

In [3]:

```

import os
import glob
import random
import numpy as np
import pandas as pd
import tensorflow_addons as tfa
import tensorflow as tf
import tensorflow.experimental.numpy as tnp
from tensorflow import keras
from keras import layers
from keras.models import Sequential
from keras.layers import Conv2D,MaxPooling2D,Activation, Dropout, Flatten, Dense
from keras.preprocessing.image import ImageDataGenerator

from tqdm import tqdm

from PIL import Image

from tensorflow.keras.utils import to_categorical

import seaborn as sns
import matplotlib.image as img
import matplotlib.pyplot as plt

```

In [4]:

```
pip install tensorflow_addons
```

Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: tensorflow_addons in /home/u188267/.local/lib/python3.9/site-packages (0.19.0)
Requirement already satisfied: packaging in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from tensorflow_addons) (21.3)
Requirement already satisfied: typeguard>=2.7 in /home/u188267/.local/lib/python3.9/site-packages (from tensorflow_addons) (3.0.1)
Requirement already satisfied: importlib-metadata>=3.6 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from typeguard>=2.7->tensorflow_addons) (6.0.0)
Requirement already satisfied: typing-extensions>=4.4.0 in /home/u188267/.local/lib/python3.9/site-packages (from typeguard>=2.7->tensorflow_addons) (4.5.0)
Requirement already satisfied: pyparsing!=3.0.5,>=2.0.2 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from packaging->tensorflow_addons) (3.0.9)
Requirement already satisfied: zipp>=0.5 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from importlib-metadata>=3.6->typeguard>=2.7->tensorflow_addons) (3.12.0)
Note: you may need to restart the kernel to use updated packages.

In [6]:

```

import tensorflow as tf
os.environ['TF_CPP_MIN_LOG_LEVEL'] = '2' # set the logging level to ERROR

tf.random.set_seed(3)
from tensorflow.python.keras import backend as K
from tensorflow.keras.layers.experimental.preprocessing import Rescaling

```

```
In [7]: import os
os.environ['TF_ENABLE_ONEDNN_OPTS'] = '1'
os.environ['TF_ENABLE_AUTO_MIXED_PRECISION'] = '1'
```

```
In [8]: pip install importlib_metadata
```

Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: importlib_metadata in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (6.0.0)
Requirement already satisfied: zipp>=0.5 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from importlib_metadata) (3.12.0)
Note: you may need to restart the kernel to use updated packages.

```
In [9]: train_csv = pd.read_csv("./Training_set.csv")
test_csv = pd.read_csv("./Testing_set.csv")
```

```
In [10]: train_csv.head()
```

```
Out[10]:
```

	filename	label
0	Image_1.jpg	sitting
1	Image_2.jpg	using_laptop
2	Image_3.jpg	hugging
3	Image_4.jpg	sleeping
4	Image_5.jpg	using_laptop

```
In [11]: train_fol = glob.glob("./train2/*")
test_fol = glob.glob("./test/*")
```

```
In [12]: train_csv
```

```
Out[12]:
```

	filename	label
0	Image_1.jpg	sitting
1	Image_2.jpg	using_laptop
2	Image_3.jpg	hugging
3	Image_4.jpg	sleeping
4	Image_5.jpg	using_laptop
...
12595	Image_12596.jpg	sitting
12596	Image_12597.jpg	clapping
12597	Image_12598.jpg	sitting

	filename	label
12598	Image_12599.jpg	dancing
12599	Image_12600.jpg	listening_to_music

12600 rows × 2 columns

```
In [13]: train_csv.label.value_counts()
```

```
Out[13]: sitting      840
using_laptop      840
hugging           840
sleeping          840
drinking          840
clapping          840
dancing           840
cycling           840
calling           840
laughing          840
eating            840
fighting          840
listening_to_music 840
running           840
texting           840
Name: label, dtype: int64
```

```
In [14]: pip install plotly
```

Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: plotly in /home/u188267/.local/lib/python3.9/site-packages (5.13.1)
Requirement already satisfied: tenacity>=6.2.0 in /home/u188267/.local/lib/python3.9/site-packages (from plotly) (8.2.2)
Note: you may need to restart the kernel to use updated packages.

```
In [15]: pip install ipykernel
```

Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: ipykernel in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (6.21.1)
Requirement already satisfied: comm>=0.1.1 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from ipykernel) (0.1.2)
Requirement already satisfied: matplotlib-inline>=0.1 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from ipykernel) (0.1.6)
Requirement already satisfied: traitlets>=5.4.0 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from ipykernel) (5.9.0)
Requirement already satisfied: pyzmq>=17 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from ipykernel) (25.0.0)
Requirement already satisfied: jupyter-client>=6.1.12 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from ipykernel) (8.0.2)
Requirement already satisfied: psutil in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from ipykernel) (5.9.4)
Requirement already satisfied: nest-asyncio in /glob/development-tools/versions/oneapi/2

023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from ipykernel) (1.5.6)

Requirement already satisfied: jupyter-core!=5.0.*,>=4.12 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from ipykernel) (5.2.0)

Requirement already satisfied: tornado>=6.1 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from ipykernel) (6.2)

Requirement already satisfied: debugpy>=1.6.5 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from ipykernel) (1.6.6)

Requirement already satisfied: packaging in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from ipykernel) (21.3)

Requirement already satisfied: ipython>=7.23.1 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from ipykernel) (8.9.0)

Requirement already satisfied: pexpect>4.3 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from ipython>=7.23.1->ipykernel) (4.8.0)

Requirement already satisfied: jedi>=0.16 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from ipython>=7.23.1->ipykernel) (0.18.2)

Requirement already satisfied: pickleshare in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from ipython>=7.23.1->ipykernel) (0.7.5)

Requirement already satisfied: backcall in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from ipython>=7.23.1->ipykernel) (0.2.0)

Requirement already satisfied: pygments>=2.4.0 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from ipython>=7.23.1->ipykernel) (2.14.0)

Requirement already satisfied: stack-data in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from ipython>=7.23.1->ipykernel) (0.6.2)

Requirement already satisfied: prompt-toolkit<3.1.0,>=3.0.30 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from ipython>=7.23.1->ipykernel) (3.0.36)

Requirement already satisfied: decorator in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from ipython>=7.23.1->ipykernel) (5.1.1)

Requirement already satisfied: importlib-metadata>=4.8.3 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from jupyter-client>=6.1.12->ipykernel) (6.0.0)

Requirement already satisfied: python-dateutil>=2.8.2 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from jupyter-client>=6.1.12->ipykernel) (2.8.2)

Requirement already satisfied: platformdirs>=2.5 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from jupyter-core!=5.0.*,>=4.12->ipykernel) (2.6.2)

Requirement already satisfied: pyparsing!=3.0.5,>=2.0.2 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from packaging->ipykernel) (3.0.9)

Requirement already satisfied: zipp>=0.5 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from importlib-metadata>=4.8.3->jupyter-client>=6.1.12->ipykernel) (3.12.0)

Requirement already satisfied: parso<0.9.0,>=0.8.0 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from jedi>=0.16->ipython>=7.23.1->ipykernel) (0.8.3)

Requirement already satisfied: ptyprocess>=0.5 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from pexpect>4.3->ipython>=7.23.1->ipykernel) (0.7.0)

Requirement already satisfied: wcwidth in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from prompt-toolkit<3.1.0,>=3.0.30->ipython>=7.23.1->ipykernel) (0.2.6)

Requirement already satisfied: six>=1.5 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from python-dateutil>=2.8.2->jupyter-client>=6.1.12->ipykernel) (1.16.0)

Requirement already satisfied: executing>=1.2.0 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from stack-data->ipython>=7.23.1->ipykernel) (1.2.0)

Requirement already satisfied: asttokens>=2.1.0 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from stack-data->ipython>=7.23.1->ipykernel) (2.2.1)

Requirement already satisfied: pure-eval in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from stack-data->ipython>=7.23.1->ipykernel) (0.2.2)

Note: you may need to restart the kernel to use updated packages.

In [16]: `pip install --upgrade nbformat`

Defaulting to user installation because normal site-packages is not writeable

Requirement already satisfied: nbformat in /home/u188267/.local/lib/python3.9/site-packages (5.7.3)

Requirement already satisfied: traitlets>=5.1 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from nbformat) (5.9.0)

Requirement already satisfied: jsonschema>=2.6 in /home/u188267/.local/lib/python3.9/site-packages (from nbformat) (4.17.3)

Requirement already satisfied: fastjsonschema in /home/u188267/.local/lib/python3.9/site-packages (from nbformat) (2.16.3)

Requirement already satisfied: jupyter-core in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from nbformat) (5.2.0)

Requirement already satisfied: attrs>=17.4.0 in /home/u188267/.local/lib/python3.9/site-packages (from jsonschema>=2.6->nbformat) (22.2.0)

Requirement already satisfied: pyparsing!=0.17.0,!=0.17.1,!=0.17.2,>=0.14.0 in /home/u188267/.local/lib/python3.9/site-packages (from jsonschema>=2.6->nbformat) (0.19.3)

Requirement already satisfied: platformdirs>=2.5 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from jupyter-core->nbformat) (2.6.2)

Note: you may need to restart the kernel to use updated packages.

In [17]: `import plotly.express as px
l = train_csv.label.value_counts()
fig = px.pie(train_csv, values=l.values, names=l.index, title='Distribution of Human Ac
fig.show()
plt.show()`

```
In [18]: filename = train_csv['filename']  
  
         situation = train_csv['label']
```

```
In [19]: filename
```

```
Out[19]: 0          Image_1.jpg  
         1          Image_2.jpg  
         2          Image_3.jpg  
         3          Image_4.jpg  
         4          Image_5.jpg  
         ...  
         12595      Image_12596.jpg  
         12596      Image_12597.jpg  
         12597      Image_12598.jpg  
         12598      Image_12599.jpg  
         12599      Image_12600.jpg  
         Name: filename, Length: 12600, dtype: object
```

```
In [20]: situation[105]
```

```
Out[20]: 'drinking'
```

```
In [21]: pip install matplotlib
```

```
Defaulting to user installation because normal site-packages is not writeable  
Requirement already satisfied: matplotlib in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (3.6.3)  
Requirement already satisfied: packaging>=20.0 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from matplotlib) (21.3)  
Requirement already satisfied: kiwisolver>=1.0.1 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from matplotlib) (1.4.2)
```

Requirement already satisfied: pillow>=6.2.0 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from matplotlib) (9.4.0)

Requirement already satisfied: pyparsing>=2.2.1 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from matplotlib) (3.0.9)

Requirement already satisfied: python-dateutil>=2.7 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from matplotlib) (2.8.2)

Requirement already satisfied: numpy>=1.19 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from matplotlib) (1.22.3)

Requirement already satisfied: fonttools>=4.22.0 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from matplotlib) (4.38.0)

Requirement already satisfied: contourpy>=1.0.1 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from matplotlib) (1.0.7)

Requirement already satisfied: cycler>=0.10 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from matplotlib) (0.11.0)

Requirement already satisfied: six>=1.5 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from python-dateutil>=2.7->matplotlib) (1.16.0)

Note: you may need to restart the kernel to use updated packages.

In [22]:

```
pip install opencv-python
```

Defaulting to user installation because normal site-packages is not writeable

Requirement already satisfied: opencv-python in /home/u188267/.local/lib/python3.9/site-packages (4.7.0.72)

Requirement already satisfied: numpy>=1.19.3 in /glob/development-tools/versions/oneapi/2023.0.1/oneapi/intelpython/python3.9/lib/python3.9/site-packages (from opencv-python) (1.22.3)

Note: you may need to restart the kernel to use updated packages.

In [26]:

```
import cv2
from matplotlib import pyplot as plt
def disp():
    num = random.randint(1,10000)
    imgg = "Image_{}.jpg".format(num)
    print(imgg)
    train = "./"
    if os.path.exists(train+imgg):
        testImage = cv2.imread(train+imgg)
        plt.imshow(testImage)
        plt.title("{}".format(train_csv.loc[train_csv['filename'] == "{}".format(imgg),

    else:
        #print(train+img)
        print("File Path not found \nSkipping the file!!")
```

In [30]:

```
disp()
```

Image_6242.jpg



```
In [25]: cd train2
```

```
/home/u188267/hackathon/train2
```

```
In [31]: cd ..
```

```
/home/u188267/hackathon
```

```
In [33]: from PIL import Image
img_data = []
img_label = []
length = len(train_fol)
temp=Image.open
for i in (range(len(train_fol)-1)):
    t = './train2/' + filename[i]
    temp_img = Image.open(t)
    img_data.append(np.asarray(temp_img.resize((160,160))))
    img_label.append(situation[i])
```

```
In [34]: inp_shape = (160, 160,3)
```

```
In [35]: iii = img_data
iii = np.asarray(iii)
type(iii)
```

```
Out[35]: numpy.ndarray
```



```
In [36]: y_train = to_categorical(np.asarray(train_csv['label']).factorize()[0])
         print(y_train[0])
```

```
[1. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.]
```

```
In [37]: vgg_model = Sequential()

         pretrained_model= tf.keras.applications.VGG16(include_top=False,
               input_shape=(160,160,3),
               pooling='avg',classes=15,
               weights='imagenet')

         for layer in pretrained_model.layers:
             layer.trainable=False

         vgg_model.add(pretrained_model)
         vgg_model.add(Flatten())
         vgg_model.add(Dense(512, activation='relu'))
         vgg_model.add(Dense(15, activation='softmax'))
```

2023-03-17 01:09:15.648952: I tensorflow/core/platform/cpu_feature_guard.cc:193] This TensorFlow binary is optimized with oneAPI Deep Neural Network Library (oneDNN) to use the following CPU instructions in performance-critical operations: AVX2 AVX512F FMA To enable them in other operations, rebuild TensorFlow with the appropriate compiler flags.

2023-03-17 01:09:15.649728: I tensorflow/core/common_runtime/process_util.cc:146] Creating new thread pool with default inter op setting:

```
In [38]: vgg_model.compile(optimizer='adam', loss='categorical_crossentropy',metrics=['accuracy'])
```

```
In [39]: vgg_model.summary()
```

Model: "sequential"

Layer (type)	Output Shape	Param #
vgg16 (Functional)	(None, 512)	14714688
flatten (Flatten)	(None, 512)	0
dense (Dense)	(None, 512)	262656
dense_1 (Dense)	(None, 15)	7695

=====
Total params: 14,985,039

Trainable params: 270,351

Non-trainable params: 14,714,688

```
In [40]: history = vgg_model.fit(iii,y_train, epochs=12)
```

Epoch 1/12

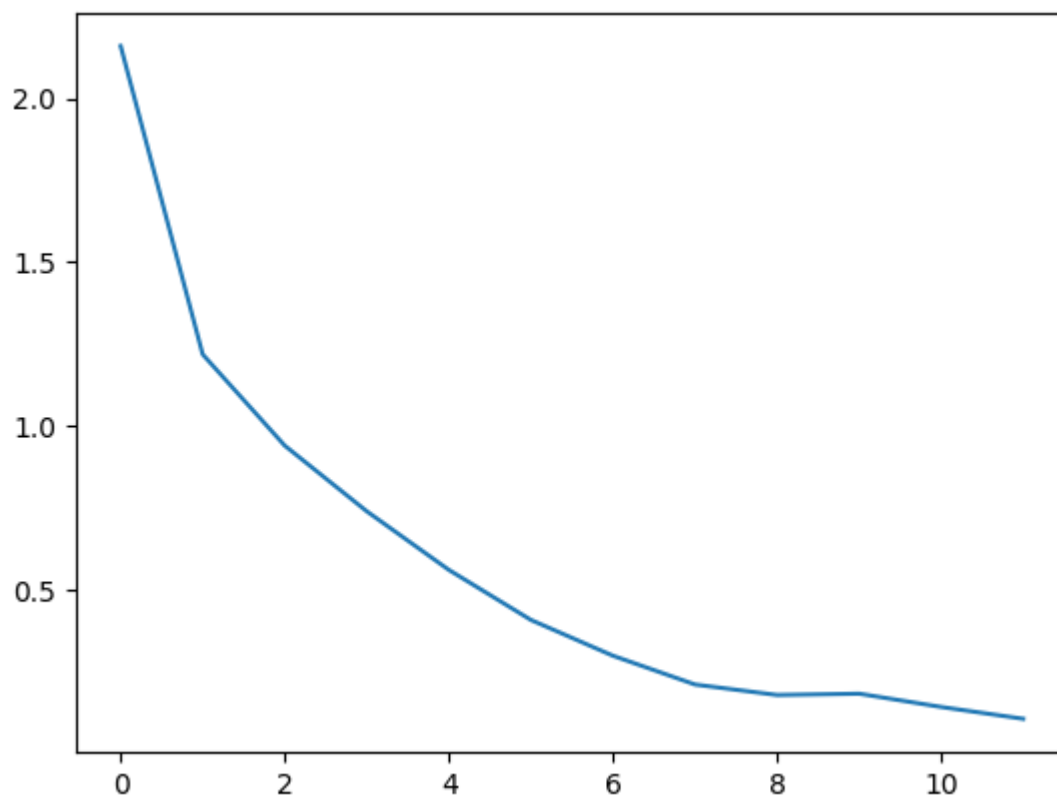
394/394 [=====] - 253s 639ms/step - loss: 2.1592 - accuracy: 0.4480

```
Epoch 2/12
394/394 [=====] - 252s 640ms/step - loss: 1.2191 - accuracy: 0.6013
Epoch 3/12
394/394 [=====] - 250s 634ms/step - loss: 0.9410 - accuracy: 0.6902
Epoch 4/12
394/394 [=====] - 251s 636ms/step - loss: 0.7407 - accuracy: 0.7562
Epoch 5/12
394/394 [=====] - 249s 631ms/step - loss: 0.5621 - accuracy: 0.8150
Epoch 6/12
394/394 [=====] - 252s 638ms/step - loss: 0.4096 - accuracy: 0.8648
Epoch 7/12
394/394 [=====] - 250s 635ms/step - loss: 0.3004 - accuracy: 0.9030
Epoch 8/12
394/394 [=====] - 250s 634ms/step - loss: 0.2127 - accuracy: 0.9306
Epoch 9/12
394/394 [=====] - 250s 634ms/step - loss: 0.1808 - accuracy: 0.9413
Epoch 10/12
394/394 [=====] - 251s 638ms/step - loss: 0.1848 - accuracy: 0.9374
Epoch 11/12
394/394 [=====] - 251s 636ms/step - loss: 0.1443 - accuracy: 0.9527
Epoch 12/12
394/394 [=====] - 250s 634ms/step - loss: 0.1082 - accuracy: 0.9656
```

```
In [41]: vgg_model.save_weights("model.h5")
```

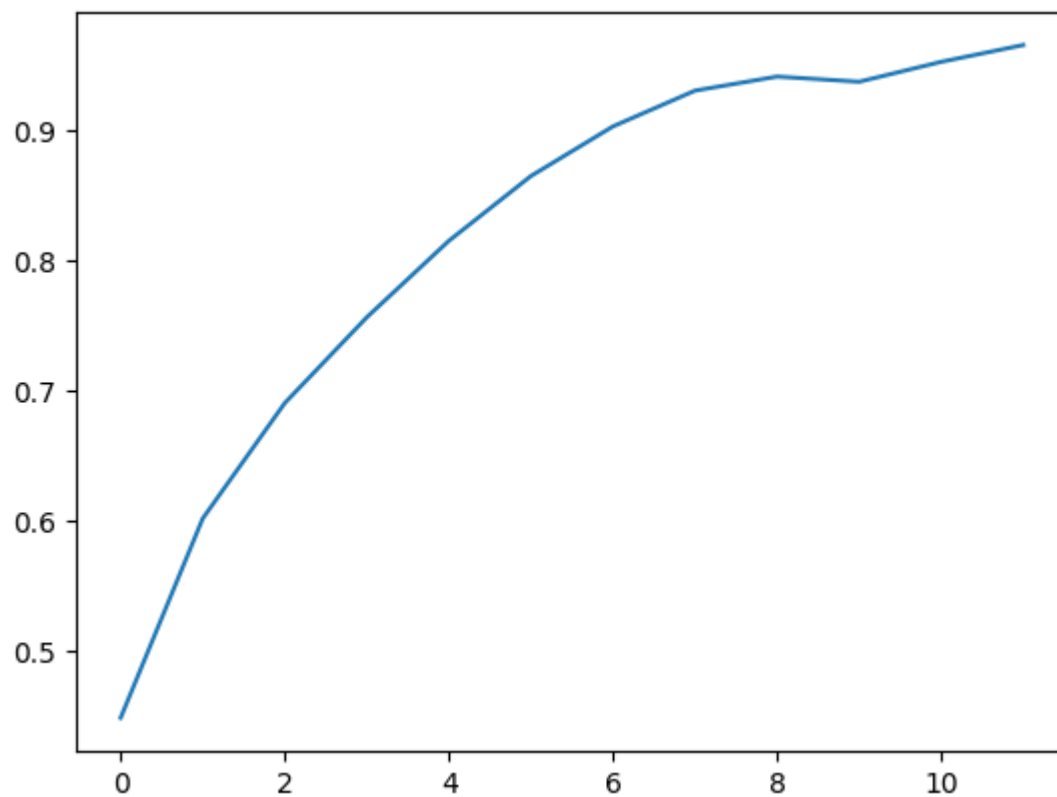
```
In [42]: losss = history.history['loss']
plt.plot(losss)
```

```
Out[42]: [<matplotlib.lines.Line2D at 0x7f72ef3d71c0>]
```



```
In [43]: accu = history.history['accuracy']  
plt.plot(accu)
```

```
Out[43]: [<matplotlib.lines.Line2D at 0x7f72ef33fca0>]
```



```
In [44]: def read_image(fn):  
         image = Image.open(fn)  
         return np.asarray(image.resize((160,160)))
```

```
In [64]: thisdict = {  
         0: "Drinking",  
         11: "Fighting",  
         4: "Using Mobile",  
         13: "Walking",  
         1: "Using Laptop",  
         6: "Dancing",  
         14: "Texting"  
         }
```

```
In [65]: def test_predict(test_image):  
         result = vgg_model.predict(np.asarray([read_image(test_image)]))  
         itemindex = np.where(result==np.max(result))  
         prediction = itemindex[1][0]  
         print("probability: "+str(np.max(result)*100) + "%\nPredicted class : ", prediction  
         if(prediction in [0,11,4,13,1,6,14]):  
             action=thisdict[prediction]  
  
         else:  
             action=""  
  
         print("Action: ",action)  
         image = img.imread(test_image)  
         plt.imshow(image)  
         plt.title(prediction)
```

```
In [47]: cd ..
```

/home/u188267

```
In [48]: cd hackathon
```

/home/u188267/hackathon

```
In [51]: cd ..
```

/home/u188267/hackathon

```
In [50]: test_predict('./Image_108.jpg')
```

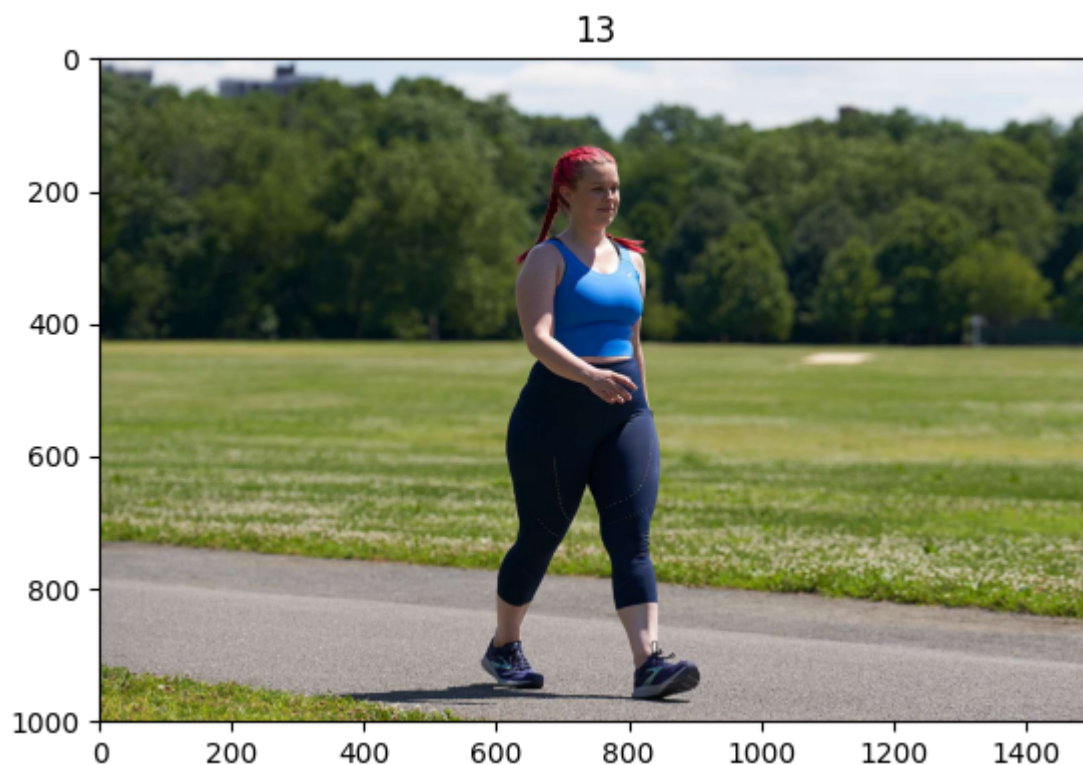
1/1 [=====] - 0s 426ms/step
probability: 99.96391534805298%
Predicted class : 6
Action: Dancing



In [54]:

```
test_predict('./w1.jpg')
```

```
1/1 [=====] - 0s 50ms/step  
probability: 99.9998807907104%  
Predicted class : 13  
Action: Walking
```



In [56]:

```
test_predict('./l.jpg')
```

```
1/1 [=====] - 0s 48ms/step  
probability: 99.90909099578857%  
Predicted class : 1  
Action: Using Laptop
```



```
In [58]: test_predict('./Two_dancers.jpg')
```

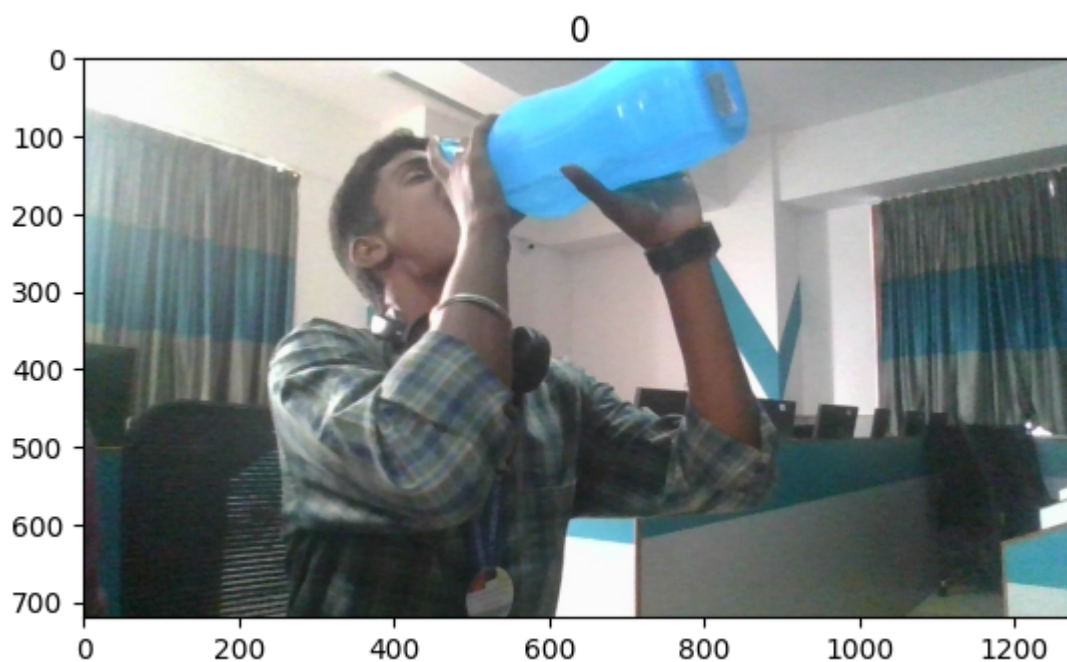
```
1/1 [=====] - 0s 58ms/step  
probability: 99.98248219490051%  
Predicted class : 6  
Action: Dancing
```



In [59]:

```
test_predict('./1.jpg')
```

```
1/1 [=====] - 0s 55ms/step  
probability: 49.47127103805542%  
Predicted class : 0  
Action: Drinking
```

