

```

1 from google.colab import drive
2 drive.mount("/content/drive")

Mounted at /content/drive

1 import pandas as pd
2 import os
3 import glob as gb
4 from tensorflow import keras
5 from keras.models import Sequential
6 from keras.layers import Conv2D
7 from keras.layers import MaxPooling2D
8 from keras.layers import Flatten
9 from keras.layers import Dense

1 TRAIN_DIR = "/content/drive/MyDrive/Emotion detection/train"
2 TEST_DIR = "/content/drive/MyDrive/Emotion detection/test"
3 BATCH_SIZE=64

1 for folder in os.listdir(TRAIN_DIR):
2     files = gb.glob(pathname= str(TRAIN_DIR+ '/' + folder + '/*.jpg'))
3     print(f'For training data, found {len(files)} in folder {folder}')

    For training data, found 10 in folder Fear
    For training data, found 10 in folder Happiness
    For training data, found 10 in folder Sadness
    For training data, found 10 in folder Surprise
    For training data, found 10 in folder Disgust
    For training data, found 10 in folder Anger

1 for folder in os.listdir(TEST_DIR):
2     files = gb.glob(pathname= str(TEST_DIR+ '/' + folder + '/*.jpg'))
3     print(f'For testing data, found {len(files)} in folder {folder}')

    For testing data, found 10 in folder Surprise
    For testing data, found 10 in folder Sadness
    For testing data, found 10 in folder Happiness
    For testing data, found 10 in folder Fear
    For testing data, found 10 in folder Anger
    For testing data, found 10 in folder Disgust

1 import random
2 import matplotlib.pyplot as plt
3 import matplotlib.image as mpimg
4
5 def view_random_image(target_dir, target_class):
6     # We will view images from here
7     target_folder = target_dir + target_class
8
9     # Get a random image path
10    random_image = random.sample(os.listdir(target_folder), 1)
11
12    # read in the image and plot it using matplotlib
13    img = mpimg.imread(target_folder+'/'+random_image[0])
14    plt.imshow(img)
15    plt.title(target_class)
16    plt.axis('off')
17    print(f"Image shape {img.shape}")
18
19    return img

1 class_names = ['Anger','Disgust','Fear','Happiness','Sadness','Surprise']

1 plt.figure(figsize=(20,10))
2 for i in range(10):
3     plt.subplot(3, 6, i+1)
4     class_name = random.choice(class_names)
5     img =view_random_image(target_dir="/content/drive/MyDrive/Emotion detection/train/", target_class=class_name)
6
7

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Image shape (416, 416, 3)
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Happiness



Happiness



Anger



Disgust



Surprise



Surprise



Anger



Happiness



Disgust



```

1 from keras.preprocessing.image import ImageDataGenerator
2
3 train_datagen = ImageDataGenerator(rescale = 1./255,
4                                   shear_range = 0.2,
5                                   zoom_range = 0.2,
6                                   horizontal_flip = True)
7
8 test_datagen = ImageDataGenerator(rescale = 1./255)
9
10 training_set = train_datagen.flow_from_directory(TRAIN_DIR,
11                                                  target_size = (128, 128),
12                                                  batch_size = BATCH_SIZE,
13                                                  class_mode = 'categorical')
14
15 test_set = test_datagen.flow_from_directory(TEST_DIR,
16                                             target_size = (128, 128),
17                                             batch_size = BATCH_SIZE,
18                                             class_mode = 'categorical')
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21 Found 60 images belonging to 6 classes.
22 Found 60 images belonging to 6 classes.
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```
1 classifier.summary()
```

```
Model: "sequential"
```

Layer (type)	Output Shape	Param #
conv2d (Conv2D)	(None, 126, 126, 16)	448

max_pooling2d (MaxPooling2D)	(None, 63, 63, 16)	0
conv2d_1 (Conv2D)	(None, 61, 61, 32)	4640
max_pooling2d_1 (MaxPooling2D)	(None, 30, 30, 32)	0
flatten (Flatten)	(None, 28800)	0
dense (Dense)	(None, 128)	3686528
dense_1 (Dense)	(None, 6)	774

```

=====
Total params: 3692390 (14.09 MB)
Trainable params: 3692390 (14.09 MB)
Non-trainable params: 0 (0.00 Byte)

```

```

1 history = classifier.fit(training_set,
2                           epochs = 10,
3                           validation_data = test_set)
4 classifier.save('model1.h5')

```

