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LAB 5:IMAGE CORPUS CREATION AND BINARY CLASSIFICATION USING DNN

```python
import numpy as np
import pandas as pd
import cv2
import glob
import random
import matplotlib.pyplot as plt
import datetime
import tensorflow as tf
from tensorflow import keras
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense
from tensorflow.keras.optimizers import Adam
from tensorflow.keras.losses import BinaryCrossentropy
from google.colab.patches import cv2_imshow

image = cv2.imread("/content/Vij&jai/vijay/j1.jpg", 1)
stretch_near = cv2.resize(image, (500,500),
              interpolation = cv2.INTER_NEAREST)
cv2.imwrite('/content/images/vij/vij1.jpg',stretch_near)
cv2_imshow(stretch_near)
plt.show()
```

```
image = cv2.imread("/content/Vij&jai/vijay/j2.jpg", 1)
stretch_near = cv2.resize(image, (500,500),
                interpolation = cv2.INTER_NEAREST)
cv2.imwrite('/content/images/vij/vij2.jpg',stretch_near)
cv2_imshow(stretch_near)
plt.show()
```

```python
image = cv2.imread("/content/Vij&jai/vijay/j3.jpg", 1)
stretch_near = cv2.resize(image, (500,500),
                  interpolation = cv2.INTER_NEAREST)
cv2.imwrite('/content/images/vij/vij3.jpg',stretch_near)
cv2_imshow(stretch_near)
plt.show()
```

```
image = cv2.imread("/content/Vij&jai/vijay/j4.jpg", 1)
stretch_near = cv2.resize(image, (500,500),
                 interpolation = cv2.INTER_NEAREST)
cv2.imwrite('/content/images/vij/vij4.jpg',stretch_near)
cv2_imshow(stretch_near)
plt.show()
```

```
image = cv2.imread("/content/Vij&jai/vijay/j5.jpg", 1)
stretch_near = cv2.resize(image, (500,500),
                  interpolation = cv2.INTER_NEAREST)
cv2.imwrite('/content/images/vij/vij5.jpg',stretch_near)
cv2_imshow(stretch_near)
plt.show()
```

```
image = cv2.imread("/content/Vij&jai/vijay/j6.jpg", 1)
stretch_near = cv2.resize(image, (500,500),
                    interpolation = cv2.INTER_NEAREST)
cv2.imwrite('/content/images/vij/vij6.jpg',stretch_near)
cv2_imshow(stretch_near)
plt.show()
```

```
image = cv2.imread("/content/Vij&jai/vijay/j7.jpg", 1)
stretch_near = cv2.resize(image, (500,500),
                 interpolation = cv2.INTER_NEAREST)
cv2.imwrite('/content/images/vij/vij7.jpg',stretch_near)
cv2_imshow(stretch_near)
plt.show()
```

```
image = cv2.imread("/content/Vij&jai/vijay/j8.jpg", 1)
stretch_near = cv2.resize(image, (500,500),
                  interpolation = cv2.INTER_NEAREST)
cv2.imwrite('/content/images/vij/vij8.jpg',stretch_near)
cv2_imshow(stretch_near)
plt.show()
```

```
image = cv2.imread("/content/Vij&jai/vijay/j9.jpg", 1)
stretch_near = cv2.resize(image, (500,500),
                interpolation = cv2.INTER_NEAREST)
cv2.imwrite('/content/images/vij/vij9.jpg',stretch_near)
cv2_imshow(stretch_near)
plt.show()
```

```
image = cv2.imread("/content/Vij&jai/vijay/j10.jpg", 1)
stretch_near = cv2.resize(image, (500,500),
                 interpolation = cv2.INTER_NEAREST)
cv2.imwrite('/content/images/vij/vij10.jpg',stretch_near)
cv2_imshow(stretch_near)
plt.show()
```

```python
image = cv2.imread("/content/Vij&jai/jai/j11.jpg", 1)
stretch_near = cv2.resize(image, (500,500),
                interpolation = cv2.INTER_NEAREST)
cv2.imwrite('/content/images/vij/jai11.jpg',stretch_near)
cv2_imshow(stretch_near)
plt.show()
```

```python
image = cv2.imread("/content/Vij&jai/jai/j12.jpg", 1)
stretch_near = cv2.resize(image, (500,500),
                    interpolation = cv2.INTER_NEAREST)
cv2.imwrite('/content/images/vij/jai12.jpg',stretch_near)
cv2_imshow(stretch_near)
plt.show()
```

```
image = cv2.imread("/content/Vij&jai/jai/j13.jpg", 1)
stretch_near = cv2.resize(image, (500,500),
                  interpolation = cv2.INTER_NEAREST)
cv2.imwrite('/content/images/vij/jai13.jpg',stretch_near)
cv2_imshow(stretch_near)
plt.show()
```

```
image = cv2.imread("/content/Vij&jai/jai/j14.jpg", 1)
stretch_near = cv2.resize(image, (500,500),
                interpolation = cv2.INTER_NEAREST)
cv2.imwrite('/content/images/vij/jai14.jpg',stretch_near)
cv2_imshow(stretch_near)
plt.show()
```

```
image = cv2.imread("/content/Vij&jai/jai/j15.jpg", 1)
stretch_near = cv2.resize(image, (500,500),
                interpolation = cv2.INTER_NEAREST)
cv2.imwrite('/content/images/vij/jai15.jpg',stretch_near)
cv2_imshow(stretch_near)
plt.show()
```

```
image = cv2.imread("/content/Vij&jai/jai/j16.jpg", 1)
stretch_near = cv2.resize(image, (500,500),
                interpolation = cv2.INTER_NEAREST)
cv2.imwrite('/content/images/vij/jai16.jpg',stretch_near)
cv2_imshow(stretch_near)
plt.show()
```

```python
image = cv2.imread("/content/Vij&jai/jai/j17.jpg", 1)
stretch_near = cv2.resize(image, (500,500),
                  interpolation = cv2.INTER_NEAREST)
cv2.imwrite('/content/images/vij/jai17.jpg',stretch_near)
cv2_imshow(stretch_near)
plt.show()
```

```
image = cv2.imread("/content/Vij&jai/jai/j18.jpg", 1)
stretch_near = cv2.resize(image, (500,500),
                interpolation = cv2.INTER_NEAREST)
cv2.imwrite('/content/images/vij/jai18.jpg',stretch_near)
cv2_imshow(stretch_near)
plt.show()
```

```
image = cv2.imread("/content/Vij&jai/jai/j19.jpg", 1)
stretch_near = cv2.resize(image, (500,500),
                interpolation = cv2.INTER_NEAREST)
cv2.imwrite('/content/images/vij/jai19.jpg',stretch_near)
cv2_imshow(stretch_near)
plt.show()
```

```
image = cv2.imread("/content/Vij&jai/jai/j20.jpg", 1)
stretch_near = cv2.resize(image, (500,500),
                  interpolation = cv2.INTER_NEAREST)
cv2.imwrite('/content/images/vij/jai20.jpg',stretch_near)
cv2_imshow(stretch_near)
plt.show()
```

```python
images = []
for img in glob.glob("/content/Vij&jai/jai/*.jpg"):
    n = cv2.imread(img)
    images.append(n)
    print (img)

for img in glob.glob("/content/Vij&jai/vijay/*.jpg"):
    m=cv2.imread(img)
    images.append(m)
    print(img)


resized_images = []
dim=(500,500)

for i in images:
```

```python
    x = cv2.resize(i,dim,interpolation = cv2.INTER_AREA)
    plt.imshow(x)
    resized_images.append(x)

xfeatures =[]
for i in resized_images:
    xfeatures.append(i.flatten())

#label=[0]*8
#label=label+[1]*10
label=[0]*10
labels =label+[1]*10 #output label is 1 for each image
#y=label

X=np.asarray(xfeatures)
Y=np.asarray(labels)
```

/content/Vij&jai/jai/j13.jpg
/content/Vij&jai/jai/j20.jpg
/content/Vij&jai/jai/j17.jpg
/content/Vij&jai/jai/j12.jpg
/content/Vij&jai/jai/j11.jpg
/content/Vij&jai/jai/j14.jpg
/content/Vij&jai/jai/j16.jpg
/content/Vij&jai/jai/j18.jpg
/content/Vij&jai/jai/j15.jpg
/content/Vij&jai/jai/j19.jpg
/content/Vij&jai/vijay/j7.jpg
/content/Vij&jai/vijay/j1.jpg
/content/Vij&jai/vijay/j3.jpg
/content/Vij&jai/vijay/j6.jpg
/content/Vij&jai/vijay/j5.jpg
/content/Vij&jai/vijay/j8.jpg
/content/Vij&jai/vijay/j4.jpg
/content/Vij&jai/vijay/j9.jpg
/content/Vij&jai/vijay/j2.jpg
/content/Vij&jai/vijay/j10.jpg
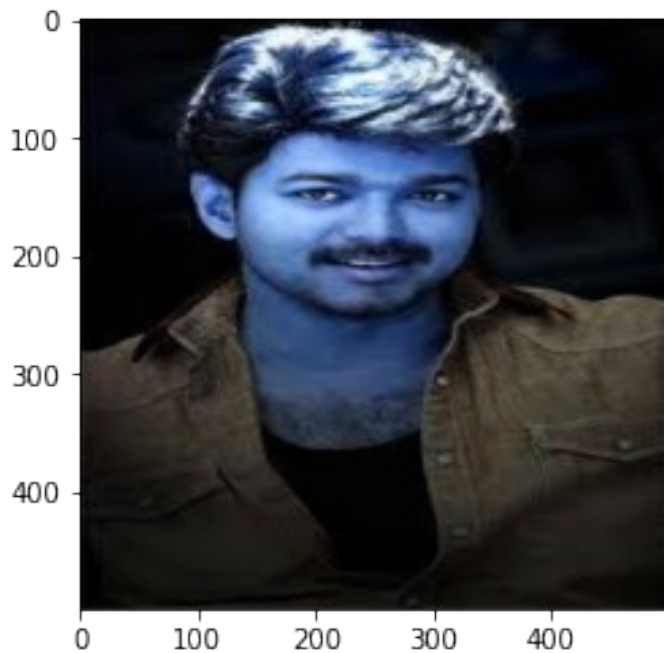
X

```
array([[ 19,  20,  31, ...,  71, 166, 199],
       [237, 246, 255, ..., 208, 232, 253],
       [187, 192, 191, ...,  96,  70,  70],
       ...,
       [149, 205, 240, ...,  31,   9,  21],
       [ 63,  62,  72, ...,  61,  54,   5],
       [ 41,  41,  41, ...,  42,  40,  39]], dtype=uint8)
```
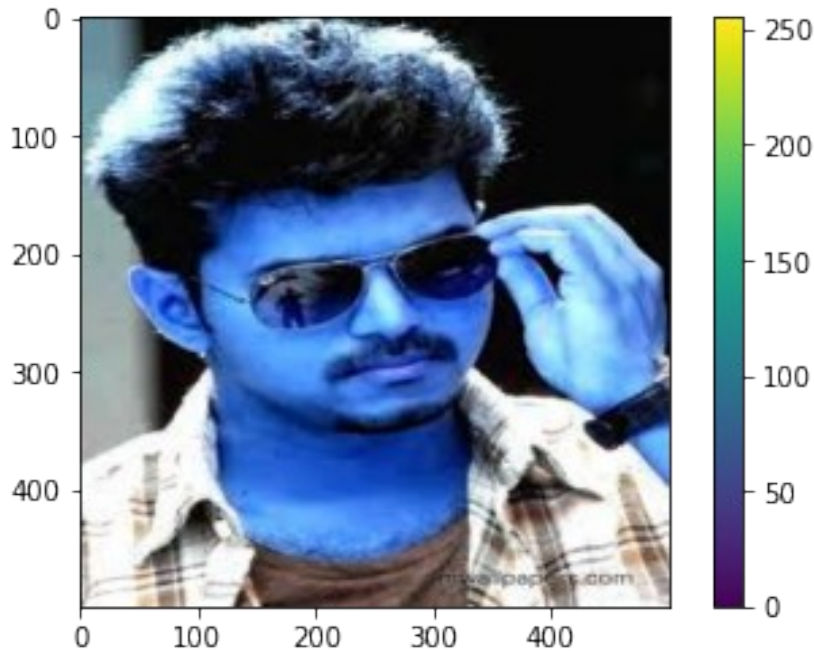
X.shape

(20, 750000)

Y

array([0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1])

Y.shape

(20,)

```python
plt.figure()
plt.imshow(resized_images[10])
plt.colorbar()
plt.grid(False)
plt.show()
```

```python
def create_model():
    model = Sequential()
    model.add(Dense(1, input_dim=750000, activation='relu'))
    model.add(Dense(1, activation='sigmoid'))
    return model

model = create_model()
model.summary()
model.compile(optimizer='adam',
              loss='BinaryCrossentropy',
              metrics=['accuracy'])
```

Model: "sequential_1"

| Layer (type) | Output Shape | Param # |
|---|---|---|
| dense_2 (Dense) | (None, 1) | 750001 |
| dense_3 (Dense) | (None, 1) | 2 |

Total params: 750,003
Trainable params: 750,003
Non-trainable params: 0

```python
model.fit(x=X, y=Y,
          epochs=20,
          validation_split=0.25)
```

```
Epoch 1/20
1/1 [==============================] - 0s 491ms/step - loss: 41.2789 -
accuracy: 0.6667 - val_loss: 0.6926 - val_accuracy: 1.0000
Epoch 2/20
1/1 [==============================] - 0s 69ms/step - loss: 0.6933 -
accuracy: 0.3333 - val_loss: 0.6925 - val_accuracy: 1.0000
Epoch 3/20
1/1 [==============================] - 0s 54ms/step - loss: 0.6934 -
accuracy: 0.3333 - val_loss: 0.6926 - val_accuracy: 1.0000
Epoch 4/20
1/1 [==============================] - 0s 56ms/step - loss: 0.6933 -
accuracy: 0.3333 - val_loss: 0.6927 - val_accuracy: 1.0000
Epoch 5/20
1/1 [==============================] - 0s 63ms/step - loss: 0.6933 -
accuracy: 0.3333 - val_loss: 0.6929 - val_accuracy: 1.0000
Epoch 6/20
1/1 [==============================] - 0s 67ms/step - loss: 0.6932 -
accuracy: 0.3333 - val_loss: 0.6931 - val_accuracy: 0.0000e+00
Epoch 7/20
1/1 [==============================] - 0s 71ms/step - loss: 0.6931 -
accuracy: 0.6667 - val_loss: 0.6934 - val_accuracy: 0.0000e+00
Epoch 8/20
1/1 [==============================] - 0s 75ms/step - loss: 0.6930 -
accuracy: 0.6667 - val_loss: 0.6938 - val_accuracy: 0.0000e+00
Epoch 9/20
1/1 [==============================] - 0s 68ms/step - loss: 0.6929 -
accuracy: 0.6667 - val_loss: 0.6941 - val_accuracy: 0.0000e+00
Epoch 10/20
1/1 [==============================] - 0s 74ms/step - loss: 0.6928 -
accuracy: 0.6667 - val_loss: 0.6945 - val_accuracy: 0.0000e+00
Epoch 11/20
1/1 [==============================] - 0s 54ms/step - loss: 0.6927 -
accuracy: 0.6667 - val_loss: 0.6948 - val_accuracy: 0.0000e+00
Epoch 12/20
1/1 [==============================] - 0s 51ms/step - loss: 0.6926 -
accuracy: 0.6667 - val_loss: 0.6952 - val_accuracy: 0.0000e+00
Epoch 13/20
1/1 [==============================] - 0s 60ms/step - loss: 0.6925 -
accuracy: 0.6667 - val_loss: 0.6956 - val_accuracy: 0.0000e+00
Epoch 14/20
1/1 [==============================] - 0s 50ms/step - loss: 0.6923 -
accuracy: 0.6667 - val_loss: 0.6960 - val_accuracy: 0.0000e+00
Epoch 15/20
1/1 [==============================] - 0s 52ms/step - loss: 0.6922 -
accuracy: 0.6667 - val_loss: 0.6965 - val_accuracy: 0.0000e+00
Epoch 16/20
1/1 [==============================] - 0s 51ms/step - loss: 0.6921 -
accuracy: 0.6667 - val_loss: 0.6969 - val_accuracy: 0.0000e+00
Epoch 17/20
1/1 [==============================] - 0s 49ms/step - loss: 0.6919 -
```

```
accuracy: 0.6667 - val_loss: 0.6973 - val_accuracy: 0.0000e+00
Epoch 18/20
1/1 [==============================] - 0s 55ms/step - loss: 0.6918 -
accuracy: 0.6667 - val_loss: 0.6977 - val_accuracy: 0.0000e+00
Epoch 19/20
1/1 [==============================] - 0s 52ms/step - loss: 0.6916 -
accuracy: 0.6667 - val_loss: 0.6982 - val_accuracy: 0.0000e+00
Epoch 20/20
1/1 [==============================] - 0s 69ms/step - loss: 0.6915 -
accuracy: 0.6667 - val_loss: 0.6986 - val_accuracy: 0.0000e+00

<keras.callbacks.History at 0x7f9b421d53d0>
```