

Data Collection

In [1]:

```
from google.colab import drive
drive.mount('/content/drive')
```

Mounted at /content/drive

In [2]:

```
!unzip '/content/drive/MyDrive/ibm/archive.zip'
```

Archive: /content/drive/MyDrive/ibm/archive.zip

```
  inflating: Dataset/Dataset/test_set/forest/0.48007200_1530881924_final_forest.jpg
  inflating: Dataset/Dataset/test_set/forest/0.64133000_1519374442_forest_deep.jpg
  inflating: Dataset/Dataset/test_set/forest/0.72918000_1559733279_forests1_gettyimages_
jpg
  inflating: Dataset/Dataset/test_set/forest/0.98884800_1554454572_spin.jpg
  inflating: Dataset/Dataset/test_set/forest/01_NeilBurnell_Mystical_photoverticall.jpg
  inflating: Dataset/Dataset/test_set/forest/091318_LH_forest_loss_main_FREE.jpg
  inflating: Dataset/Dataset/test_set/forest/1009821.jpg
  inflating: Dataset/Dataset/test_set/forest/111188170_river_in_the_mountain_forest.jpg
  inflating: Dataset/Dataset/test_set/forest/1170x500_Ireland_web.jpg
  inflating: Dataset/Dataset/test_set/forest/1200px_Mountainarea.jpg
  inflating: Dataset/Dataset/test_set/forest/146019.jpg
  inflating: Dataset/Dataset/test_set/forest/1506697583544.jpg
  inflating: Dataset/Dataset/test_set/forest/1551622076_img_5241.jpg
  inflating: Dataset/Dataset/test_set/forest/1551903255_2942.jpg
  inflating: Dataset/Dataset/test_set/forest/1556508284pexels_photo_1179229.jpeg
  inflating: Dataset/Dataset/test_set/forest/16475617_web1_ForestHealth_VIB_190418_2.jpg

  inflating: Dataset/Dataset/test_set/forest/18435324436_6a20e7fc70_k.jpg
  inflating: Dataset/Dataset/test_set/forest/1_chimp.jpg
  inflating: Dataset/Dataset/test_set/forest/200px_View_of_Lake_Moraine.jpg
  inflating: Dataset/Dataset/test_set/forest/2017_10_12_09_01_56.jpg
  inflating: Dataset/Dataset/test_set/forest/220px_The_forest_near_Blatets_Vinita.JPG
  inflating: Dataset/Dataset/test_set/forest/23769_pcbkrdoss_1500310327.jpg
  inflating: Dataset/Dataset/test_set/forest/2E215059_55C7_417B_8DDD693AA6E416B4_source.j
pg
  inflating: Dataset/Dataset/test_set/forest/31105585103_4c32392ac1_k.jpg
  inflating: Dataset/Dataset/test_set/forest/381417.jpg
  inflating: Dataset/Dataset/test_set/forest/4632581118_dcfb9ed978_b.jpg.860x0_q70_crop_s
cale.jpg
  inflating: Dataset/Dataset/test_set/forest/4fe3f4e45d6bb93070989b8bbb77d30e.jpg
  inflating: Dataset/Dataset/test_set/forest/4k_timelapse_heavy_rain_on_mountain_forest_t
ree_fog_motion_bad_weather_condition_rfift1zh_thumbnail_.png
  inflating: Dataset/Dataset/test_set/forest/5325.jpg
  inflating: Dataset/Dataset/test_set/forest/5472.jpg
  inflating: Dataset/Dataset/test_set/forest/559672101517195076987621071193712n.jpg
  inflating: Dataset/Dataset/test_set/forest/78closer_exterior_view_of_northern_Rocky_Mou
ntain_forest.jpg
  inflating: Dataset/Dataset/test_set/forest/79806645_landscape_of_tall_grass_field_green
_mountain_forest.jpg
  inflating: Dataset/Dataset/test_set/forest/7_18_MedicineBowHikingFishing_KL_1319_4003.j
pg
  inflating: Dataset/Dataset/test_set/forest/7ece9530_9cf1_11e9_bf3c_4fe6e6438142.jpg
  inflating: Dataset/Dataset/test_set/forest/852554.jpg
  inflating: Dataset/Dataset/test_set/forest/91ErlodmE5L.jpg
  inflating: Dataset/Dataset/test_set/forest/91sALlLjdlL.jpg
  inflating: Dataset/Dataset/test_set/forest/A003_C014_0724EC.0000000.jpg
  inflating: Dataset/Dataset/test_set/forest/Adirondack_Habitats_Mixed_Forest_Barnum_Broo
k_Trail_Paul_Smiths_VIC_23_May_2012_61.jpg
  inflating: Dataset/Dataset/test_set/forest/Adirondack_Habitats_Mixed_Forest_Jenkins_Mou
ntain_Trail_Paul_Smiths_VIC_12_August_2013_71.jpg
  inflating: Dataset/Dataset/test_set/forest/Almaty_Mountains.jpg
  inflating: Dataset/Dataset/test_set/forest/DSCN8209(1)_250x333.JPG
  inflating: Dataset/Dataset/test_set/forest/DSC_0072_Forest.jpg
  inflating: Dataset/Dataset/test_set/forest/Deciduous_forest.jpg
```

inflating: Dataset/Dataset/test_set/forest/Deciduous_forest.jpg
inflating: Dataset/Dataset/test_set/forest/Dupont_Forest_Triple_Falls_Rob_Travis_2_1.jpg
g
inflating: Dataset/Dataset/test_set/forest/Fall_Trees_Alaskan_Adventure_by_John_Simeone.jpg
inflating: Dataset/Dataset/test_set/forest/Fallen_e1499694482182.jpg
inflating: Dataset/Dataset/test_set/forest/_101542074_gettyimages_956391468.jpg
inflating: Dataset/Dataset/test_set/forest/a.jpg
inflating: Dataset/Dataset/test_set/forest/acadia_np_622419_High_Res.jpg
inflating: Dataset/Dataset/test_set/forest/altai_regio_pine_forest_1550x804.jpg
inflating: Dataset/Dataset/test_set/forest/amazing_green_trees_in_dense_mountain_forest_nature_landscape_in_4k_aerial_view_b7oqfwutg_thumbnail.png
inflating: Dataset/Dataset/test_set/forest/aokigaharaforest_1_star.jpg
inflating: Dataset/Dataset/test_set/forest/appalachian_mtns_forest_usda_srs.jpg
inflating: Dataset/Dataset/test_set/forest/austria_mountain_forest_landscape_wallpaper_1920x1200.jpg
inflating: Dataset/Dataset/test_set/forest/bavarian_forest_3385966_1280_1.jpg
inflating: Dataset/Dataset/test_set/forest/beautiful_green_forest_range_images_picture_photos_wallpaper_download.jpg
inflating: Dataset/Dataset/test_set/forest/beautiful_morning_mountain_forest_scenery_free_stock_photos_picjumbo_DSC02176.jpg
inflating: Dataset/Dataset/test_set/forest/beautiful_mountain_forest_wallpaper_1920x1200.jpg
0.jpg
inflating: Dataset/Dataset/test_set/forest/beech_oak_forest_560.jpg
inflating: Dataset/Dataset/test_set/forest/britishforest_696483208.jpg
inflating: Dataset/Dataset/test_set/forest/canva_waterfalls_in_the_mountain_forest__MADR_l3e0W4.jpg
inflating: Dataset/Dataset/test_set/forest/ce8b73d56bd242eb1f2369fe856f1c63_700.jpg
inflating: Dataset/Dataset/test_set/forest/cold_daylight_environment_1423600_640x427.jpg
g
inflating: Dataset/Dataset/test_set/forest/easternArc.jpg
inflating: Dataset/Dataset/test_set/forest/em_tiger_mountain_570x284_nc.jpg
inflating: Dataset/Dataset/test_set/forest/europeslostf.jpg
inflating: Dataset/Dataset/test_set/forest/fanas_gregorschmucki_2016_28_1_2600x1733.jpg