```

Epoch 1/10
1/1 [=====] - 31s 31s/step - loss: 1.7927 - accuracy: 0.1667 - val_loss: 2.0238 - val_accuracy: 0.1667
Epoch 2/10
1/1 [=====] - 3s 3s/step - loss: 1.8955 - accuracy: 0.2000 - val_loss: 2.2774 - val_accuracy: 0.1333
Epoch 3/10
1/1 [=====] - 2s 2s/step - loss: 2.0151 - accuracy: 0.1667 - val_loss: 2.3034 - val_accuracy: 0.1667
Epoch 4/10
1/1 [=====] - 2s 2s/step - loss: 2.0303 - accuracy: 0.1667 - val_loss: 1.9034 - val_accuracy: 0.1667
Epoch 5/10
1/1 [=====] - 2s 2s/step - loss: 1.7657 - accuracy: 0.2500 - val_loss: 1.8760 - val_accuracy: 0.1667
Epoch 6/10
1/1 [=====] - 2s 2s/step - loss: 1.7559 - accuracy: 0.2500 - val_loss: 1.8628 - val_accuracy: 0.2333
Epoch 7/10
1/1 [=====] - 2s 2s/step - loss: 1.7694 - accuracy: 0.3000 - val_loss: 1.8622 - val_accuracy: 0.2500
Epoch 8/10
1/1 [=====] - 3s 3s/step - loss: 1.7492 - accuracy: 0.2667 - val_loss: 1.8316 - val_accuracy: 0.2333
Epoch 9/10
1/1 [=====] - 2s 2s/step - loss: 1.7226 - accuracy: 0.3500 - val_loss: 1.8112 - val_accuracy: 0.2000
Epoch 10/10
1/1 [=====] - 2s 2s/step - loss: 1.6942 - accuracy: 0.3833 - val_loss: 1.8000 - val_accuracy: 0.1833
/usr/local/lib/python3.10/dist-packages/keras/src/engine/training.py:3000: UserWarning: You are saving your model as an HDF5 file via `
saving_api.save_model(

```

```
1 classifier.evaluate(test_set)
```

```

1/1 [=====] - 0s 415ms/step - loss: 1.8000 - accuracy: 0.1833
[1.800031304359436, 0.18333333730697632]

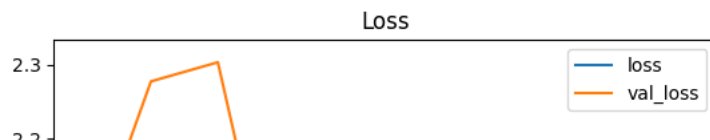
```

```

1 pd.DataFrame(history.history)[['loss', 'val_loss']].plot()
2 plt.title('Loss')
3 plt.xlabel('epochs')
4 plt.ylabel('Loss')

```

Text(0, 0.5, 'Loss')

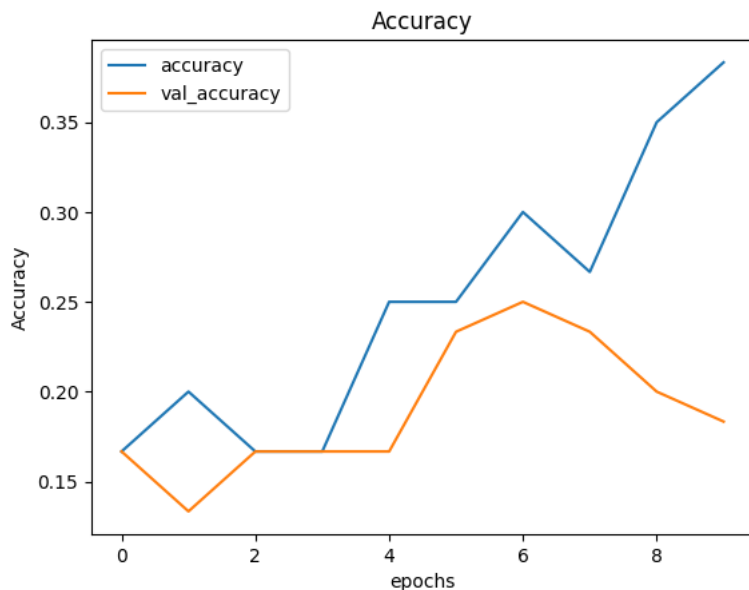


```

1 pd.DataFrame(history.history)[['accuracy', 'val_accuracy']].plot()
2 plt.title('Accuracy')
3 plt.xlabel('epochs')
4 plt.ylabel('Accuracy')

```

Text(0, 0.5, 'Accuracy')



```

1 model_path = "model1.h5"
2 loaded_model = keras.models.load_model(model_path)
3
4 import matplotlib.pyplot as plt
5 import numpy as np
6 import cv2
7 from PIL import Image
8
9 image = cv2.imread("/content/drive/MyDrive/Emotion detection/test/Anger/myvideo_frames5_jpg.rf.f1726ea78f0bb1d5f16e3403e2d92468.jpg")
10
11 image_fromarray = Image.fromarray(image, 'RGB')
12 resize_image = image_fromarray.resize((128, 128))
13 expand_input = np.expand_dims(resize_image,axis=0)
14 input_data = np.array(expand_input)
15 input_data = input_data/255
16
17 pred = loaded_model.predict(input_data)
18 result = pred.argmax()
19 result

1/1 [=====] - 0s 112ms/step
1

```

1 training\_set.class\_indices

```

{'Anger': 0,
 'Disgust': 1,
 'Fear': 2,
 'Happiness': 3,
 'Sadness': 4,
 'Surprise': 5}

```

