.9459

Epoch 00392: val_loss did not improve from 0.12786
Epoch 393/400
3/3 [=====] - 0s 25ms/step - loss: 0.1112 - accuracy: 0.9405 - val_loss: 0.1598 - val_accuracy: 0.9459

Epoch 00393: val_loss did not improve from 0.12786
Epoch 394/400
3/3 [=====] - 0s 26ms/step - loss: 0.0868 - accuracy: 0.9643 - val_loss: 0.1666 - val_accuracy: 0.9459

Epoch 00394: val_loss did not improve from 0.12786
Epoch 395/400
3/3 [=====] - 0s 28ms/step - loss: 0.1144 - accuracy: 0.9762 - val_loss: 0.1745 - val_accuracy: 0.9459

Epoch 00395: val_loss did not improve from 0.12786
Epoch 396/400
3/3 [=====] - 0s 28ms/step - loss: 0.0171 - accuracy: 1.0000 - val_loss: 0.1769 - val_accuracy: 0.9459

Epoch 00396: val_loss did not improve from 0.12786
Epoch 397/400
3/3 [=====] - 0s 29ms/step - loss: 0.0753 - accuracy: 0.9643 - val_loss: 0.1770 - val_accuracy: 0.9459

Epoch 00397: val_loss did not improve from 0.12786
Epoch 398/400
3/3 [=====] - 0s 24ms/step - loss: 0.1104 - accuracy: 0.9643 - val_loss: 0.1692 - val_accuracy: 0.9459

Epoch 00398: val_loss did not improve from 0.12786
Epoch 399/400

3/3 [=====] - 0s 27ms/step - loss: 0.1013 - accuracy: 0.9762 - val_loss: 0.1690 - val_accuracy: 0.9459

Epoch 00399: val_loss did not improve from 0.12786
Epoch 400/400

3/3 [=====] - 0s 23ms/step - loss: 0.0322 - accuracy: 0.9881 - val_loss: 0.1720 - val_accuracy: 0.9459

Epoch 00400: val_loss did not improve from 0.12786
Training completed in time: 0:00:29.911454

```
In [12]: # Evaluating the model on the training and testing set
score = model.evaluate(x_train, y_train, verbose=0)
print("Training Accuracy: ", score[1])

score = model.evaluate(x_test, y_test, verbose=0)
print("Testing Accuracy: ", score[1])
```

Training Accuracy: 1.0
Testing Accuracy: 0.9459459185600281

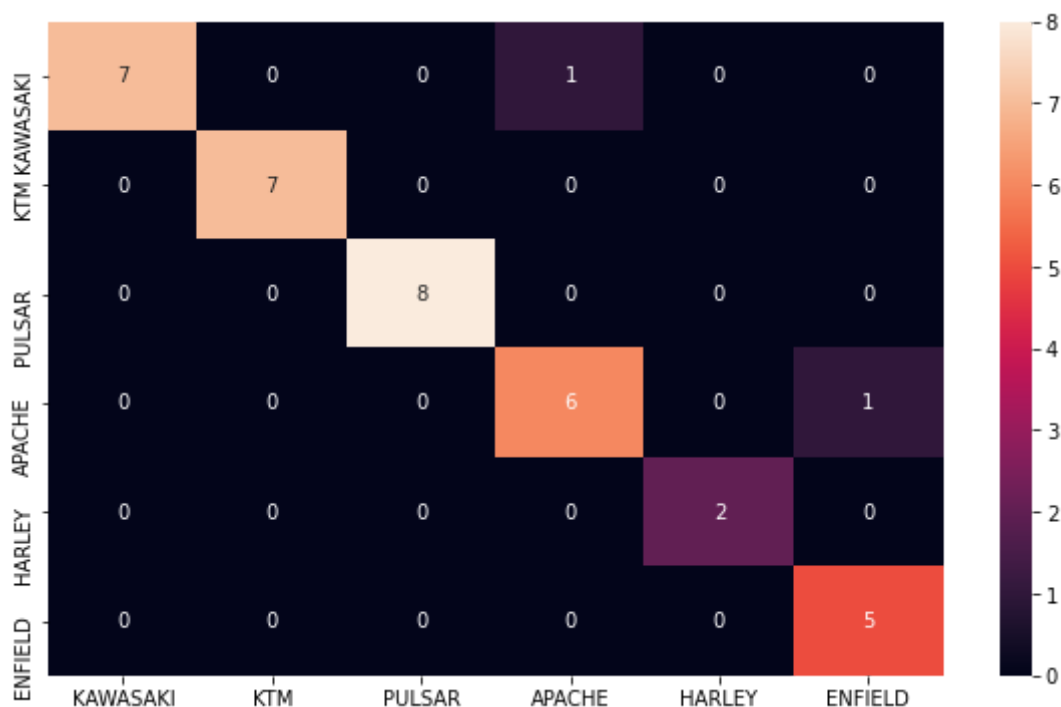
```
In [13]: y_pred = model.predict(x_test)
from sklearn.metrics import confusion_matrix
confusion_matrix(y_test.argmax(axis=1), y_pred.argmax(axis=1))
print(confusion_matrix)
```

<function confusion_matrix at 0x7f5f4ab72700>

```
In [14]: from sklearn.metrics import confusion_matrix
import seaborn as sns
import matplotlib.pyplot as plt

cm = confusion_matrix(y_test.argmax(axis=1), y_pred.argmax(axis=1))
index = ["KAWASAKI", "KTM", "PULSAR", "APACHE", "HARLEY", "ENFIELD"]
columns = ["KAWASAKI", "KTM", "PULSAR", "APACHE", "HARLEY", "ENFIELD"]
cm_df = pd.DataFrame(cm, columns, index)
plt.figure(figsize=(10,6))
sns.heatmap(cm_df, annot=True)
```

Out[14]: <AxesSubplot:>



```
In [15]: import librosa
```

```

import numpy as np

def extract_feature(file_name):

    try:
        audio_data, sample_rate = librosa.load(file_name, res_type='kaiser_fa
        mfccs = librosa.feature.mfcc(y=audio_data, sr=sample_rate, n_mfcc=40)
        mfccsscaled = np.mean(mfccs.T,axis=0)

    except Exception as e:
        print("Error encountered while parsing file: ", file)
        return None, None

    return np.array([mfccsscaled])

```

```

In [54]: category=[]
         predicted_proba = []
         pro=[]

         y=900
         #global cur_labelb
         global print_prediction

         def print_prediction(file_name):
             global Label1,Label2,Label3,Label4,Label5,Label0
             prediction_feature = extract_feature(file_name)
             predicted_vector = np.argmax(model.predict(prediction_feature), axis=
             predicted_class = le.inverse_transform(predicted_vector)
             print("The predicted class is:", predicted_class[0], '\n')
             global cur_labelb
             cur_labelb=tk.Label(canvas,text = str("The predicted class is:")+str
             cur_labelb.place(x=790,y=900)
             #label1 = tk.Label(root, text = str("The predicted class is:")+str(
             #canvas.create_text(400,200, text = str("The predicted class is:")+s
             predicted_proba_vector = model.predict(prediction_feature)
             predicted_proba = predicted_proba_vector[0]
             for i in range(len(predicted_proba)):
                 pro.append(format(predicted_proba[i], '.5f'))
                 category = le.inverse_transform(np.array([i]))
                 print(category[0], "\t\t : ", format(predicted_proba[i], '.5f') )
                 cur_label='Label'+str(i)
                 cur_label=tk.Label(canvas,text = str(category[0])+" = "+str(form
                 cur_label.grid(column=100,row=i+300,sticky='')
                 #label = tkinter.Label(canvas, text = str(category[0])+"\t\t : "

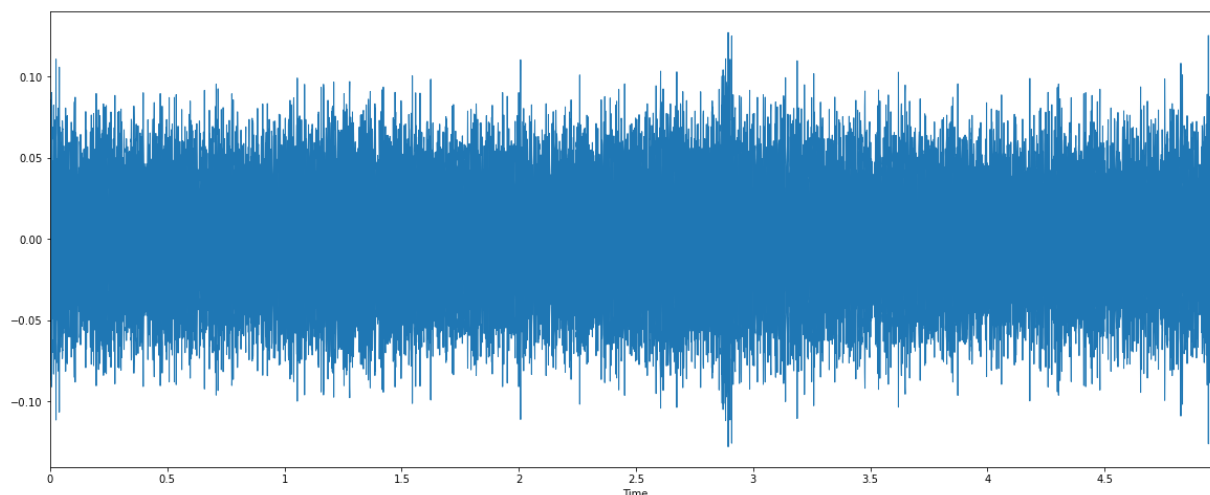
```

```

In [55]: plt.figure(figsize=(20,8))
         data,sample_rate = librosa.load(filename)
         _ = librosa.display.waveplot(data,sr=sample_rate)
         ipd.Audio(filename)

