

MOOD CLASSIFICATION

Image classifying Using Max Pooling

```
In [5]: !pip show tensorflow
```

```
Name: tensorflow
Version: 2.10.0
Summary: TensorFlow is an open source machine learning framework for everyone.
Home-page: https://www.tensorflow.org/
Author: Google Inc.
Author-email: packages@tensorflow.org
License: Apache 2.0
Location: c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages
Requires: absl-py, astunparse, flatbuffers, gast, google-pasta, grpcio, h5py, keras, keras-preprocessing, libclang, numpy, opt-einsum, packaging, protobuf, setupools, six, tensorboard, tensorflow-estimator, tensorflow-io-gcs-filesystem, termcolor, typing-extensions, wrapt
Required-by:
```

```
In [6]: !pip install tensorflow
```

Requirement already satisfied: tensorflow in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (2.10.0)
Requirement already satisfied: absl-py>=1.0.0 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorflow) (2.1.0)
Requirement already satisfied: astunparse>=1.6.0 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorflow) (1.6.3)
Requirement already satisfied: flatbuffers>=2.0 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorflow) (24.3.25)
Requirement already satisfied: gast<=0.4.0,>=0.2.1 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorflow) (0.4.0)
Requirement already satisfied: google-pasta>=0.1.1 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorflow) (0.2.0)
Requirement already satisfied: h5py>=2.9.0 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorflow) (3.12.1)
Requirement already satisfied: keras-preprocessing>=1.1.1 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorflow) (1.1.2)
Requirement already satisfied: libclang>=13.0.0 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorflow) (18.1.1)
Requirement already satisfied: numpy>=1.20 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorflow) (1.26.4)
Requirement already satisfied: opt-einsum>=2.3.2 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorflow) (3.3.0)
Requirement already satisfied: packaging in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorflow) (24.1)
Requirement already satisfied: protobuf<3.20,>=3.9.2 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorflow) (3.19.6)
Requirement already satisfied: setuptools in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorflow) (75.1.0)
Requirement already satisfied: six>=1.12.0 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorflow) (1.16.0)
Requirement already satisfied: termcolor>=1.1.0 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorflow) (2.1.0)
Requirement already satisfied: typing-extensions>=3.6.6 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorflow) (4.11.0)
Requirement already satisfied: wrapt>=1.11.0 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorflow) (1.14.1)
Requirement already satisfied: tensorflow-io-gcs-filesystem>=0.23.1 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorflow) (0.31.0)
Requirement already satisfied: grpcio<2.0,>=1.24.3 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorflow) (1.48.2)
Requirement already satisfied: tensorboard<2.11,>=2.10 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorflow) (2.10.0)
Requirement already satisfied: tensorflow-estimator<2.11,>=2.10.0 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorflow) (2.10.0)
Requirement already satisfied: keras<2.11,>=2.10.0 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorflow) (2.10.0)
Requirement already satisfied: wheel<1.0,>=0.23.0 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from astunparse>=1.6.0->tensorflow) (0.44.0)
Requirement already satisfied: google-auth<3,>=1.6.3 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorboard<2.11,>=2.10->tensorflow) (2.29.0)
Requirement already satisfied: google-auth-oauthlib<0.5,>=0.4.1 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorboard<2.11,>=2.10->tensorflow) (0.4.4)
Requirement already satisfied: markdown>=2.6.8 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorboard<2.11,>=2.10->tensorflow) (3.4.1)
Requirement already satisfied: requests<3,>=2.21.0 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorboard<2.11,>=2.10->tensorflow) (2.32.3)

```
Requirement already satisfied: tensorboard-data-server<0.7.0,>=0.6.0 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorboard<2.11,>=2.10->tensorflow) (0.6.1)
Requirement already satisfied: tensorboard-plugin-wit>=1.6.0 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorboard<2.11,>=2.10->tensorflow) (1.8.1)
Requirement already satisfied: werkzeug>=1.0.1 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from tensorboard<2.11,>=2.10->tensorflow) (3.1.3)
Requirement already satisfied: cachetools<6.0,>=2.0.0 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from google-auth<3,>=1.6.3->tensorboard<2.11,>=2.10->tensorflow) (5.3.3)
Requirement already satisfied: pyasn1-modules>=0.2.1 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from google-auth<3,>=1.6.3->tensorboard<2.11,>=2.10->tensorflow) (0.2.8)
Requirement already satisfied: rsa<5,>=3.1.4 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from google-auth<3,>=1.6.3->tensorboard<2.11,>=2.10->tensorflow) (4.7.2)
Requirement already satisfied: requests-oauthlib>=0.7.0 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from google-auth-oauthlib<0.5,>=0.4.1->tensorboard<2.11,>=2.10->tensorflow) (2.0.0)
Requirement already satisfied: charset-normalizer<4,>=2 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from requests<3,>=2.21.0->tensorboard<2.11,>=2.10->tensorflow) (3.3.2)
Requirement already satisfied: idna<4,>=2.5 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from requests<3,>=2.21.0->tensorboard<2.11,>=2.10->tensorflow) (3.7)
Requirement already satisfied: urllib3<3,>=1.21.1 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from requests<3,>=2.21.0->tensorboard<2.11,>=2.10->tensorflow) (2.2.3)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from requests<3,>=2.21.0->tensorboard<2.11,>=2.10->tensorflow) (2024.8.30)
Requirement already satisfied: MarkupSafe>=2.1.1 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from werkzeug>=1.0.1->tensorboard<2.11,>=2.10->tensorflow) (2.1.3)
Requirement already satisfied: pyasn1<0.5.0,>=0.4.6 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from pyasn1-modules>=0.2.1->google-auth<3,>=1.6.3->tensorboard<2.11,>=2.10->tensorflow) (0.4.8)
Requirement already satisfied: oauthlib>=3.0.0 in c:\users\roy62\anaconda3\envs\tensorflow_env\lib\site-packages (from requests-oauthlib>=0.7.0->google-auth-oauthlib<0.5,>=0.4.1->tensorboard<2.11,>=2.10->tensorflow) (3.2.2)
```

```
In [7]: import tensorflow as tf
print(tf.__version__)
```

2.10.0

```
In [4]: from tensorflow.keras.preprocessing.image import ImageDataGenerator
from tensorflow.keras.preprocessing import image
import matplotlib.pyplot as plt
import tensorflow as tf
import numpy as np
import cv2
import os
```

```
In [5]: img = image.load_img(r"E:\Data Science & AI\Dataset files\Tensorflow_env\Happy &
```

```
In [6]: plt.imshow(img)
```

```
Out[6]: <matplotlib.image.AxesImage at 0x217fc096da0>
```



```
In [7]: i1= cv2.imread(r"E:\Data Science & AI\Dataset files\Tensorflow_env\Happy & Sad\T  
i1
```

```
Out[7]: array([[[ 51,  50,  52],
   [ 34,  33,  35],
   [ 29,  27,  27],
   ...,
   [126, 133, 142],
   [121, 132, 140],
   [121, 136, 145]],

   [[ 53,  52,  54],
   [ 36,  35,  37],
   [ 30,  28,  28],
   ...,
   [131, 140, 149],
   [130, 141, 149],
   [129, 144, 153]],

   [[ 57,  56,  58],
   [ 39,  38,  40],
   [ 31,  29,  29],
   ...,
   [136, 147, 155],
   [123, 136, 144],
   [116, 133, 142]],

   ...,

   [[ 74,  41,  38],
   [ 84,  49,  45],
   [ 78,  42,  36],
   ...,
   [146, 168, 156],
   [153, 174, 166],
   [209, 229, 224]],

   [[ 77,  44,  41],
   [ 93,  58,  54],
   [ 92,  56,  50],
   ...,
   [148, 168, 156],
   [152, 173, 165],
   [211, 230, 227]],

   [[ 79,  46,  43],
   [100,  65,  61],
   [104,  68,  62],
   ...,
   [147, 167, 155],
   [150, 171, 163],
   [213, 232, 229]]], dtype=uint8)
```

```
In [8]: i1.shape
```

```
Out[8]: (188, 269, 3)
```

```
In [9]: train=ImageDataGenerator(rescale=1/255)
validation=ImageDataGenerator(rescale=1/255)
```

```
In [10]: train_dataset=train.flow_from_directory(r"E:\Data Science & AI\Dataset files\Ten
target_size=(200,200),
```

```
        batch_size=3,
        class_mode='binary')
validation_dataset=validation.flow_from_directory(r"E:\Data Science & AI\Dataset",
                                                target_size=(200,200),
                                                batch_size=3,
                                                class_mode='binary')
```

Found 10 images belonging to 2 classes.
Found 0 images belonging to 2 classes.

In [11]: `train_dataset.class_indices`

Out[11]: {'Happy': 0, 'Not Happy': 1}

In [12]: `train_dataset.classes`

Out[12]: array([0, 0, 0, 0, 0, 0, 0, 1, 1, 1])

In [13]: `model = tf.keras.models.Sequential([
 tf.keras.layers.Conv2D(16, (3,3), activation='relu', input_shape=(200, 200,
 tf.keras.layers.MaxPooling2D(2, 2),
 tf.keras.layers.Conv2D(32, (3,3), activation='relu'),
 tf.keras.layers.MaxPooling2D(2,2),
 tf.keras.layers.Conv2D(64, (3,3), activation='relu'),
 tf.keras.layers.MaxPooling2D(2,2),
 tf.keras.layers.Flatten(),
 tf.keras.layers.Dense(512, activation='relu'),
 tf.keras.layers.Dense(1, activation='sigmoid')
])
model.summary()`

Model: "sequential"

Layer (type)	Output Shape	Param #
conv2d (Conv2D)	(None, 198, 198, 16)	448
max_pooling2d (MaxPooling2D)	(None, 99, 99, 16)	0
conv2d_1 (Conv2D)	(None, 97, 97, 32)	4640
max_pooling2d_1 (MaxPooling 2D)	(None, 48, 48, 32)	0
conv2d_2 (Conv2D)	(None, 46, 46, 64)	18496
max_pooling2d_2 (MaxPooling 2D)	(None, 23, 23, 64)	0
flatten (Flatten)	(None, 33856)	0
dense (Dense)	(None, 512)	17334784
dense_1 (Dense)	(None, 1)	513
<hr/>		
Total params:	17,358,881	
Trainable params:	17,358,881	
Non-trainable params:	0	

```
In [19]: model.compile(loss='binary_crossentropy',
                      optimizer=tf.keras.optimizers.RMSprop(learning_rate=0.001),
                      metrics=['acc'])
```

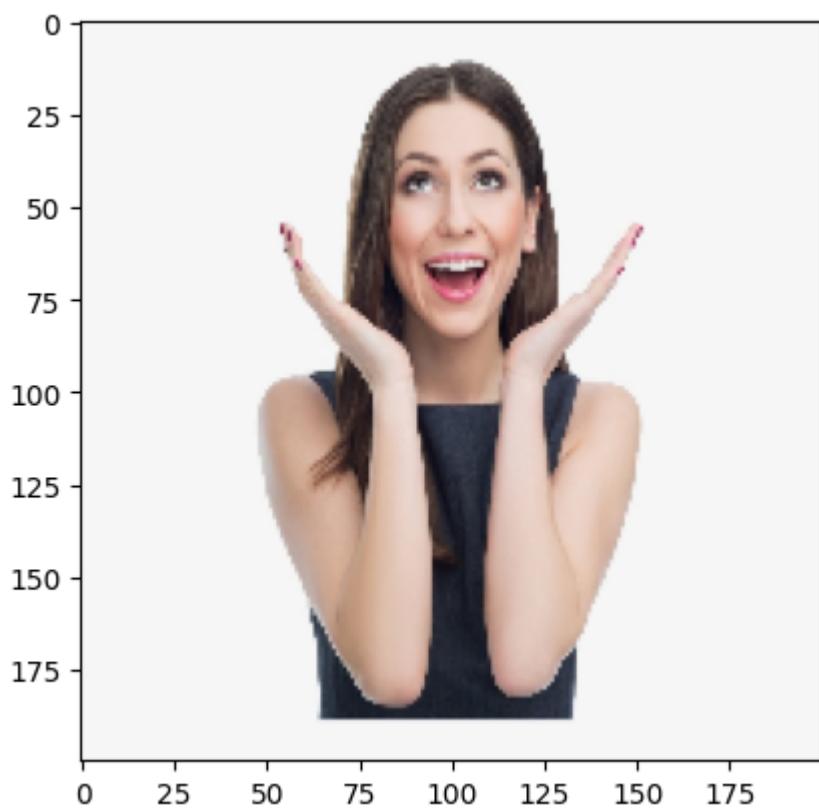
```
Epoch 1/10
3/3 [=====] - 2s 122ms/step - loss: 2.3728 - acc: 0.5556
Epoch 2/10
3/3 [=====] - 0s 110ms/step - loss: 1.8478 - acc: 0.8571
Epoch 3/10
3/3 [=====] - 0s 111ms/step - loss: 0.8609 - acc: 0.4286
Epoch 4/10
3/3 [=====] - 0s 102ms/step - loss: 0.1011 - acc: 1.0000
Epoch 5/10
3/3 [=====] - 0s 110ms/step - loss: 0.0037 - acc: 1.0000
Epoch 6/10
3/3 [=====] - 0s 102ms/step - loss: 0.0238 - acc: 1.0000
Epoch 7/10
3/3 [=====] - 0s 102ms/step - loss: 0.0062 - acc: 1.0000
Epoch 8/10
3/3 [=====] - 0s 100ms/step - loss: 0.0013 - acc: 1.0000
Epoch 9/10
3/3 [=====] - 0s 102ms/step - loss: 5.7090e-04 - acc: 1.0000
Epoch 10/10
3/3 [=====] - 0s 102ms/step - loss: 0.0030 - acc: 1.0000
```

```
In [21]: dir_path = r"E:\Data Science & AI\Dataset files\Tensorflow_env\Happy & Sad\Testi
for i in os.listdir(dir_path):
    print(i)
    #img = image.load_img(dir_path+ '//'+i, target_size = (200,200))
    # plt.imshow(img)
    # plt.show()
```

```
1.png
3.jpg
4.jpg
5.jpg
6.webp
7.webp
images (1).jpg
images (2).jpg
images (3).jpg
images (4).jpg
images.jpg
istockphoto-842311786-612x612.jpg
```

```
In [22]: dir_path = r"E:\Data Science & AI\Dataset files\Tensorflow_env\Happy & Sad\Testi
for i in os.listdir(dir_path):
    print(i)
    img = image.load_img(dir_path+ '//'+i, target_size = (200,200))
    plt.imshow(img)
    plt.show()
```

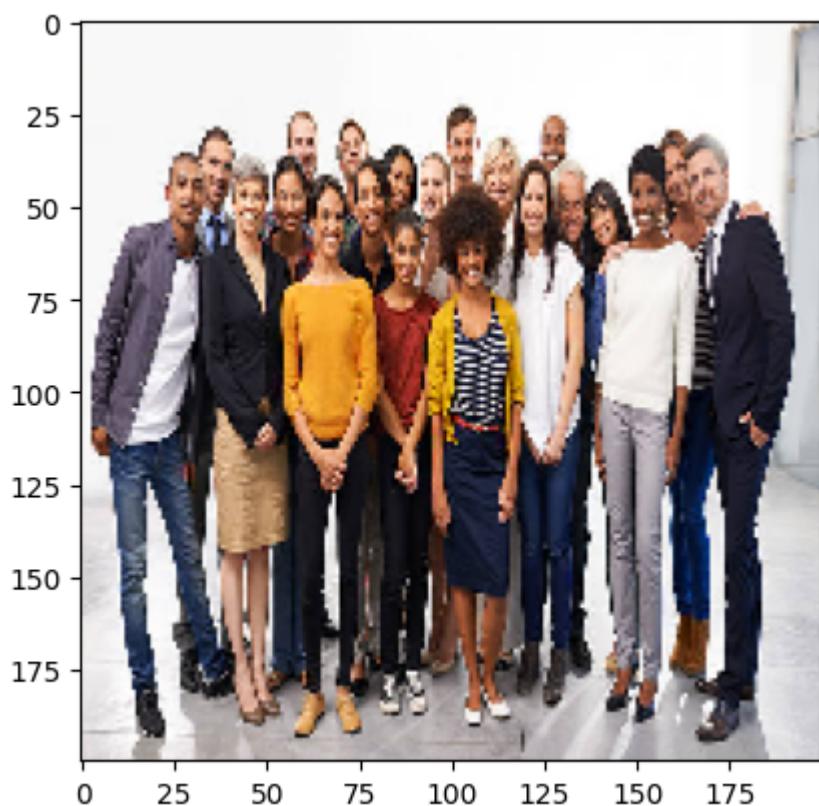
```
1.png
```



3.jpg



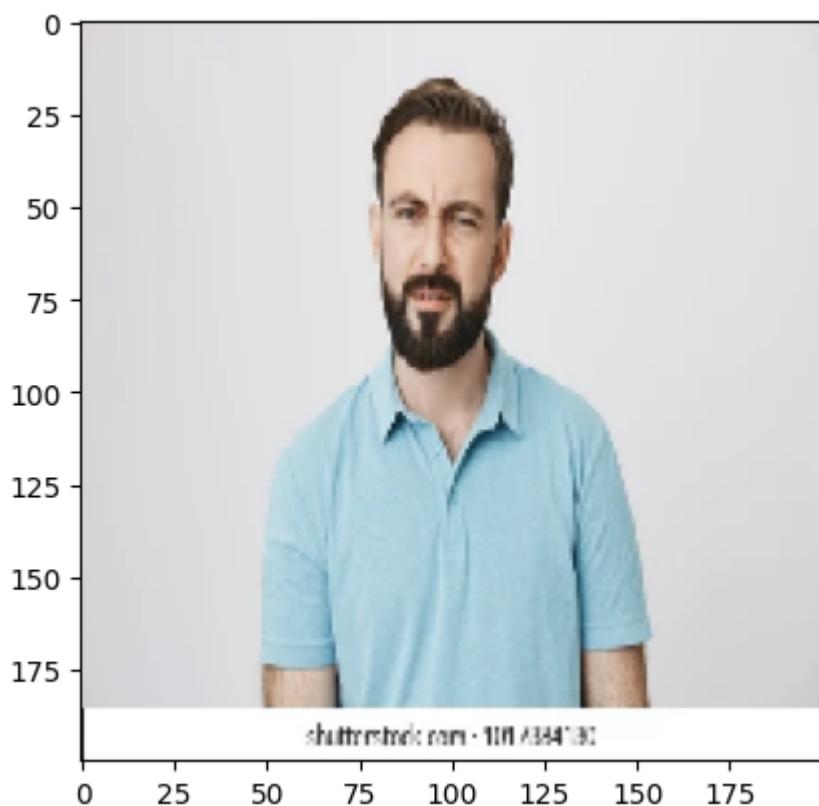
4.jpg



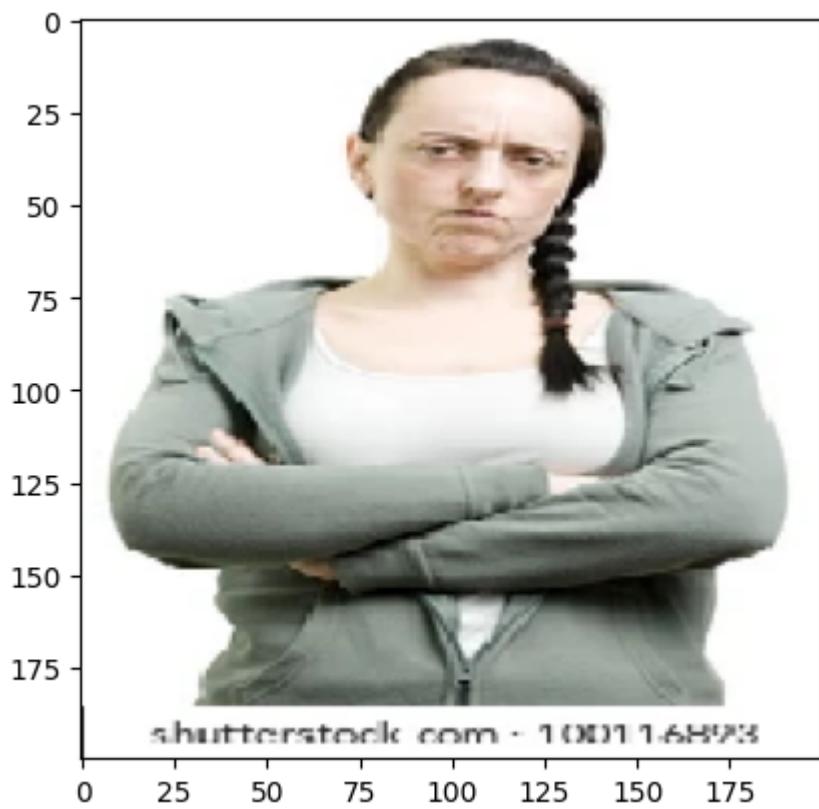
5.jpg



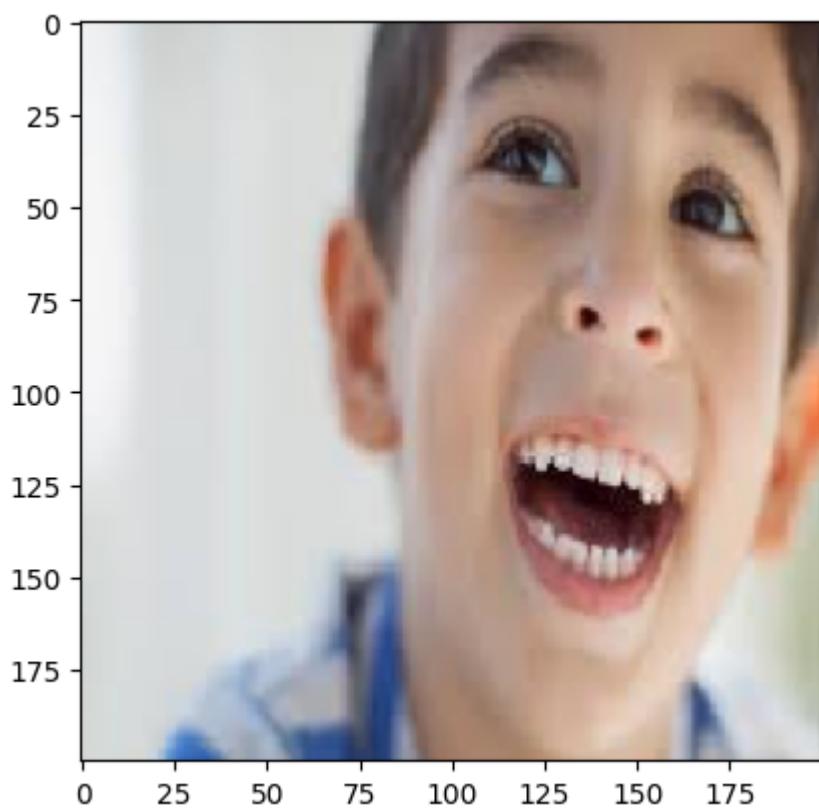
6.webp



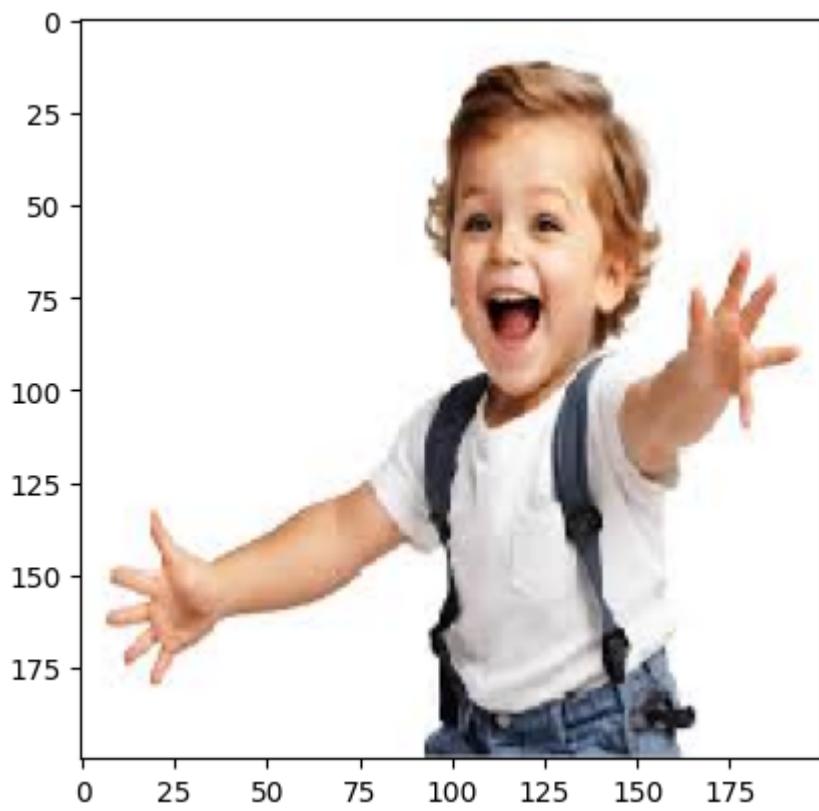
7.webp



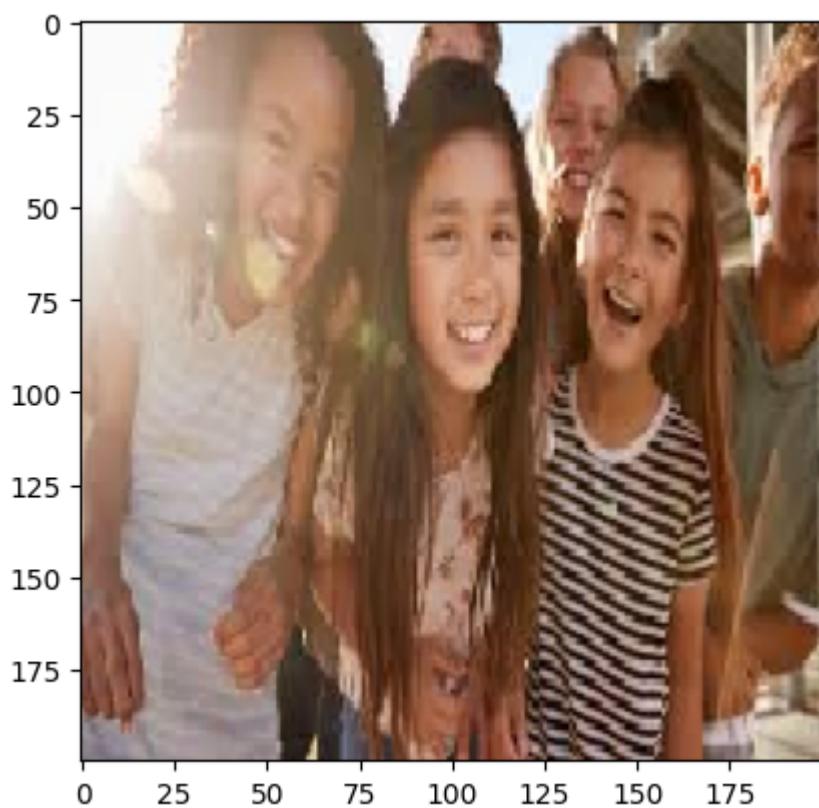
images (1).jpg



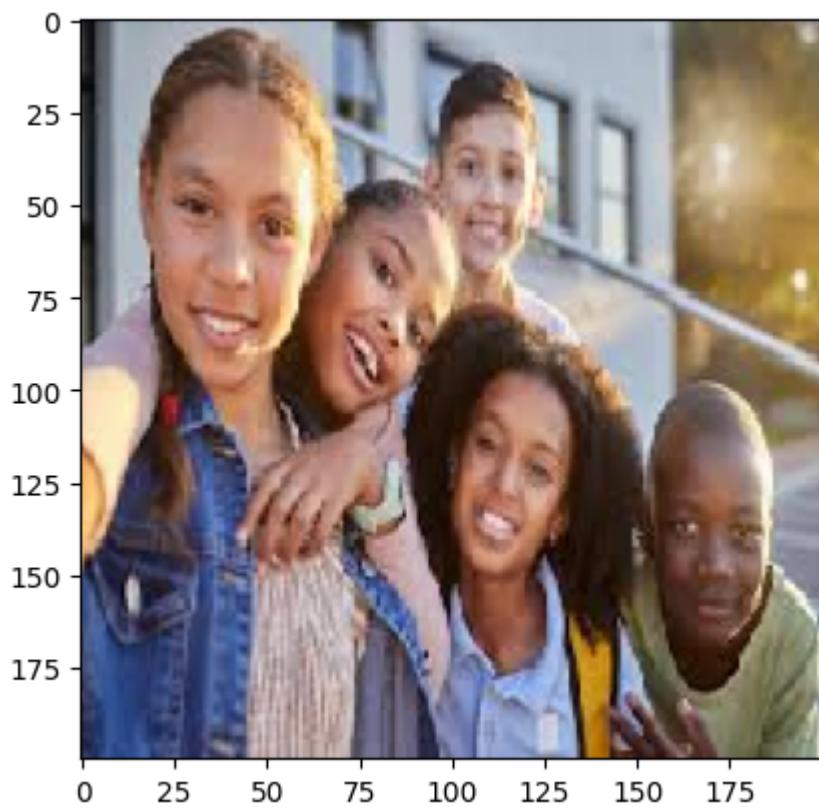
images (2).jpg



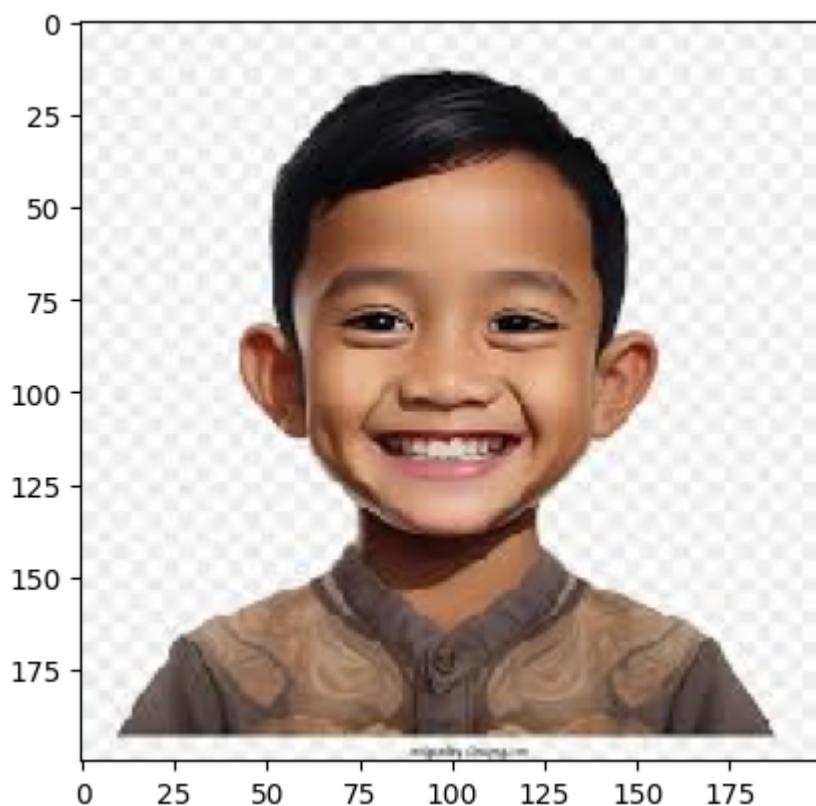
images (3).jpg



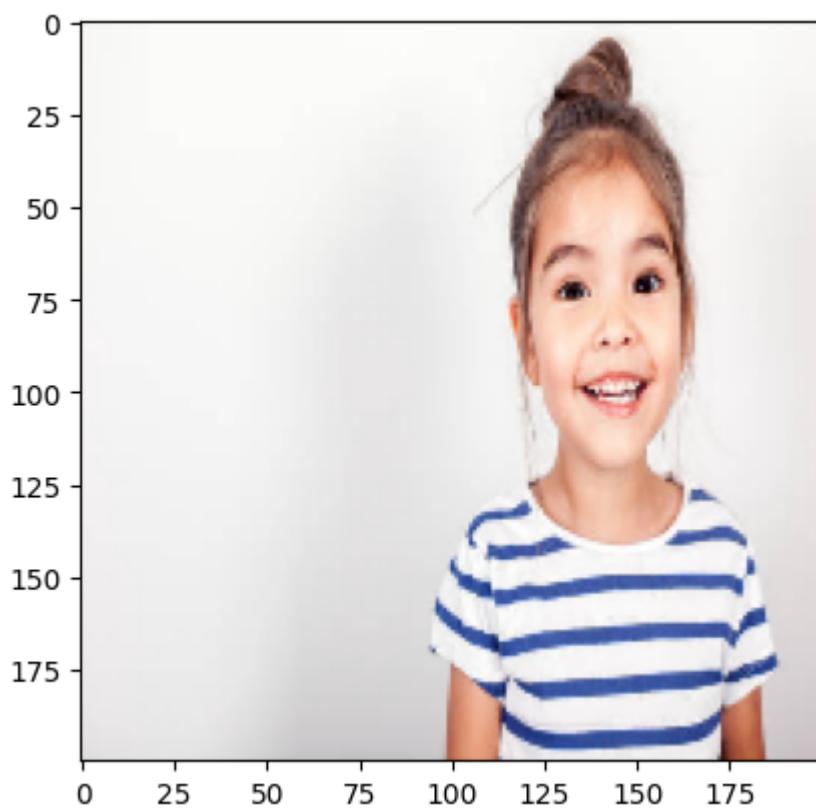
images (4).jpg



images.jpg



istockphoto-842311786-612x612.jpg



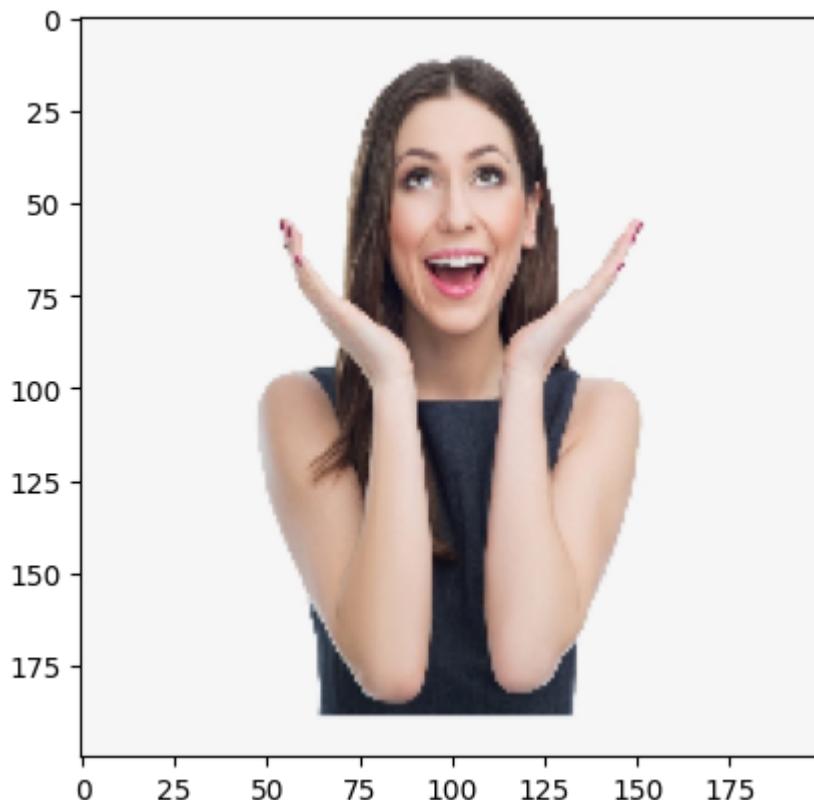
```
In [23]: dir_path = r"E:\Data Science & AI\Dataset files\Tensorflow_env\Happy & Sad\Testi
for i in os.listdir(dir_path):
    print(i)
    img = image.load_img(dir_path+ '//'+i, target_size = (200,200))
    plt.imshow(img)
    plt.show()

x= image.img_to_array(img)
```

```
x=np.expand_dims(x, axis=0)
images = np.vstack([x])

val = model.predict(images)
if val ==0:
    print('NOT HAPPY')
else:
    print('HAPPY')
```

1.png



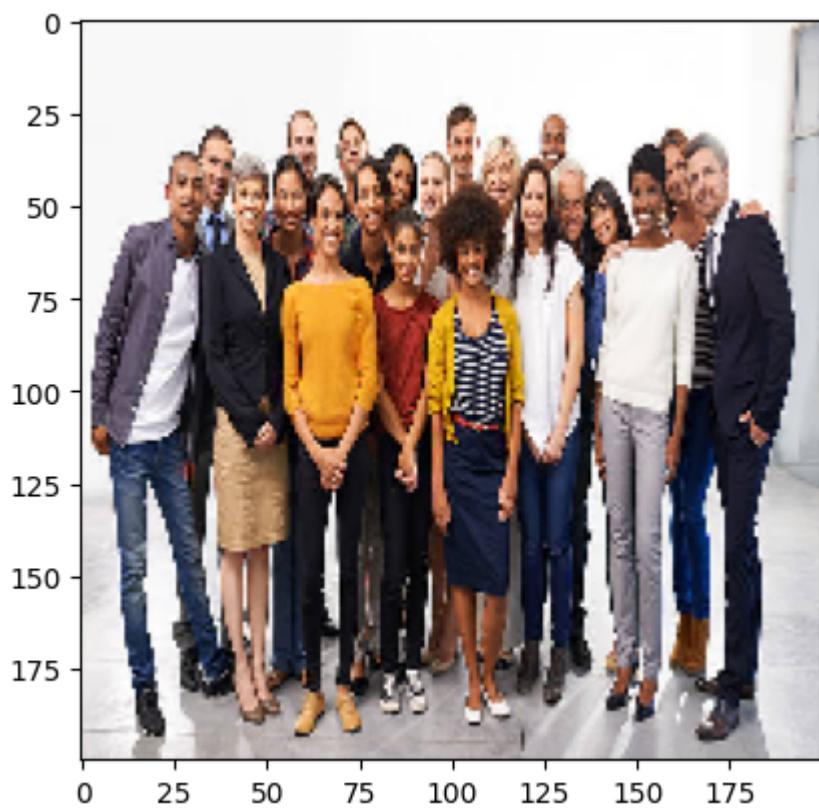
1/1 [=====] - 0s 138ms/step

NOT HAPPY

3.jpg



1/1 [=====] - 0s 26ms/step
HAPPY
4.jpg



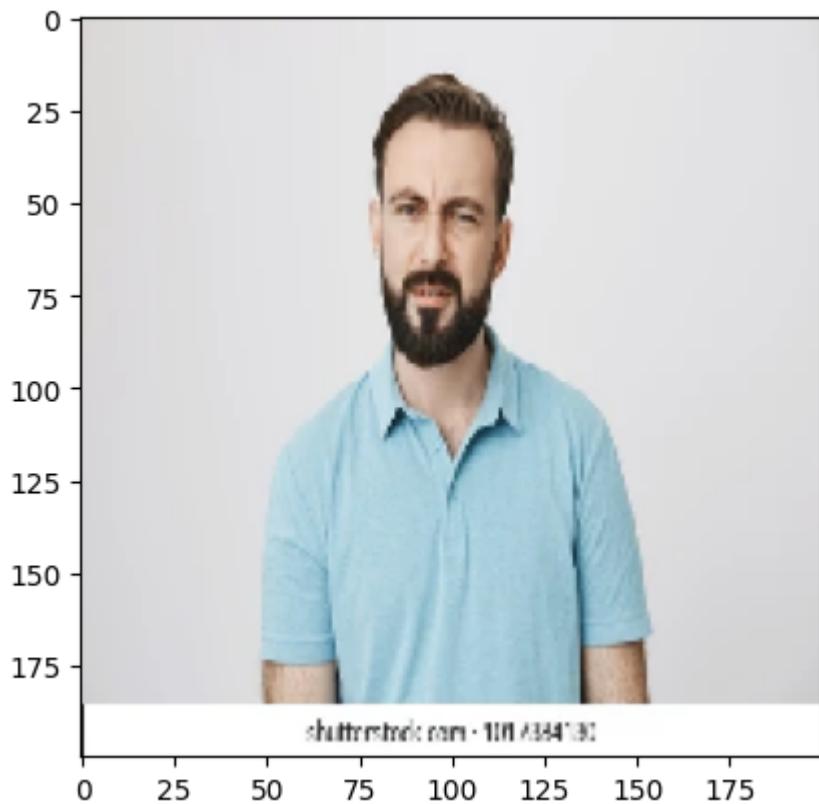
1/1 [=====] - 0s 48ms/step
HAPPY
5.jpg



1/1 [=====] - 0s 34ms/step

HAPPY

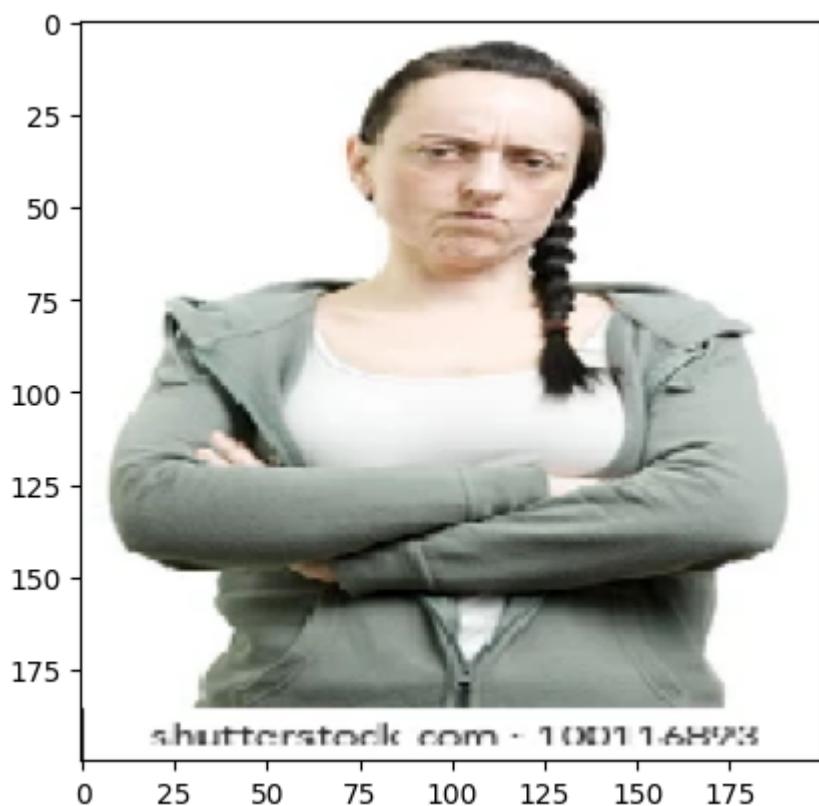
6.webp



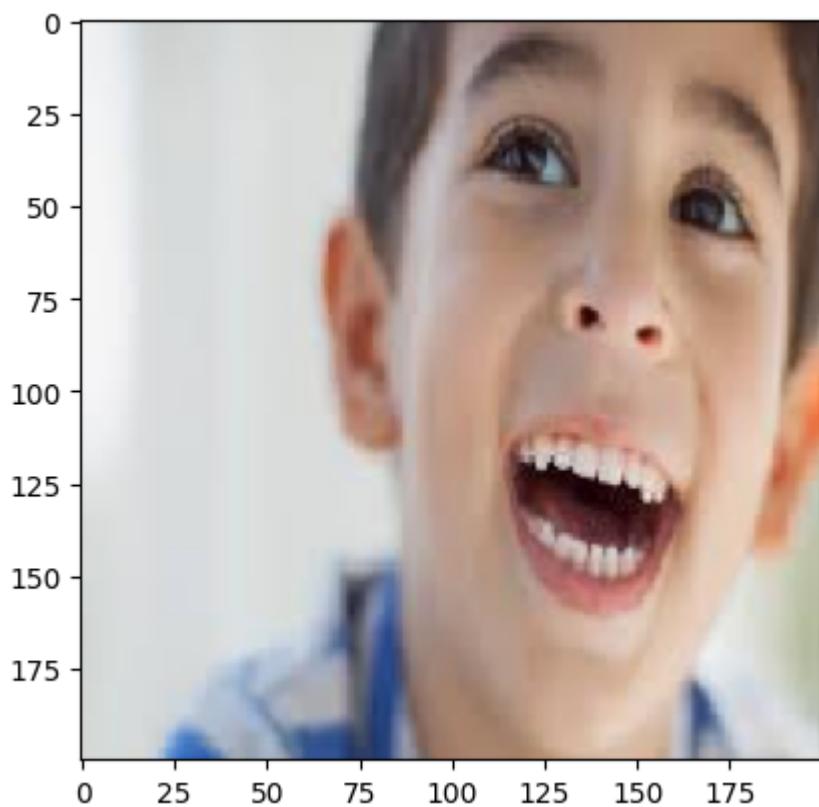
1/1 [=====] - 0s 33ms/step

NOT HAPPY

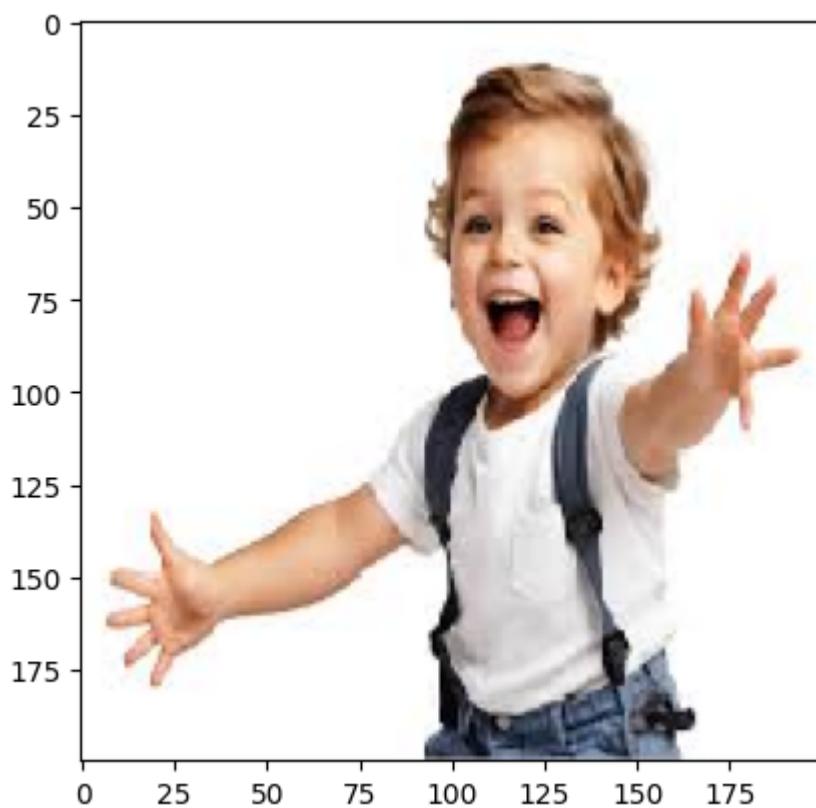
7.webp



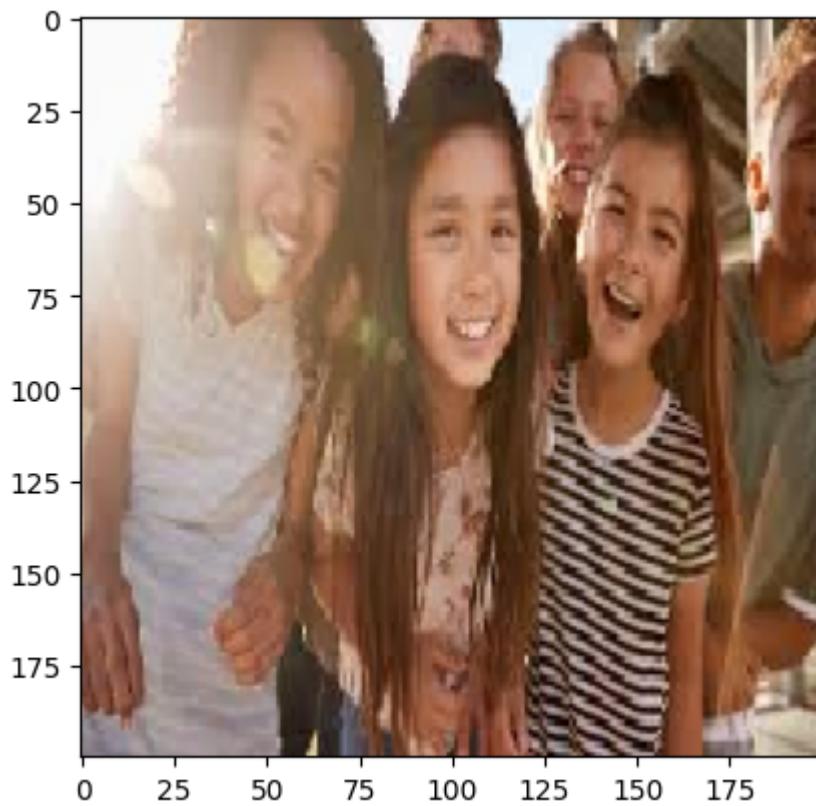
1/1 [=====] - 0s 33ms/step
NOT HAPPY
images (1).jpg



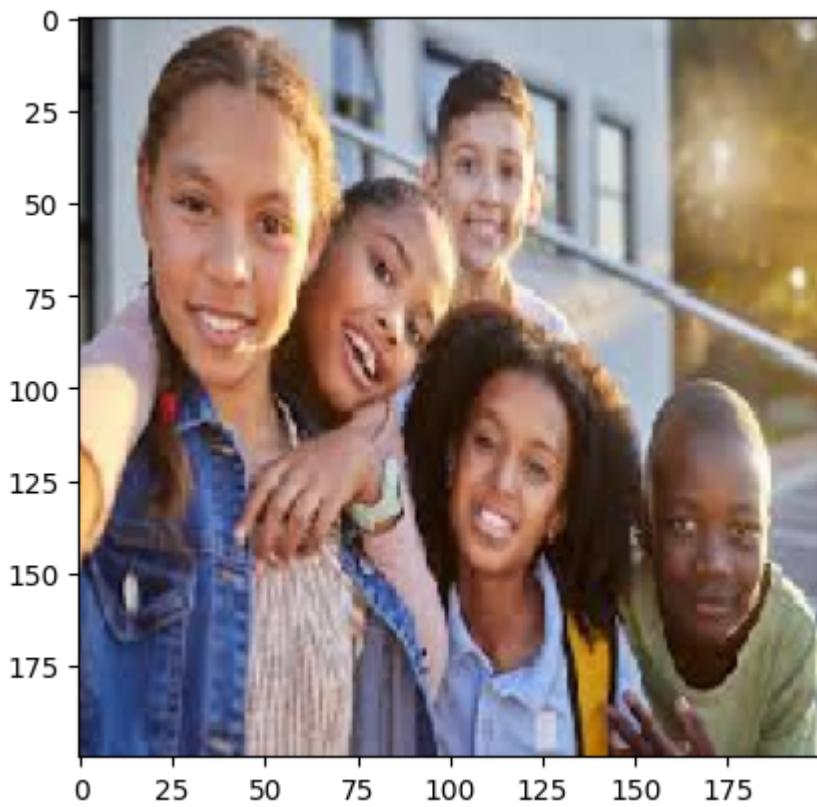
1/1 [=====] - 0s 48ms/step
NOT HAPPY
images (2).jpg



1/1 [=====] - 0s 27ms/step
NOT HAPPY
images (3).jpg



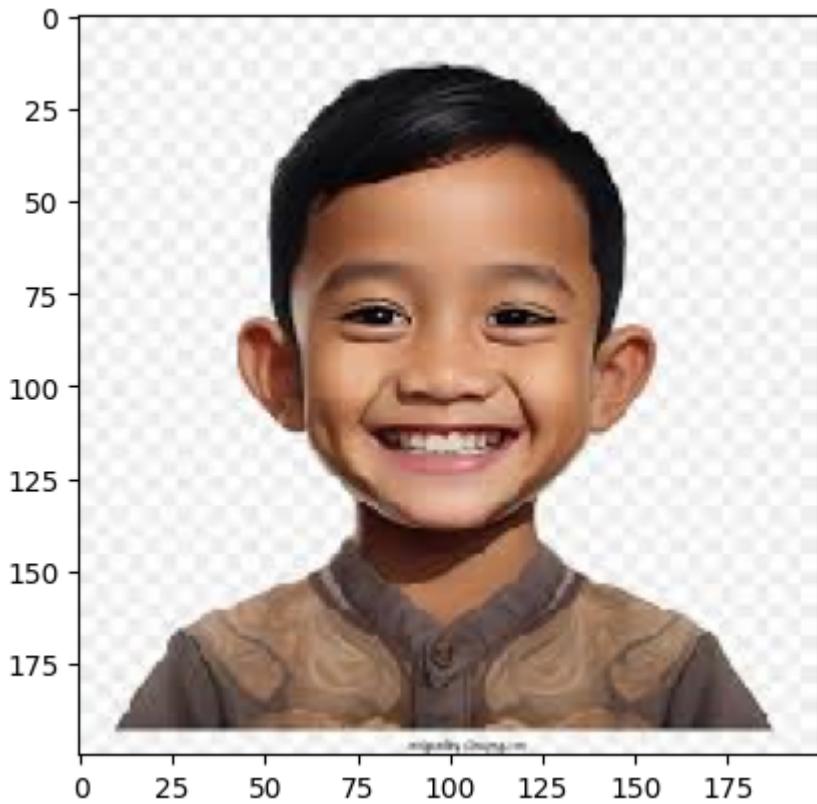
1/1 [=====] - 0s 32ms/step
NOT HAPPY
images (4).jpg



1/1 [=====] - 0s 47ms/step

NOT HAPPY

images.jpg



1/1 [=====] - 0s 40ms/step

NOT HAPPY

istockphoto-842311786-612x612.jpg