inflating: Dataset/Dataset/test_set/forest/fantastic_dark_landscape_of_mountain_forest_in_clouds_fog_or_mist_picture_id688948674.jpg
inflating: Dataset/Dataset/test_set/forest/fb26e4420f3ae3b12788fffdea0fb132_full.jpg
inflating: Dataset/Dataset/test_set/forest/file_20180627_112634_8tdgn4.jpg
inflating: Dataset/Dataset/test_set/with fire/180802_CarrFire_010_large_700x467.jpg
inflating: Dataset/Dataset/test_set/with fire/19464620_401.jpg
inflating: Dataset/Dataset/test_set/with fire/599857.jpg
inflating: Dataset/Dataset/test_set/with fire/Bandipur_fires_2019.jpg
inflating: Dataset/Dataset/test_set/with fire/FORESTFIRE (1).jpg
inflating: Dataset/Dataset/test_set/with fire/Fire_2_696x392.jpg
inflating: Dataset/Dataset/test_set/with fire/Forest_Fire (3).jpg
inflating: Dataset/Dataset/test_set/with fire/Forest_Fire (4).jpg
inflating: Dataset/Dataset/test_set/with fire/Forest_fire_MNRF_esize_IMG_6743.jpg
inflating: Dataset/Dataset/test_set/with fire/GettyImages_482867948.0.jpg
inflating: Dataset/Dataset/test_set/with fire/GettyImages_862092472_1160x773.jpg
inflating: Dataset/Dataset/test_set/with fire/How_to_Protect_Your_Home_From_Forest_Fire_1024x588.jpg
inflating: Dataset/Dataset/test_set/with fire/RED7_May29_1986.jpg
inflating: Dataset/Dataset/test_set/with fire/The_Rim_Fire_in_the_Stanislaus_National_Forest_near_in_California_began_on_Aug._17_2013_0004.jpg
inflating: Dataset/Dataset/test_set/with fire/Untitled_design_161_866x487.jpg
inflating: Dataset/Dataset/test_set/with fire/Uttarakhand_forest_fire.jpeg
inflating: Dataset/Dataset/test_set/with fire/Washington_DNR_Chiwaukum_WildFires_2014_2015_WA_DNR_cropped.jpg
inflating: Dataset/Dataset/test_set/with fire/Wild_fires.jpg
inflating: Dataset/Dataset/test_set/with fire/X80IR0GYSSG6RailcsXX.jpg
inflating: Dataset/Dataset/test_set/with fire/b2683a16be44f230a90f50bb944315e994b43042e43df798bb4feaf27e0f8bc8.jpg
inflating: Dataset/Dataset/test_set/with fire/climate_change_forest_fire.jpeg
inflating: Dataset/Dataset/test_set/with fire/cumming_forest_fires.jpg
inflating: Dataset/Dataset/test_set/with fire/deerfire_high_res_edit.jpg
inflating: Dataset/Dataset/test_set/with fire/defense_large.jpg
inflating: Dataset/Dataset/test_set/with fire/f90_fire_1168x657.jpg
inflating: Dataset/Dataset/test_set/with fire/file_20190308_155532_1nvts27.jpg
inflating: Dataset/Dataset/test_set/with fire/forest_fire_0.jpg
inflating: Dataset/Dataset/test_set/with fire/forest_fire_2268729_1280.jpg
inflating: Dataset/Dataset/test_set/with fire/forest_fire_at_bandipur_tiger_reserve_04f0dd5e_2019_11e9_0708_f85edfb62de22.png

inflatng: Dataset/Dataset/test_set/with fire/forestfire.jpg
inflatng: Dataset/Dataset/test_set/with fire/forestfire_kApH_621x414_LiveMint.jpg
inflatng: Dataset/Dataset/test_set/with fire/growing_risk_future_wildfires_adobestock_199370851.jpeg
inflatng: Dataset/Dataset/test_set/with fire/header_hypermaritime_fire.jpg
inflatng: Dataset/Dataset/test_set/with fire/horseshoe_bay_fire.jpg
inflatng: Dataset/Dataset/test_set/with fire/image.jpg
inflatng: Dataset/Dataset/test_set/with fire/in_forestfire1_(1).jpg
inflatng: Dataset/Dataset/test_set/with fire/in_forestfires_shutter.jpg
inflatng: Dataset/Dataset/test_set/with fire/in_forestfiress_(1).jpg
inflatng: Dataset/Dataset/test_set/with fire/korea_forest_fire_4.jpg
inflatng: Dataset/Dataset/test_set/with fire/louisiana_forest_fire.jpg
inflatng: Dataset/Dataset/test_set/with fire/maxresdefault.jpg
inflatng: Dataset/Dataset/test_set/with fire/photo_1555842027_660d9d8df55b.jpg
inflatng: Dataset/Dataset/test_set/with fire/ring_of_fire_bailey_colorado_rocky_mounta
in_forest_wildfire_picture_id157384116.jpg
inflatng: Dataset/Dataset/test_set/with fire/rsz_1fire_pix_accumulation_640_1_2.jpg
inflatng: Dataset/Dataset/test_set/with fire/shutterstock_48032821.jpg
inflatng: Dataset/Dataset/test_set/with fire/shutterstock_710588224.jpg
inflatng: Dataset/Dataset/test_set/with fire/skynews_ashdown_forest_fire_4653702.jpg
inflatng: Dataset/Dataset/test_set/with fire/uttarakhand_forest_fire_750x500.jpg
inflatng: Dataset/Dataset/test_set/with fire/wildfire_header_image_1024x1024.jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (1).gif
inflatng: Dataset/Dataset/train_set/forest/with_fire (1).jpeg
inflatng: Dataset/Dataset/train_set/forest/with_fire (1).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (1).png
inflatng: Dataset/Dataset/train_set/forest/with_fire (10).jpeg
inflatng: Dataset/Dataset/train_set/forest/with_fire (10).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (100).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (101).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (102).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (103).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (104).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (105).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (106).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (107).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (108).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (109).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (11).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (110).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (111).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (112).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (113).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (114).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (115).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (116).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (117).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (118).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (119).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (12).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (120).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (121).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (122).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (123).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (124).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (125).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (126).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (127).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (128).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (129).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (13).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (130).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (131).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (132).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (133).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (134).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (135).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (136).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (137).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (138).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (139).jpg
inflatng: Dataset/Dataset/train_set/forest/with_fire (14).jpg

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]


```
inflating: Dataset/Dataset/train_set/with fire/with fire (75).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (76).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (77).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (78).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (79).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (8).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (80).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (81).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (82).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (83).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (84).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (85).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (86).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (87).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (88).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (89).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (9).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (90).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (91).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (92).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (93).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (94).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (95).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (96).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (97).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (98).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire (99).jpg
inflating: Dataset/Dataset/train_set/with fire/with fire.jpeg
inflating: forest1.h5
```

Image Preprocessing

In [3]:

```
# import keras library
import keras
#import ImageDataGenerator from keras.preprocessing.image
from keras.preprocessing.image import ImageDataGenerator
```

In [4]:

```
import tensorflow as tf
import numpy as np
import matplotlib.pyplot as plt
from tensorflow import keras
from tensorflow.keras.preprocessing import image_dataset_from_directory
```

In [5]:

```
train_datagen = ImageDataGenerator(
    rotation_range=180,
    brightness_range=None,
    shear_range=0.4,
    zoom_range=0.3,
    horizontal_flip=True,
    vertical_flip=True,
    rescale=1./255,)
```

In [6]:

```
test_datagen = ImageDataGenerator(rescale=1./255)
```

In [7]:

```
xtrain = train_datagen.flow_from_directory('/content/Dataset/Dataset/train_set',
    target_size=(64, 64),
    class_mode='binary',
    batch_size=100)
```

Found 436 images belonging to 2 classes.

In [8]:

```
xtest = train_datagen.flow_from_directory('/content/Dataset/Dataset/test_set',
                                          target_size=(64, 64),
                                          class_mode='binary',
                                          batch_size=100)
```

Found 121 images belonging to 2 classes.

Model Building

1. Import the Model Building Libraries

In [9]:

```
import warnings
warnings.filterwarnings('ignore')
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense
from tensorflow.keras.layers import Convolution2D
from tensorflow.keras.layers import MaxPooling2D
from tensorflow.keras.layers import Flatten
```

1. Initialize the Model

In [10]:

```
model = Sequential()
```

1. Adding CNN Layers

In [11]:

```
#Convolution Layer
model.add(Convolution2D(32, (3, 3), activation='relu', input_shape=(64, 64, 3)))
```

In [12]:

```
#MaxPooling Layer
model.add(MaxPooling2D(pool_size=(2, 2)))
```

In [13]:

```
#Flatten Layer
model.add(Flatten())
```

1. Adding Dense Layer

In [14]:

```
#Hidden Layer
model.add(Dense(350, activation='relu')) # Hidden layer 1
model.add(Dense(200, activation='relu')) # Hidden layer 2
```

In [15]:

```
#Output Layer
model.add(Dense(1, activation='softmax'))
```

1. Configuring The Learning Process

In [16]:

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

1. Training the Model

In []:

```
model.fit_generator(xtrain,
                    steps_per_epoch=len(xtrain),
                    epochs=10,
                    validation_data=xtest,
                    validation_steps=len(xtest))
```

Epoch 1/10

5/5 [=====] - 27s 4s/step - loss: 1.1776 - accuracy: 0.3555 - val_loss: 0.5062 - val_accuracy: 0.4050

Epoch 2/10

5/5 [=====] - 15s 4s/step - loss: 0.6706 - accuracy: 0.3555 - val_loss: 0.3663 - val_accuracy: 0.4050

Epoch 3/10

5/5 [=====] - 15s 3s/step - loss: 0.4347 - accuracy: 0.3555 - val_loss: 0.2793 - val_accuracy: 0.4050

Epoch 4/10

5/5 [=====] - 15s 3s/step - loss: 0.3615 - accuracy: 0.3555 - val_loss: 0.2003 - val_accuracy: 0.4050

Epoch 5/10

5/5 [=====] - 15s 3s/step - loss: 0.2997 - accuracy: 0.3555 - val_loss: 0.1575 - val_accuracy: 0.4050

Epoch 6/10

5/5 [=====] - 15s 3s/step - loss: 0.2407 - accuracy: 0.3555 - val_loss: 0.1290 - val_accuracy: 0.4050

Epoch 7/10

5/5 [=====] - 15s 3s/step - loss: 0.2670 - accuracy: 0.3555 - val_loss: 0.1571 - val_accuracy: 0.4050

Epoch 8/10

5/5 [=====] - 15s 3s/step - loss: 0.2214 - accuracy: 0.3555 - val_loss: 0.1045 - val_accuracy: 0.4050

Epoch 9/10

5/5 [=====] - 15s 3s/step - loss: 0.1986 - accuracy: 0.3555 - val_loss: 0.0923 - val_accuracy: 0.4050

Epoch 10/10

5/5 [=====] - 15s 3s/step - loss: 0.1922 - accuracy: 0.3555 - val_loss: 0.0798 - val_accuracy: 0.4050

1. Saving the Model

In [18]:

```
model.save('Forest_fire.h5')
```

1. Prediction

In [19]:

```
from tensorflow.keras.models import load_model
from tensorflow.keras.preprocessing import image
```

In [22]:

```
img = image.load_img('/content/Fire-Forest.jpg', target_size=(64, 64))
```

In [23]:

```
img
```

Out[23]:



In [24]:

```
x=image.img_to_array(img)
#expand the image shape
x=np.expand_dims(x,axis=0)
```

In [25]:

```
pred=model.predict(x)
```

1/1 [=====] - 0s 125ms/step

In [26]:

```
print(pred)
```

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

Video Analysis

OpenCV For Video Processing

1: Capture Video from Camera

In [27]:

```
import cv2
import numpy as np
from keras.preprocessing import image
from keras.models import load_model
```

In [29]:

```
pip install twilio
```

```
Looking in indexes: https://pypi.org/simple, https://us-python.pkg.dev/colab-wheels/public/simple/
Collecting twilio
  Downloading twilio-7.15.1-py2.py3-none-any.whl (1.4 MB)
    |████████████████████| 1.4 MB 19.0 MB/s
Collecting PyJWT<3.0.0,>=2.0.0
  Downloading PyJWT-2.6.0-py3-none-any.whl (20 kB)
Requirement already satisfied: pytz in /usr/local/lib/python3.7/dist-packages (from twilio) (2022.5)
Requirement already satisfied: requests>=2.0.0 in /usr/local/lib/python3.7/dist-packages (from twilio) (2.23.0)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.7/dist-packages (from requests>=2.0.0->twilio) (2022.9.24)
Requirement already satisfied: idna<3,>=2.5 in /usr/local/lib/python3.7/dist-packages (from requests>=2.0.0->twilio) (2.10)
Requirement already satisfied: chardet<4,>=3.0.2 in /usr/local/lib/python3.7/dist-packages (from requests>=2.0.0->twilio) (3.0.4)
Requirement already satisfied: urllib3!=1.25.0,!1.25.1,<1.26,>=1.21.1 in /usr/local/lib/python3.7/dist-packages (from requests>=2.0.0->twilio) (1.24.3)
Installing collected packages: PyJWT, twilio
Successfully installed PyJWT-2.6.0 twilio-7.15.1
```

In [30]:

```
from twilio.rest import Client
```

In [31]:

```
pip install playsound
```

```
Looking in indexes: https://pypi.org/simple, https://us-python.pkg.dev/colab-wheels/public/simple/
Collecting playsound
  Downloading playsound-1.3.0.tar.gz (7.7 kB)
```

```
Building wheels for collected packages: playsound
  Building wheel for playsound (setup.py) ... done
  Created wheel for playsound: filename=playsound-1.3.0-py3-none-any.whl size=7035 sha256
=b288d3136966667575bd1739c4951e140fc7b17285c535dc3f7b39dc91af604b
  Stored in directory: /root/.cache/pip/wheels/ba/f8/bb/ea57c0146b664dca3a0ada4199b0ecb5f
9dfcb7b7e22b65ba2
Successfully built playsound
Installing collected packages: playsound
Successfully installed playsound-1.3.0
```

In [32]:

```
pip install pygobject
```

```
Looking in indexes: https://pypi.org/simple, https://us-python.pkg.dev/colab-wheels/public/simple/
Requirement already satisfied: pygobject in /usr/lib/python3/dist-packages (3.26.1)
```

In [33]:

```
from playsound import playsound
```

```
WARNING:playsound:playsound is relying on another python subprocess. Please use `pip install pygobject` if you want playsound to run more efficiently.
```

3: Loading our saved model file using load_model from Keras library

In [35]:

```
model = load_model(r'forest1.h5')
```

In [36]:

```
video = cv2.VideoCapture(0)
```

In [37]:

```
name = ['forest', 'with fire']
```

openCV intergeration

In [46]:

```
account_sid = 'ACe316932976f5aff487f6cdcab9a13579'
auth_token= '2388b1f10e88371fd6ebeabc00fd3ebf'
client = Client (account_sid, auth_token)
message = client.messages\
.create(
    body='Forest Fire is detected, stay alert',
    from_ = '+12183043886',
    to='+916374835017')
print (message.sid)
```

```
SM6e87d843df48e379caa471b1d2fa85a6
```