```

Out[55]: 0:00 / 0:04



```
In [56]: def record():
    FORMAT = pyaudio.paInt16
    CHANNELS = 2
    RATE = 44100
    CHUNK = 1024
    RECORD_SECONDS = 5
    WAVE_OUTPUT_FILENAME = "file2.wav"

    audio = pyaudio.PyAudio()
    # start Recording
    stream = audio.open(format=FORMAT, channels=CHANNELS,
                        rate=RATE, input=True,
                        frames_per_buffer=CHUNK)
    print ("recording...")
    frames = []

    for i in range(0, int(RATE / CHUNK * RECORD_SECONDS)):
        data = stream.read(CHUNK)
        frames.append(data)
    print ("finished recording")
    global cur_labela
    cur_labela=ttk.Label(canvas,text = "finished recording",style='green/black')
    cur_labela.place(x=790,y=850)

    # stop Recording
    stream.stop_stream()
    stream.close()
    audio.terminate()

    waveFile = wave.open(WAVE_OUTPUT_FILENAME, 'wb')
    waveFile.setnchannels(CHANNELS)
    waveFile.setsampwidth(audio.get_sample_size(FORMAT))
    waveFile.setframerate(RATE)
    waveFile.writeframes(b''.join(frames))
    waveFile.close()

def prd():
    filename = '/home/ece/Music/file2.wav'
    print_prediction(filename)

def restart():
    cur_labela.place_forget()
    cur_labelb.place_forget()

def play():
    pygame.mixer.init()
    pygame.mixer.music.load("/home/ece/Music/file2.wav")
```

```
pygame.mixer.music.play(loops=0)
```

```
In [57]: import pygame
import os
import pyaudio
import wave
from tkinter import import ttk
```

```
In [58]: from tkinter.ttk import *
from tkinter import *
import tkinter
canvas = Tk()
canvas.geometry('1920x1080')
canvas = Canvas(width=1920, height=1080, bg='black')

canvas.pack(expand=YES, fill=BOTH)

gif1 = PhotoImage(file='fn.png')

canvas.create_image(0, 0, image=gif1, anchor=NW)
style = ttk.Style()
ttk.Style().configure('green/black.TLabel', font=('Helvetica', 20, 'bold'), foreground='green', background='black')
ttk.Style().configure('green/black.TButton', font=('Helvetica', 20, 'bold'), foreground='green', background='black')
ttk.Style().configure('sp.TLabel', font=('ariel', 25, 'bold'), foreground='red', background='black')

button_rec = ttk.Button(canvas, text='START', style='green/black.TButton', foreground='green', background='black')
button_rec.place(x=500, y=750)

button_rec = ttk.Button(canvas, text='PREDICT', style='green/black.TButton', foreground='green', background='black')
button_rec.place(x=1280, y=750)

button_rec = ttk.Button(canvas, text='RESET', style='green/black.TButton', foreground='green', background='black')
button_rec.place(x=880, y=950)

play_button = ttk.Button(canvas, text='PLAY', style='green/black.TButton', foreground='green', background='black')
play_button.place(x=880, y=280)
mainloop()
```

```
recording...
finished recording
The predicted class is: ktm
```

```
apache      : 0.00000
enfield     : 0.00000
harley      : 0.00000
kawasaki    : 0.00000
ktm         : 1.00000
pulsar      : 0.00000
```

```
In [28]: import tkinter as tk
from tkinter import ttk

root = tk.Tk()

# background="..." doesn't work...
ttk.Style().configure('green/black.TLabel', foreground='green', background='black')
ttk.Style().configure('green/black.TButton', foreground='green', background='black')

label = ttk.Label(root, text='I am a ttk.Label with text!', style='green/black.TLabel')
label.pack()

button = ttk.Button(root, text='Click Me!', style='green/black.TButton')
button.pack()
```

```
root.mainloop()
```

In []: