

Lab_9 TCV3151 Computer Vision

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```
In [4]: !pip install playsound==1.2.2
!pip install opencv-contrib-python
```

Requirement already satisfied: playsound==1.2.2 in c:\programdata\anaconda3\lib\site-packages (1.2.2)
 Requirement already satisfied: opencv-contrib-python in c:\programdata\anaconda3\lib\site-packages (4.5.3.56)
 Requirement already satisfied: numpy>=1.17.3 in c:\programdata\anaconda3\lib\site-packages (from opencv-contrib-python) (1.19.2)

Intruder Detection for Surveillance System

```
In [5]: import cv2
import numpy as np
from playsound import playsound

cap = cv2.VideoCapture('video.avi')

# Check if camera opened successfully
if (cap.isOpened() == False):
    print('Error opening video stream or file')

ret, current_frame = cap.read()
previous_frame = current_frame

flag = True
while(cap.isOpened()):
    if ret == True:
        current_frame_gray = cv2.cvtColor(current_frame, cv2.COLOR_BGR2GRAY)
        previous_frame_gray = cv2.cvtColor(previous_frame, cv2.COLOR_BGR2GRAY)

        # Find difference between previous and current frames
        frame_diff = cv2.absdiff(current_frame_gray, previous_frame_gray)

        if np.sum(frame_diff) < 500000:
            cv2.imshow('Frame', current_frame)
        else:
            if flag:
                playsound('somethingwrong.wav')
                flag = False

            cv2.putText(current_frame, 'Intruder!!!', (20, 120),
                        cv2.FONT_HERSHEY_SIMPLEX, 2, (0, 0, 255))
            cv2.imshow('Frame', current_frame)

        # Press Q on keyboard to exit
        if cv2.waitKey(25) & 0xFF == ord('q'):
            break
        ret, current_frame = cap.read()
    else:
        break
```

```
cap.release()  
cv2.destroyAllWindows()
```

Another alternative: BackgroundSubtractorMOG2

```
In [6]: import numpy as np  
import cv2  
from playsound import playsound  
  
cap = cv2.VideoCapture('video.avi')  
  
kernel = cv2.getStructuringElement(cv2.MORPH_ELLIPSE,(3,3))  
fgbg = cv2.createBackgroundSubtractorMOG2()  
  
flag = True  
while(cap.isOpened()):  
  
    ret, frame = cap.read()  
    if ret == True:  
        fgmask = fgbg.apply(frame)  
        fgmask = cv2.morphologyEx(fgmask, cv2.MORPH_OPEN, kernel)  
        if np.sum(fgmask) < 500000:  
            cv2.imshow('frame',frame)  
        else:  
            if flag:  
                playsound('somethingwrong.wav')  
                flag = False  
  
            cv2.putText(frame, 'Intruder!!!', (20,120),  
                        cv2.FONT_HERSHEY_SIMPLEX, 2, (0,0,255))  
            cv2.imshow('frame',frame)  
            if cv2.waitKey(25) & 0xFF == ord('q'):  
                break  
        else:  
            break  
  
cap.release()  
cv2.destroyAllWindows()
```

```
In [ ]:
```