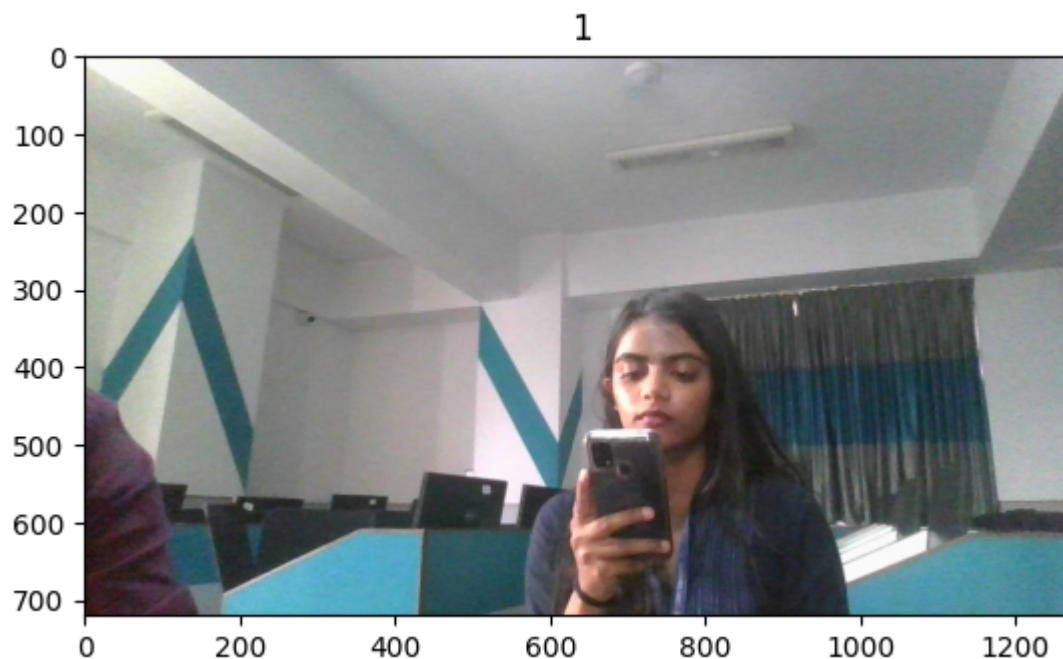


In [62]:

```
test_predict('./2.jpg')
```



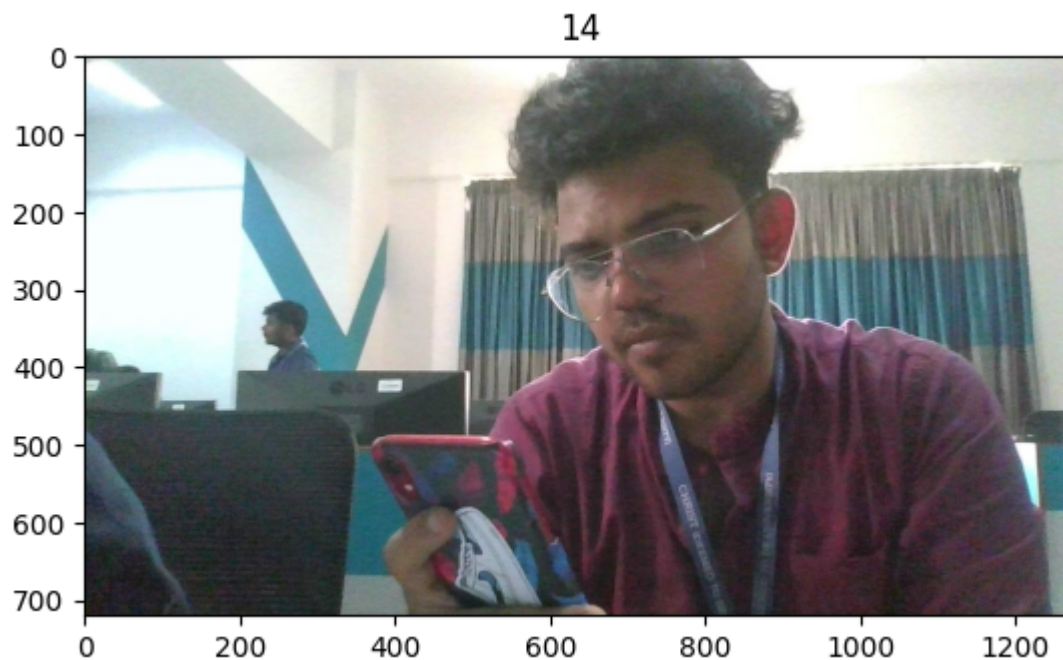
```
1/1 [=====] - 0s 51ms/step  
probability: 38.698768615722656%  
Predicted class : 1  
Action: Using Laptop
```



In [66]:

```
test_predict('./3.jpg')
```

```
1/1 [=====] - 0s 52ms/step  
probability: 77.91008353233337%  
Predicted class : 14  
Action: Texting
```



In [68]:

```
test_predict('./tt.jpg')
```

```
1/1 [=====] - 0s 59ms/step  
probability: 62.337279319763184%
```


Predicted class : 4
Action: Using Mobile



```
In [69]: from sklearn.linear_model import LogisticRegression
import pickle
DT_pkl_filename = './model.pkl'
DT_Model_pkl = open(DT_pkl_filename, 'wb')
pickle.dump(LogisticRegression, DT_Model_pkl)
```

Intel(R) Extension for Scikit-learn* enabled (<https://github.com/intel/scikit-learn-intelx>)

In []: