

VIDEO ANALYSIS

Sending Alert Message

Date:08 november 2022

Team ID:PNT2022TMID50335

Project Name:Emerging Methods For Early Dectection Of Forest Fire

```
from google.colab import drive
drive.mount('/content/drive')
Drive already mounted at /content/drive; to attempt to forcibly
remount, call drive.mount("/content/drive", force_remount=True).
!unzip "/content/drive/MyDrive/ibm.zip"
Archive: /content/drive/MyDrive/ibm.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_gettyim
ages_.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
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inflating: Dataset/Dataset/test_set/forest/1_chimp.jpg
inflating:
Dataset/Dataset/test_set/forest/200px_View_of_Lake_Moraine.jpg
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Dataset/Dataset/test_set/forest/220px_The_forest_near_Blatets__Vinitsa
.JPG
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urce.jpg
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inflating: Dataset/Dataset/test_set/forest/381417.jpg
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Dataset/Dataset/test_set/forest/4632581118_dcfb9ed978_b.jpg.860x0_q70_
crop_scale.jpg
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Dataset/Dataset/test_set/forest/4fe3f4e45d6bb93070989b8bbb77d30e.jpg
inflating:
Dataset/Dataset/test_set/forest/4k_timelapse_heavy_rain_on_mountain_fo
rest_tree_fog_motion_bad_weather_condition_rfiftlzh_thumbnail.png
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_green_mountain_forest.jpg
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4003.jpg
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pg
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Dataset/Dataset/test_set/forest/A003_C014_0724EC.00000000.jpg
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Dataset/Dataset/test_set/forest/Adirondack_Habitats_Mixed_Forest_Barnu
m_Brook_Trail_Paul_Smiths_VIC_23_May_2012_61.jpg
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Dataset/Dataset/test_set/forest/Adirondack_Habitats_Mixed_Forest_Jenki

ns_Mountain_Trail_Paul_Smiths_VIC_12_August_2013_71.jpg
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Dataset/Dataset/test_set/forest/_101542074_gettyimages_956391468.jpg
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Dataset/Dataset/test_set/forest/appalachian_mtns_forest_usda_srs.jpg
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Dataset/Dataset/test_set/forest/austria_mountain_forest_landscape_wallpaper_1920x1200.jpg
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Dataset/Dataset/test_set/forest/bavarian_forest_3385966_1280_1.jpg
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Dataset/Dataset/test_set/forest/beautiful_green_forest_range_images_picture_photos_wallpaper_download.jpg
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Dataset/Dataset/test_set/forest/beautiful_morning_mountain_forest_scenery_free_stock_photos_picjumbo_DSC02176.jpg
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Dataset/Dataset/test_set/forest/ce8b73d56bd242eb1f2369fe856f1c63_700.j

pg
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Dataset/Dataset/test_set/forest/em_tiger_mountain_570x284_nc.jpg
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inflatng:
Dataset/Dataset/test_set/forest/fanas_gregorschmucki_2016_28_1_2600x1733.jpg
inflatng:
Dataset/Dataset/test_set/forest/fantastic_dark_landscape_of_mountain_forest_in_clouds_fog_or_mist_picture_id688948674.jpg
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fire/Bandipur_fires_2019.jpg
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fire/Washington_DNR_Chiwaukum_WildFires_2014_2015_WA_DNR_cropped.jpg
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fire/X80IR0GYSSG6RaiLcsXX.jpg

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jpg
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fire/climate_change_forest_fire.jpeg
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fire/cumming_forest_fires.jpg
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fire/deerfire_high_res_edit.jpg
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fire/forest_fire_at_bandipur_tiger_reserve_04f0dd5e_3919_11e9_9798_f85
edb62de22.jpg
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fire/growing_risk_future_wildfires_adobestock_199370851.jpeg
