PROJECT DEVELOPMENT PHASE

SPRINT-III

VIDEO ANALYSIS

Date	09 November 2022
Team ID	PNT2022TMID04128
Project Name	Emerging Methods for Early Detection of Forest Fires
Maximum Marks	8 Marks
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OpenCv for video processing:

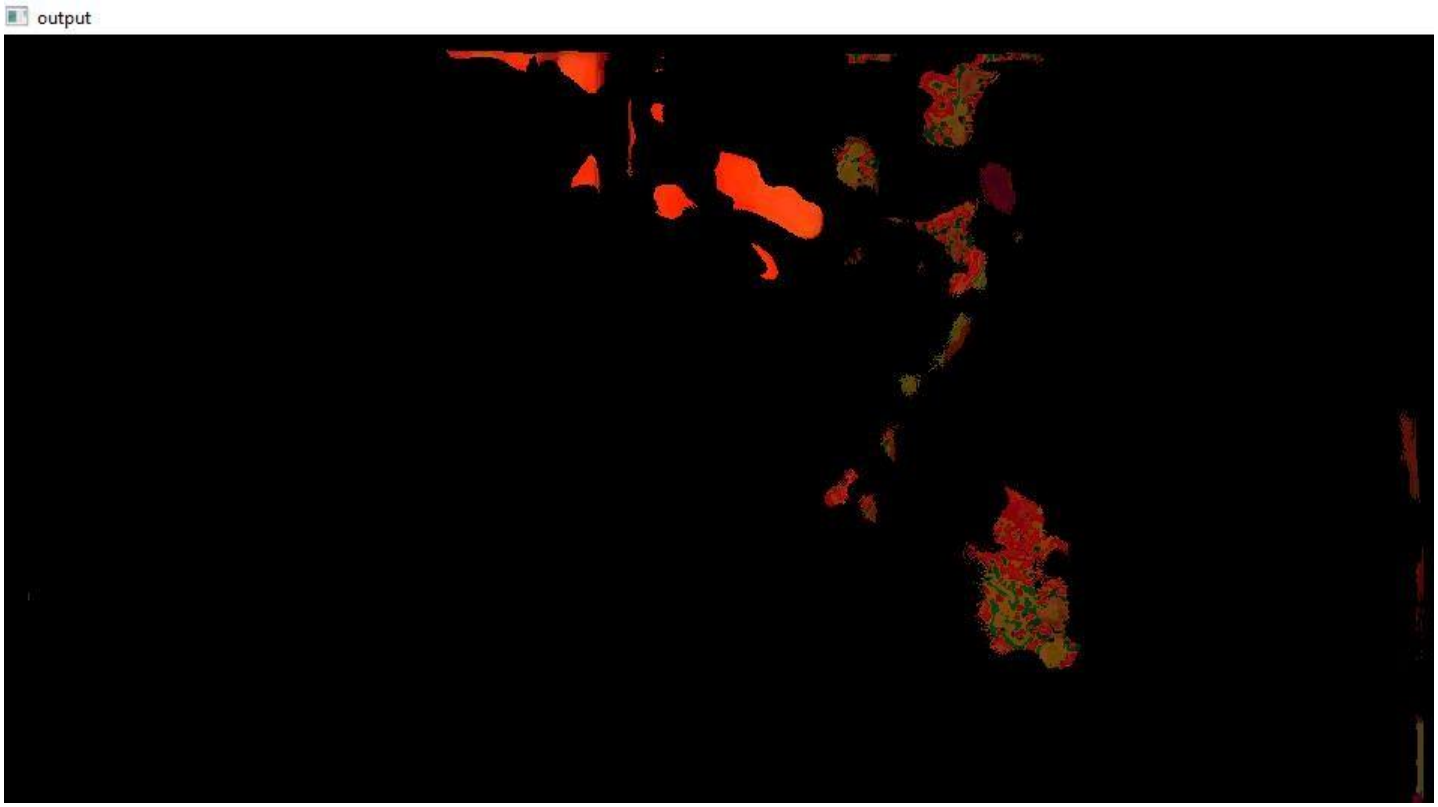
```
import cv2
import numpy as np
#import smtplib
#import playsound
#import threading

Alarm_Status = False
Email_Status = False
Fire_Reported = 0
```

```
#def play_alarm_sound_function():
        #while True:
                #playsound.playsound('alarm-sound.mp3',True)
```

```
#def send_mail_function():

    #recipientEmail = "reenu8602@gmail.com"
   # recipientEmail = recipientEmail.lower()

   # try:
        #server = smtplib.SMTP('smtp.gmail.com', 587)
        #server.ehlo()
        #server.starttls()
        #!server.login("swethathanam52@gmail.com", 'swethaanu3')
        #server.sendmail('reenu8602@gmail.com)', recipientEmail, "Warning A
Fire Accident has been reported on ABC ")
        #print("sent to {}".format(recipientEmail))
       # server.close()
   # except Exception as e:
    #   print(e)


video = cv2.VideoCapture("video.mp4") # If you want to use webcam use
Index like 0,1.

while True:
    (grabbed, frame) = video.read()
    if not grabbed:
        break

    frame = cv2.resize(frame, (960, 540))

    blur = cv2.GaussianBlur(frame, (21, 21), 0)
    hsv = cv2.cvtColor(blur, cv2.COLOR_BGR2HSV)

    lower = [18, 50, 50]
    upper = [35, 255, 255]
    lower = np.array(lower, dtype="uint8")
    upper = np.array(upper, dtype="uint8")
```

```
    mask = cv2.inRange(hsv, lower, upper)

    output = cv2.bitwise_and(frame, hsv, mask=mask)

    no_red = cv2.countNonZero(mask)

    if int(no_red) > 15000:
        Fire_Reported = Fire_Reported + 1

    cv2.imshow("output", output)

    if Fire_Reported >= 1:

        if Alarm_Status == False:
                #threading.Thread(target=play_alarm_sound_function).start()
                Alarm_Status = True

        if Email_Status == False:
                #threading.Thread(target=send_mail_function).start()
                Email_Status = True


    if cv2.waitKey(1) & 0xFF == ord('q'):
        break

cv2.destroyAllWindows()
video.release()
```

Output:



Creating an account in Twilio Services:

```
from twilio.rest import Client
account_sid = 'AC9496860c13d1e2959a984c6744e6e513'
auth_token = 'c5d994417543434 92a6d9046e614c4cb'
client = Client(account_sid, auth_token)
myMessage = client.messages.create(
   body = 'Forest Fire is detected,Stay alert' ,
    from_=' +12183046916',
    to = ' +918680875090')
print(message.sid)
print("Fire detected")
print("SMS Sent!")
```

Sending Alert Message:

```
import cv2
import numpy as np
from keras.preprocessing import image
from keras.models import load_model
from twilio.rest import Client
from playsound import playsound
model = load_model(r'forestfire13.h5')
video = cv2.VideoCpature(0)
name = ['forest','with fire']
while(1):
    success,frame = video.read()
    cv2.imwrite("img.jpg",frame)
    img = image.load_image("image.jpg",target_size = (64,64))
    x = image.img_to_array(img)
    x = np.expand_dims(x,axis = 0)
    pred = model.predict_classes(x)
    p = pred[0]
    print(pred)
    cv2.putText(frame,"predicted class = "+str(name[p]),(100,100),
                cv2.FONT_HERSHEY_SIMPLEX,1,(0,0,0),1)
    pred = model.predict_classes(x)
    if pred[0]==1:
        account_sid = 'AC9496860c13d1e2959a984c6744e6e513'
        auth_token = 'c5d99441754343492a6d9046e614c4cb'
        client = Client(account_sid, auth_token)
        myMessage = client.messages.create(
            body='Forest Fire is detected,Stay alert',
            from_='+12183046916',
            to='+918680875090')
        print(message.sid)
```

```
        print("Fire detected")
        print("SMS Sent!")
        playsound(r")
    else:
        print("No Danger")
        cv2.imshow("image",frame)
        if cv2.waitKey(1) & 0xFF == ord('a'):
            break
            video.release()
            cv2.destroyAllWindows()
```

Message Output: