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MORE ADVANCED LEVEL TASK 10 - ML Facial recognition to detect mood and suggest songs accordingly

Importing Required libraries

```
In [ ]: import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import os
import warnings
warnings.filterwarnings('ignore')
from mtcnn import MTCNN # helps in detecting faces from image
from tensorflow.keras.models import load_model
```

```
2021-10-21 12:35:29.281705: W tensorflow/stream_executor/platform/default/dso_loader.cc:60] Could not load dynamic library 'libcudart.so.11.0'; dLError: libcudart.so.11.0: cannot open shared object file: No such file or directory; LD_LIBRARY_PATH: /opt/conda/lib
2021-10-21 12:35:29.281849: I tensorflow/stream_executor/cuda/cudart_stub.cc:29] Ignore above cudart dLError if you do not have a GPU set up on your machine.
```

Loading Model

```
In [ ]: model = load_model('../input/facialemotionrecognition-vgg19/model_optimal.h5')
print('Model Loaded 100%')
```

```
2021-10-21 12:35:35.343077: I tensorflow/compiler/jit/xla_cpu_device.cc:41] Not creating XLA devices, tf_xla_enable_xla_devices not set
2021-10-21 12:35:35.346294: W tensorflow/stream_executor/platform/default/dso_loader.cc:60] Could not load dynamic library 'libcudart.so.11.0'; dLError: libcudart.so.11.0: cannot open shared object file: No such file or directory; LD_LIBRARY_PATH: /opt/conda/lib
2021-10-21 12:35:35.346362: W tensorflow/stream_executor/cuda/cuda_driver.cc:326] failed call to cuInit: UNKNOWN ERROR (303)
2021-10-21 12:35:35.346409: I tensorflow/stream_executor/cuda/cuda_diagnostics.cc:156] kernel driver does not appear to be running on this host (2ad1d29f26a6): /proc/driver/nvidia/version does not exist
2021-10-21 12:35:35.346777: I tensorflow/core/platform/cpu_feature_guard.cc:142] This TensorFlow binary is optimized with oneAPI D
```

Use TensorFlow Neural Network Library (tf.nn) to use the following CPU instructions in performance-critical operations: AVX2 FMA
To enable them in other operations, rebuild TensorFlow with the appropriate compiler flags.
2021-10-21 12:35:35.347187: I tensorflow/compiler/jit/xla_gpu_device.cc:99] Not creating XLA devices, tf_xla_enable_xla_devices not set
Model Loaded 100%

Test Image

```
In [ ]: img = 'https://static-bebeautiful-in.unileverservices.com/Unlock-flawless-skin_MobileHomeFeature.jpg'
try:
    image = plt.imread(img)
except SyntaxError:
    image = plt.imread(img, format='jpg')
plt.imshow(image)
```

```
Out[ ]: <matplotlib.image.AxesImage at 0x7fb1dc5a4cd0>
```



Detecting Face

```
In [ ]: detect = MTCNN()
results = detect.detect_faces(image)

x1, y1, width, height = results[0]['box']
x2, y2 = x1 + width, y1 + height
```

```
face = image[y1:y2, x1:x2]  
plt.imshow(face)
```

```
2021-10-21 12:35:39.121761: I tensorflow/compiler/mlir/mlir_graph_optimization_pass.cc:116] None of the MLIR optimization passes are enabled (registered 2)
```

```
2021-10-21 12:35:39.136424: I tensorflow/core/platform/profile_utils/cpu_utils.cc:112] CPU Frequency: 2200135000 Hz
```

```
<matplotlib.image.AxesImage at 0x7fb1dc2adbd0>
```

Out[]:



Resizing Image

In []:

```
test_image = np.resize(face, (224,224,1))
```

Prediction

In []:

```
label_dict = {0: 'Angry', 1: 'Disgust', 2: 'Fear', 3: 'Happy', 4: 'Neutral', 5: 'Sad', 6: 'Surprise'}  
  
test_img = np.expand_dims(test_image, axis = 0)  
test_img = test_img.reshape(-1,224,224,1)  
result = model.predict(test_img)  
result = list(result[0])  
  
img_index = result.index(max(result))
```

```
emotion = label_dict[img_index]
print(emotion)
```

Happy

Song Playing as per mood

```
In [ ]: from IPython.display import Audio
song_path = '../input/emotion-audio-files/Ringtones'
song = os.path.join(song_path, emotion)
print(f'Playing {emotion} song')
Audio(song + '.mp3', autoplay=True)
```

Playing Happy song

```
Out[ ]: 0:00 / 0:18
```

```
In [ ]:
```