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fire/header_hypermaritime_fire.jpg
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fire/photo_1555842027_660d9d8df55b.jpg
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fire/ring_of_fire_bailey_colorado_rocky_mountain_forest_wildfire_pictu
re_id157384116.jpg
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fire/rsz_lfire_pix_accumulation_640_1_2.jpg
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fire/shutterstock_48032821.jpg

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fire/uttarakhand_forest_fire_750x500.jpg
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fire/wildfire_header_image_1024x1024.jpg
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[illegible]

[illegible]

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import numpy as np
from tensorflow import keras
import os
import cv2
from tensorflow.keras.preprocessing.image import ImageDataGenerator
from tensorflow.keras.preprocessing import image
Looking in indexes: https://pypi.org/simple, https://us-
python.pkg.dev/colab-wheels/public/simple/
Requirement already satisfied: tensorflow in
/usr/local/lib/python3.7/dist-packages (2.9.2)
Requirement already satisfied: six>=1.12.0 in
/usr/local/lib/python3.7/dist-packages (from tensorflow) (1.15.0)
Requirement already satisfied: tensorboard<2.10,>=2.9 in
/usr/local/lib/python3.7/dist-packages (from tensorflow) (2.9.1)
Requirement already satisfied: termcolor>=1.1.0 in
/usr/local/lib/python3.7/dist-packages (from tensorflow) (2.0.1)
Requirement already satisfied: opt-einsum>=2.3.2 in
/usr/local/lib/python3.7/dist-packages (from tensorflow) (3.3.0)
Requirement already satisfied: tensorflow-io-gcs-filesystem>=0.23.1 in
/usr/local/lib/python3.7/dist-packages (from tensorflow) (0.27.0)
Requirement already satisfied: tensorflow-estimator<2.10.0,>=2.9.0rc0
in /usr/local/lib/python3.7/dist-packages (from tensorflow) (2.9.0)
Requirement already satisfied: google-pasta>=0.1.1 in
/usr/local/lib/python3.7/dist-packages (from tensorflow) (0.2.0)
Requirement already satisfied: astunparse>=1.6.0 in
/usr/local/lib/python3.7/dist-packages (from tensorflow) (1.6.3)
Requirement already satisfied: packaging in
/usr/local/lib/python3.7/dist-packages (from tensorflow) (21.3)
Requirement already satisfied: gast<=0.4.0,>=0.2.1 in
/usr/local/lib/python3.7/dist-packages (from tensorflow) (0.4.0)
Requirement already satisfied: h5py>=2.9.0 in
/usr/local/lib/python3.7/dist-packages (from tensorflow) (3.1.0)
Requirement already satisfied: numpy>=1.20 in
/usr/local/lib/python3.7/dist-packages (from tensorflow) (1.21.6)
Requirement already satisfied: flatbuffers<2,>=1.12 in
/usr/local/lib/python3.7/dist-packages (from tensorflow) (1.12)
Requirement already satisfied: absl-py>=1.0.0 in
/usr/local/lib/python3.7/dist-packages (from tensorflow) (1.3.0)
Requirement already satisfied: keras<2.10.0,>=2.9.0rc0 in
/usr/local/lib/python3.7/dist-packages (from tensorflow) (2.9.0)
Requirement already satisfied: libclang>=13.0.0 in
/usr/local/lib/python3.7/dist-packages (from tensorflow) (14.0.6)
Requirement already satisfied: typing-extensions>=3.6.6 in
/usr/local/lib/python3.7/dist-packages (from tensorflow) (4.1.1)
Requirement already satisfied: setuptools in
/usr/local/lib/python3.7/dist-packages (from tensorflow) (57.4.0)
Requirement already satisfied: grpcio<2.0,>=1.24.3 in
/usr/local/lib/python3.7/dist-packages (from tensorflow) (1.50.0)
Requirement already satisfied: keras-preprocessing>=1.1.1 in
/usr/local/lib/python3.7/dist-packages (from tensorflow) (1.1.2)

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Requirement already satisfied: wrapt<=1.11.0 in
/usr/local/lib/python3.7/dist-packages (from tensorflow) (1.14.1)
Requirement already satisfied: protobuf<3.20,>=3.9.2 in
/usr/local/lib/python3.7/dist-packages (from tensorflow) (3.17.3)
Requirement already satisfied: wheel<1.0,>=0.23.0 in
/usr/local/lib/python3.7/dist-packages (from astunparse>=1.6.0->tensorflow) (0.37.1)
Requirement already satisfied: cached-property in
/usr/local/lib/python3.7/dist-packages (from h5py>=2.9.0->tensorflow) (1.5.2)
Requirement already satisfied: google-auth<3,>=1.6.3 in
/usr/local/lib/python3.7/dist-packages (from tensorboard<2.10,>=2.9->tensorflow) (1.35.0)
Requirement already satisfied: google-auth-oauthlib<0.5,>=0.4.1 in
/usr/local/lib/python3.7/dist-packages (from tensorboard<2.10,>=2.9->tensorflow) (0.4.6)
Requirement already satisfied: tensorboard-plugin-wit>=1.6.0 in
/usr/local/lib/python3.7/dist-packages (from tensorboard<2.10,>=2.9->tensorflow) (1.8.1)
Requirement already satisfied: markdown>=2.6.8 in
/usr/local/lib/python3.7/dist-packages (from tensorboard<2.10,>=2.9->tensorflow) (3.4.1)
Requirement already satisfied: requests<3,>=2.21.0 in
/usr/local/lib/python3.7/dist-packages (from tensorboard<2.10,>=2.9->tensorflow) (2.23.0)
Requirement already satisfied: werkzeug>=1.0.1 in
/usr/local/lib/python3.7/dist-packages (from tensorboard<2.10,>=2.9->tensorflow) (1.0.1)
Requirement already satisfied: tensorboard-data-server<0.7.0,>=0.6.0 in /usr/local/lib/python3.7/dist-packages (from tensorboard<2.10,>=2.9->tensorflow) (0.6.1)
Requirement already satisfied: pyasn1-modules>=0.2.1 in
/usr/local/lib/python3.7/dist-packages (from google-auth<3,>=1.6.3->tensorboard<2.10,>=2.9->tensorflow) (0.2.8)
Requirement already satisfied: rsa<5,>=3.1.4 in
/usr/local/lib/python3.7/dist-packages (from google-auth<3,>=1.6.3->tensorboard<2.10,>=2.9->tensorflow) (4.9)
Requirement already satisfied: cachetools<5.0,>=2.0.0 in
/usr/local/lib/python3.7/dist-packages (from google-auth<3,>=1.6.3->tensorboard<2.10,>=2.9->tensorflow) (4.2.4)
Requirement already satisfied: requests-oauthlib>=0.7.0 in
/usr/local/lib/python3.7/dist-packages (from google-auth-oauthlib<0.5,>=0.4.1->tensorboard<2.10,>=2.9->tensorflow) (1.3.1)
Requirement already satisfied: importlib-metadata>=4.4 in
/usr/local/lib/python3.7/dist-packages (from markdown>=2.6.8->tensorboard<2.10,>=2.9->tensorflow) (4.13.0)
Requirement already satisfied: zipp>=0.5 in
/usr/local/lib/python3.7/dist-packages (from importlib-metadata>=4.4->markdown>=2.6.8->tensorboard<2.10,>=2.9->tensorflow) (3.10.0)
Requirement already satisfied: pyasn1<0.5.0,>=0.4.6 in

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/usr/local/lib/python3.7/dist-packages (from pyasn1-modules>=0.2.1-
>google-auth<3,>=1.6.3->tensorboard<2.10,>=2.9->tensorflow) (0.4.8)
Requirement already satisfied: idna<3,>=2.5 in
/usr/local/lib/python3.7/dist-packages (from requests<3,>=2.21.0-
>tensorboard<2.10,>=2.9->tensorflow) (2.10)
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<3,>=2.21.0-
>tensorboard<2.10,>=2.9->tensorflow) (1.24.3)
Requirement already satisfied: certifi>=2017.4.17 in
/usr/local/lib/python3.7/dist-packages (from requests<3,>=2.21.0-
>tensorboard<2.10,>=2.9->tensorflow) (2022.9.24)
Requirement already satisfied: chardet<4,>=3.0.2 in
/usr/local/lib/python3.7/dist-packages (from requests<3,>=2.21.0-
>tensorboard<2.10,>=2.9->tensorflow) (3.0.4)
Requirement already satisfied: oauthlib>=3.0.0 in
/usr/local/lib/python3.7/dist-packages (from requests-oauthlib>=0.7.0-
>google-auth-oauthlib<0.5,>=0.4.1->tensorboard<2.10,>=2.9->tensorflow)
(3.2.2)
Requirement already satisfied: pyparsing!=3.0.5,>=2.0.2 in
/usr/local/lib/python3.7/dist-packages (from packaging->tensorflow)
(3.0.9)
Looking in indexes: https://pypi.org/simple, https://us-
python.pkg.dev/colab-wheels/public/simple/
Requirement already satisfied: opencv-python in
/usr/local/lib/python3.7/dist-packages (4.6.0.66)
Requirement already satisfied: numpy>=1.14.5 in
/usr/local/lib/python3.7/dist-packages (from opencv-python) (1.21.6)
Looking in indexes: https://pypi.org/simple, https://us-
python.pkg.dev/colab-wheels/public/simple/
Requirement already satisfied: opencv-contrib-python in
/usr/local/lib/python3.7/dist-packages (4.6.0.66)
Requirement already satisfied: numpy>=1.14.5 in
/usr/local/lib/python3.7/dist-packages (from opencv-contrib-python)
(1.21.6)
train=ImageDataGenerator(rescale=1./255,
                        shear_range=0.2,
                        rotation_range=180,
                        zoom_range=0.2,
                        horizontal_flip=True)

train = ImageDataGenerator(rescale=1/255)
test = ImageDataGenerator(rescale=1/255)
train_dataset =
train.flow_from_directory("/content/drive/MyDrive/Dataset/Dataset/
train_set",
                        target_size=(128,128),
                        batch_size = 32,
                        class_mode = 'binary' )

Found 436 images belonging to 2 classes.
test_dataset =
test.flow_from_directory("/content/drive/MyDrive/Dataset/Dataset/test_

```

```

set",

target_size=(128,128),
batch_size = 32,
class_mode = 'binary' )

Found 121 images belonging to 2 classes.
test_dataset.class_indices
{'forest': 0, 'with fire': 1}
#to define linear initialisation import sequential
from keras.models import Sequential
#to add layer import Dense
from keras.layers import Dense
#to create convolution kernel import convolution2D
from keras.layers import Convolution2D
#import Maxpooling layer
from keras.layers import MaxPooling2D
#import flatten layer
from keras.layers import Flatten
import warnings
warnings.filterwarnings('ignore')
model = keras.Sequential()
model.add(Convolution2D(32,
(3,3),input_shape=(128,128,3),activation='relu'))
model.add(MaxPooling2D(pool_size=(2,2)))
model.add(Convolution2D(32,(3,3),activation='relu'))
model.add(MaxPooling2D(pool_size=(2,2)))
model.add(Convolution2D(32,(3,3),activation='relu'))
model.add(MaxPooling2D(pool_size=(2,2)))
model.add(Convolution2D(32,(3,3),activation='relu'))
model.add(MaxPooling2D(pool_size=(2,2)))
model.add(Flatten())
model.add(Dense(150,activation='relu'))

model.add(Dense(1,activation='sigmoid'))
model.compile(loss = 'binary_crossentropy',
optimizer = "adam",
metrics = ["accuracy"])
r = model.fit(train_dataset, epochs = 5, validation_data =
test_dataset)
Epoch 1/5
14/14 [=====] - 146s 10s/step - loss: 0.5411
- accuracy: 0.7362 - val_loss: 0.2099 - val_accuracy: 0.9504
Epoch 2/5
14/14 [=====] - 25s 2s/step - loss: 0.2775 -
accuracy: 0.8807 - val_loss: 0.2187 - val_accuracy: 0.8926
Epoch 3/5
14/14 [=====] - 25s 2s/step - loss: 0.2991 -
accuracy: 0.8532 - val_loss: 0.2396 - val_accuracy: 0.9256
Epoch 4/5
14/14 [=====] - 25s 2s/step - loss: 0.2643 -
accuracy: 0.8899 - val_loss: 0.0606 - val_accuracy: 0.9835

```

Epoch 5/5

14/14 [=====] - 25s 2s/step - loss: 0.1849 - accuracy: 0.9243 - val_loss: 0.0536 - val_accuracy: 0.9917

predictions = model.predict(test_dataset)

predictions = np.round(predictions)

4/4 [=====] - 5s 1s/step

predictions

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        [0.]], dtype=float32)
print(len(predictions))
121
model.save("/content/drive/MyDrive/archive (1)/forest1.h5")
#import load_model from keras.model
from keras.models import load_model
#import image class from keras
import tensorflow as tf
from tensorflow.keras.preprocessing import image
#import numpy
import numpy as np
#import cv2
import cv2
model = load_model("/content/drive/MyDrive/archive (1)/forest1.h5")
def predictImage(filename):
    img1 = image.load_img(filename,target_size=(128,128))
    Y = image.img_to_array(img1)
    X = np.expand_dims(Y,axis=0)
    val = model.predict(X)
    print(val)
    if val == 1:
        print(" fire")
    elif val == 0:

```

```

    print("no fire")
predictImage("/content/drive/MyDrive/archive
(1)/Dataset/Dataset/test_set/with fire/Forest_Fire (3).jpg")
1/1 [=====] - 0s 96ms/step
[[1.]]
fire
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 9.6 MB/s
Collecting PyJWT<3.0.0,>=2.0.0
  Downloading PyJWT-2.6.0-py3-none-any.whl (20 kB)
Requirement already satisfied: requests>=2.0.0 in
/usr/local/lib/python3.7/dist-packages (from twilio) (2.23.0)
Requirement already satisfied: pytz in /usr/local/lib/python3.7/dist-
packages (from twilio) (2022.5)
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: 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)
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: idna<3,>=2.5 in
/usr/local/lib/python3.7/dist-packages (from requests>=2.0.0->twilio)
(2.10)
Installing collected packages: PyJWT, twilio
Successfully installed PyJWT-2.6.0 twilio-7.15.1
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=58c730885ef477f0bdfa405c910ad06d569eecb53e6f36465f325ce0a120aa9
2
  Stored in directory:
/root/.cache/pip/wheels/ba/f8/bb/ea57c0146b664dca3a0ada4199b0ecb5f9dfc
b7b7e22b65ba2
Successfully built playsound
Installing collected packages: playsound
Successfully installed playsound-1.3.0
#import opencv library

```

```

import cv2
#import numpy
import numpy as np
#import image function from keras
from keras.preprocessing import image
#import load_model from keras
from keras.models import load_model
#import client from twilio API
from twilio.rest import Client
#import playsound package
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.
#load the saved model
model = load_model(r'/content/drive/MyDrive/archive (1)/forest1.h5')
#define video
video = cv2.VideoCapture('/content/Fighting Fire with Fire _ Explained
in 30 Seconds.mp4')
#define the features
name = ['forest','with forest']
account_sid = 'AC9e15eae056ba54ebe61e3ed93d4f2658'
auth_token = 'a049c8a7500762182c3fa47a9fa239f7'
client = Client(account_sid, auth_token)

message = client.messages \
    .create(
        body='Forest fire is detected , stay alert',
        from_='+19472104724',
        to='+919361221241'
    )

print(message.sid)
SM98f0e902a5dbacc0a2c578b2fde3a14c
#import opencv library
import cv2
#import numpy
import numpy as np
#import images and load_model function from keras
from keras_preprocessing import image
from keras.models import load_model
#import client from twilio API
from twilio.rest import Client
#import playsound package
from playsound import playsound

#load the saved model
model = load_model(r'/content/drive/MyDrive/archive (1)/forest1.h5')
video = cv2.VideoCapture('/content/Fighting Fire with Fire _ Explained

```

```
in 30 Seconds.mp4')  
name = ['forest', 'with fire']
```

```
File "<ipython-input-2-74f59e6e4c69>", line 3  
    Drive already mounted at /content/drive; to attempt to forcibly  
remount, call drive.mount("/content/drive", force_remount=True).  
    ^
```

```
SyntaxError: invalid syntax
```