

Assignment-0

January 17, 2022

1 Assignment-0: OpenCV and Chroma Keying

Name: Tushar Choudhary

Roll number: 2019111019

1.1 Imports

```
[1]: import cv2
import numpy as np
import os
from os.path import isfile, join
from matplotlib import pyplot as plt
import matplotlib.image as mpimg
%matplotlib inline
```

1.2 Converting video to images

We know that a video is just images being played sequentially with high speed. To convert a video to images, all I have done is use `read()` method of `opencv` and read all the frames one by one and stored them in a directory. All the images have been shown to be stored and some random frames have with visualized as well.

```
[2]: # A utility function to get basic info about
# the video such as FPS, length, etc
def video_description(filename):
    cap = cv2.VideoCapture(filename)
    fps = cap.get(cv2.CAP_PROP_FPS)
    frame_count = int(cap.get(cv2.CAP_PROP_FRAME_COUNT))
    duration = frame_count/fps
    print(f"\nVideo source: {filename}")
    print(f"FPS: {fps}")
    print(f"Total frames: {frame_count}")
    print(f"Total Duration: {duration} seconds")
    print(f"-----")

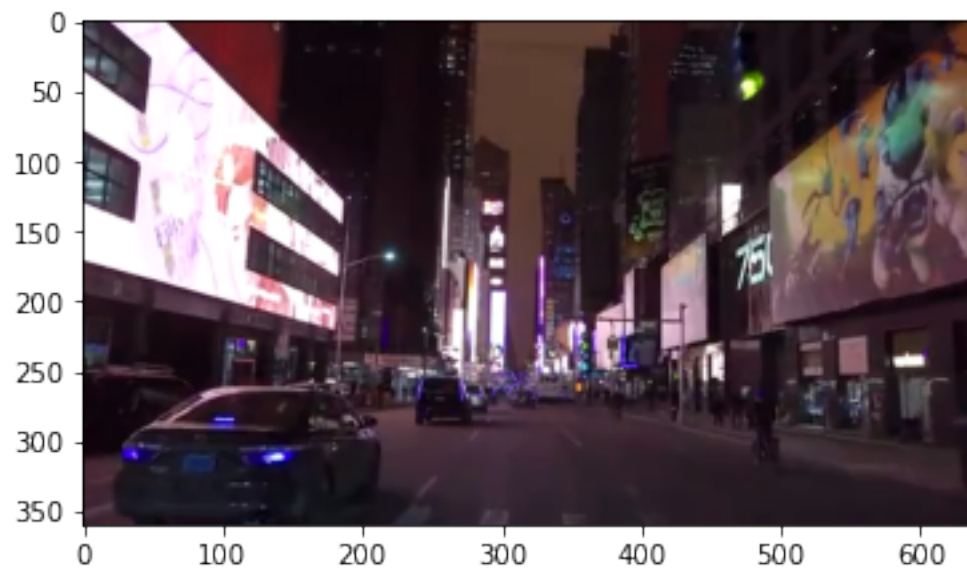
video_description('Data/Q1.mp4')
```

Video source: Data/Q1.mp4
FPS: 29.97002997002997
Total frames: 90
Total Duration: 3.003 seconds

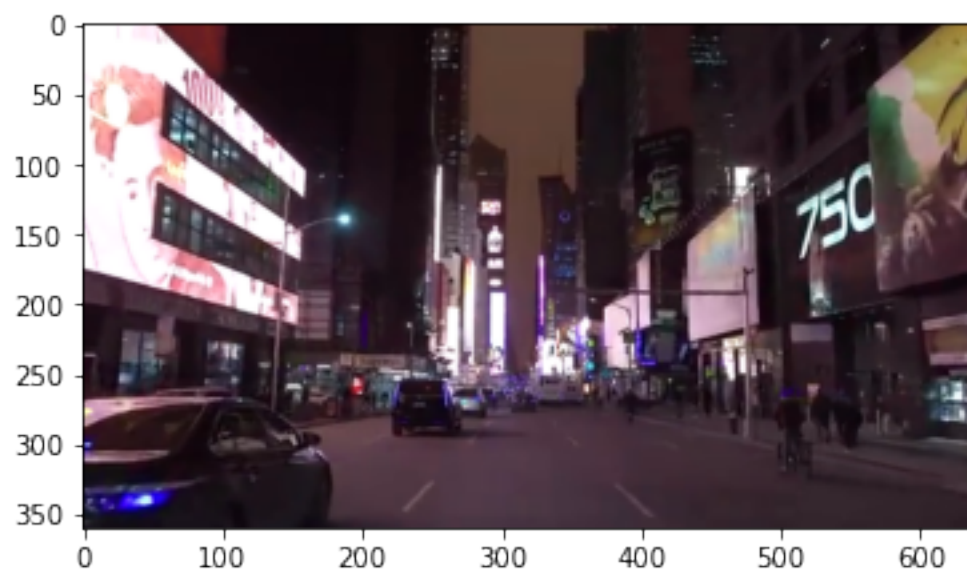
```
[3]: def convert_video_to_frames(input_path,output_path):  
    vid = cv2.VideoCapture(input_path)  
    count = 0  
    while True:  
        success, img = vid.read()  
        if success == True:  
            count = count+1  
            cv2.imwrite(output_path+"/frame"+str(count)+".jpg", img)  
            if count==1 or count==41 or count==81:  
                print(f"\nSample frame: number {count}")  
                plt.imshow(img)  
                plt.show()  
        else:  
            break  
  
    !rm -rf Results/Q1/Frames/*  
    print("Directory content before conversion:")  
    !ls -la Results/Q1/Frames  
  
    convert_video_to_frames('Data/Q1.mp4','Results/Q1/Frames')  
  
    print("\nDirectory content after conversion:")  
    !ls -la Results/Q1/Frames
```

Directory content before conversion:
total 8
drwxrwxr-x 2 tusharc31 tusharc31 4096 Jan 17 22:53 .
drwxrwxr-x 4 tusharc31 tusharc31 4096 Jan 17 19:14 ..

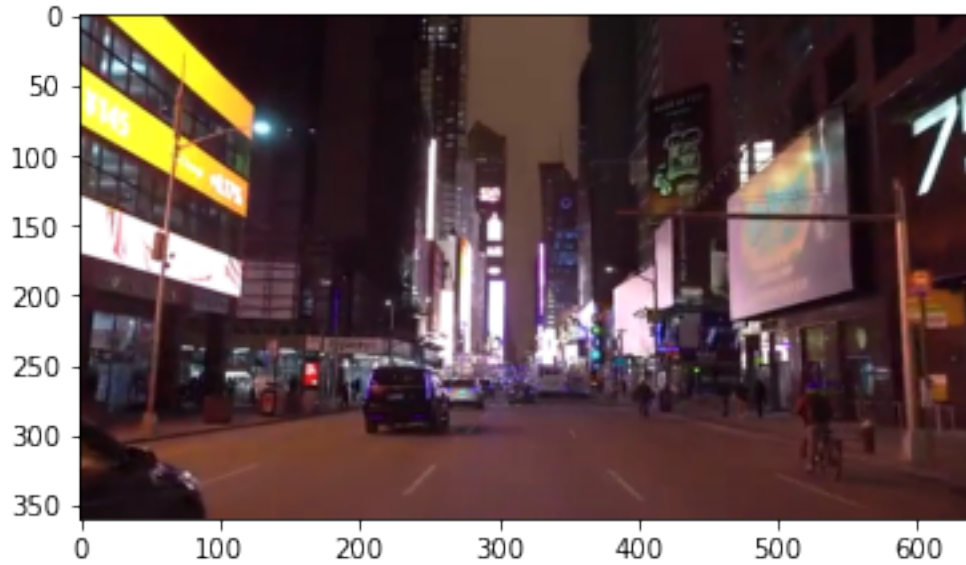
Sample frame: number 1



Sample frame: number 41



Sample frame: number 81



Directory content after conversion:

total 6848

```
drwxrwxr-x 2 tusharc31 tusharc31 4096 Jan 17 22:53 .
drwxrwxr-x 4 tusharc31 tusharc31 4096 Jan 17 19:14 ..
-rw-rw-r-- 1 tusharc31 tusharc31 74739 Jan 17 22:53 frame10.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74855 Jan 17 22:53 frame11.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74293 Jan 17 22:53 frame12.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75666 Jan 17 22:53 frame13.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74365 Jan 17 22:53 frame14.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74378 Jan 17 22:53 frame15.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73940 Jan 17 22:53 frame16.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75240 Jan 17 22:53 frame17.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73830 Jan 17 22:53 frame18.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74140 Jan 17 22:53 frame19.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 71888 Jan 17 22:53 frame1.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75085 Jan 17 22:53 frame20.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76095 Jan 17 22:53 frame21.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75563 Jan 17 22:53 frame22.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75439 Jan 17 22:53 frame23.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74923 Jan 17 22:53 frame24.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76890 Jan 17 22:53 frame25.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75253 Jan 17 22:53 frame26.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75354 Jan 17 22:53 frame27.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74993 Jan 17 22:53 frame28.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76728 Jan 17 22:53 frame29.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72129 Jan 17 22:53 frame2.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75303 Jan 17 22:53 frame30.jpg
```

```

-rw-rw-r-- 1 tusharc31 tusharc31 74963 Jan 17 22:53 frame31.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74705 Jan 17 22:53 frame32.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76363 Jan 17 22:53 frame33.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74905 Jan 17 22:53 frame34.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74895 Jan 17 22:53 frame35.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74594 Jan 17 22:53 frame36.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76380 Jan 17 22:53 frame37.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75438 Jan 17 22:53 frame38.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75685 Jan 17 22:53 frame39.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74199 Jan 17 22:53 frame3.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75269 Jan 17 22:53 frame40.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76963 Jan 17 22:53 frame41.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75671 Jan 17 22:53 frame42.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75811 Jan 17 22:53 frame43.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75196 Jan 17 22:53 frame44.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76797 Jan 17 22:53 frame45.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75746 Jan 17 22:53 frame46.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75097 Jan 17 22:53 frame47.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75048 Jan 17 22:53 frame48.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76541 Jan 17 22:53 frame49.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74149 Jan 17 22:53 frame4.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75521 Jan 17 22:53 frame50.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76599 Jan 17 22:53 frame51.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76439 Jan 17 22:53 frame52.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 77564 Jan 17 22:53 frame53.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76430 Jan 17 22:53 frame54.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76509 Jan 17 22:53 frame55.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76215 Jan 17 22:53 frame56.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 78284 Jan 17 22:53 frame57.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76957 Jan 17 22:53 frame58.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 77384 Jan 17 22:53 frame59.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75553 Jan 17 22:53 frame5.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 77237 Jan 17 22:53 frame60.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 78319 Jan 17 22:53 frame61.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76921 Jan 17 22:53 frame62.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76924 Jan 17 22:53 frame63.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76376 Jan 17 22:53 frame64.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 77359 Jan 17 22:53 frame65.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75991 Jan 17 22:53 frame66.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75664 Jan 17 22:53 frame67.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75320 Jan 17 22:53 frame68.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76544 Jan 17 22:53 frame69.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74183 Jan 17 22:53 frame6.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75761 Jan 17 22:53 frame70.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75562 Jan 17 22:53 frame71.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75198 Jan 17 22:53 frame72.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76492 Jan 17 22:53 frame73.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75687 Jan 17 22:53 frame74.jpg

```

```

-rw-rw-r-- 1 tusharc31 tusharc31 75624 Jan 17 22:53 frame75.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75309 Jan 17 22:53 frame76.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76757 Jan 17 22:53 frame77.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75815 Jan 17 22:53 frame78.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75826 Jan 17 22:53 frame79.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74372 Jan 17 22:53 frame7.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75430 Jan 17 22:53 frame80.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76698 Jan 17 22:53 frame81.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75705 Jan 17 22:53 frame82.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75671 Jan 17 22:53 frame83.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75545 Jan 17 22:53 frame84.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76496 Jan 17 22:53 frame85.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75496 Jan 17 22:53 frame86.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75516 Jan 17 22:53 frame87.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74760 Jan 17 22:53 frame88.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75170 Jan 17 22:53 frame89.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73912 Jan 17 22:53 frame8.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74321 Jan 17 22:53 frame90.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75378 Jan 17 22:53 frame9.jpg

```

1.3 Converting images to video

In this question, I have used the same set of images generated in the previous part. To convert these images to a video I have used the `VideoWriter` method from `opencv`. The most important part of this question is the frame rate. We know $\text{FPS} = \text{Total frames} / \text{duration}$. Hence if we change the FPS, the duration of the generated video will change as the total number of frames are constant. Based on the frame rate, these are the following cases I have tried.

- FPS = 30. This frame rate is same as of the original video and hence I was able to generate a video with same speed and duration as the original one.
- FPS = 45. Having a frame rate higher than the frame rate of the original video made the new video faster and hence of lesser duration then the original video.
- FPS = 25. Having a frame rate lower than the frame rate of the original video made the new video slower and hence of more duration then the original video.
- FPS = 12. We know human eyes process a sequence of images as a realistic motion video if the frame rate is higher than 24. So I have also generated a video with frame rate of 12 and here I can feel the motion between the frames is not smooth enough/realistic.

All the videos have been shown to be written in a directory and basic information for them has been printed.

```

[4]: def convert_frames_to_video(input_path,output_path,fps):
      all_frames = []
      files = os.listdir(input_path)
      files.sort(key = lambda x: int(x[5:-4]))
      for i in range(len(files)):
          filename = input_path + files[i]
          img = cv2.imread(filename)
          height, width, layers = img.shape

```

```

        size = (width,height)
        all_frames.append(img)
        out = cv2.VideoWriter(output_path,cv2.VideoWriter_fourcc(*'DIVX'), fps,
        size)
        for i in range(len(all_frames)):
            out.write(all_frames[i])
        out.release()

frame_rates = [12, 25, 30, 45]
input_path= './Results/Q1/Frames/'

!rm -rf Results/Q1/Videos/*
print("Directory content before conversion:")
!ls -la Results/Q1/Videos

for fps in frame_rates:
    output_path = './Results/Q1/Videos/Combined-'+str(fps)+'.avi'
    convert_frames_to_video(input_path, output_path, fps)
    video_description(output_path)

print("\nDirectory content after conversion:")
!ls -la Results/Q1/Videos

```

Directory content before conversion:

```

total 8
drwxrwxr-x 2 tusharc31 tusharc31 4096 Jan 17 22:53 .
drwxrwxr-x 4 tusharc31 tusharc31 4096 Jan 17 19:14 ..

```

Video source: ./Results/Q1/Videos/Combined-12.avi

FPS: 12.0

Total frames: 90

Total Duration: 7.5 seconds

Video source: ./Results/Q1/Videos/Combined-25.avi

FPS: 25.0

Total frames: 90

Total Duration: 3.6 seconds

Video source: ./Results/Q1/Videos/Combined-30.avi

FPS: 30.0

Total frames: 90

Total Duration: 3.0 seconds

Video source: ./Results/Q1/Videos/Combined-45.avi

```
FPS: 45.0
Total frames: 90
Total Duration: 2.0 seconds
-----
```

Directory content after conversion:

```
total 5336
drwxrwxr-x 2 tusharc31 tusharc31    4096 Jan 17 22:53 .
drwxrwxr-x 4 tusharc31 tusharc31    4096 Jan 17 19:14 ..
-rw-rw-r-- 1 tusharc31 tusharc31 1363572 Jan 17 22:53 Combined-12.avi
-rw-rw-r-- 1 tusharc31 tusharc31 1363588 Jan 17 22:53 Combined-25.avi
-rw-rw-r-- 1 tusharc31 tusharc31 1363588 Jan 17 22:53 Combined-30.avi
-rw-rw-r-- 1 tusharc31 tusharc31 1363602 Jan 17 22:53 Combined-45.avi
```

1.4 Capturing images from webcam

For this part, I have used my laptop's web camera using `cv2.VideoCapture(0)`. The images have been stored in a directory and few samples have been shown in the notebook. Please note that the webcam doesn't properly work with the jupyter notebook, hence I have commented the code used in the cell below and used the same code from another python file in the cell later.

```
[5]: # import cv2
      # from matplotlib import pyplot as plt

      # cap = cv2.VideoCapture(0)
      # cap.set(3,640)
      # cap.set(4,360)
      # cap.set(10,100) # Brightness id is 10

      # cnt = 0
      # while True:
      #     success, img = cap.read()
      #     if success == True:
      #         cnt+=1
      #         cv2.imshow("output",img)
      #         cv2.imwrite("Results/Q2/frame"+str(cnt)+".jpg", img)

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

      # print(f"\nSaved {cnt} frames to Results/Q2")
```

```
[6]: !rm -rf Results/Q2/*
      print("Directory content before conversion:")
      !ls -la Results/Q2
```



```
!python3 webcam.py

print("\nDirectory content after conversion:")
!ls -la Results/Q2

for i in ['15', '35']:
    img = mpimg.imread("Results/Q2/frame"+i+".jpg")
    imgplot = plt.imshow(img)
    plt.show()
```

Directory content before conversion:

total 8

drwxrwxr-x 2 tusharc31 tusharc31 4096 Jan 17 22:53 .

drwxrwxr-x 5 tusharc31 tusharc31 4096 Jan 17 18:28 ..

Saved 41 frames to Results/Q2

Directory content after conversion:

total 2176

drwxrwxr-x 2 tusharc31 tusharc31 4096 Jan 17 22:53 .

drwxrwxr-x 5 tusharc31 tusharc31 4096 Jan 17 18:28 ..

-rw-rw-r-- 1 tusharc31 tusharc31 52550 Jan 17 22:53 frame10.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 52609 Jan 17 22:53 frame11.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 52396 Jan 17 22:53 frame12.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 52384 Jan 17 22:53 frame13.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 52872 Jan 17 22:53 frame14.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 52231 Jan 17 22:53 frame15.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 52357 Jan 17 22:53 frame16.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 52612 Jan 17 22:53 frame17.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 52325 Jan 17 22:53 frame18.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 52350 Jan 17 22:53 frame19.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 52429 Jan 17 22:53 frame1.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 52839 Jan 17 22:53 frame20.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 52500 Jan 17 22:53 frame21.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 52558 Jan 17 22:53 frame22.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 52480 Jan 17 22:53 frame23.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 52104 Jan 17 22:53 frame24.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 51788 Jan 17 22:53 frame25.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 51117 Jan 17 22:53 frame26.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 50774 Jan 17 22:53 frame27.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 51027 Jan 17 22:53 frame28.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 52067 Jan 17 22:53 frame29.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 52743 Jan 17 22:53 frame2.jpg

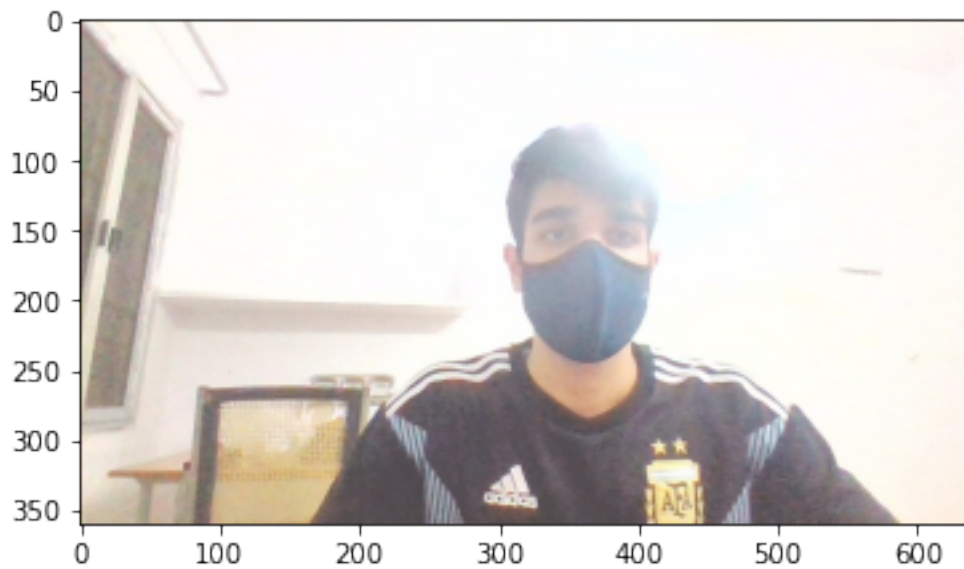
-rw-rw-r-- 1 tusharc31 tusharc31 52419 Jan 17 22:53 frame30.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 52747 Jan 17 22:53 frame31.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 53385 Jan 17 22:53 frame32.jpg

-rw-rw-r-- 1 tusharc31 tusharc31 53208 Jan 17 22:53 frame33.jpg

```
-rw-rw-r-- 1 tusharc31 tusharc31 53608 Jan 17 22:53 frame34.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 53795 Jan 17 22:53 frame35.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 53568 Jan 17 22:53 frame36.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 53668 Jan 17 22:53 frame37.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 53803 Jan 17 22:53 frame38.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 53517 Jan 17 22:53 frame39.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 52472 Jan 17 22:53 frame3.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 53707 Jan 17 22:53 frame40.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 53849 Jan 17 22:53 frame41.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 52648 Jan 17 22:53 frame4.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 52985 Jan 17 22:53 frame5.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 52527 Jan 17 22:53 frame6.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 52527 Jan 17 22:53 frame7.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 52607 Jan 17 22:53 frame8.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 52533 Jan 17 22:53 frame9.jpg
```





1.5 Chroma Keying:

For this question, we had to use two videos, and via chroma keying we had to add foreground of one video on a background from another video. I attempted this problem twice and my challenges and learnings have been explained below:

- In the first attempt, I used a **5 second duration at 25 FPS** video, and another video of me shot on my phone which was roughly **5 seconds long at 120 FPS**. Hence both videos had unequal frames (5x25 and 5x120 respectively). I read both the videos frame by frame, and till I could read frames, I masked pixels of image from my video with RGB values in the range [160, 160, 160] to [255, 255, 255]. This range was found by logical trial and error (the background in my video was white). After this, I added it to the background image from the second video. However, it was very noticeable that both the videos were not in sync at all. My video was going very slow compared to the background, and this was because two videos of unequal frame rates were being played at the same FPS.
- In the second attempt, I preprocessed my video, so now it was roughly **5 seconds long at 24 FPS**. I performed the preprocessing by converting the video to frames, and then converting it back to a video by choosing 1 in every 5 frames. I did this since I wanted to bring the FPS of my video closer to the background video. Hence, I changed the FPS from 120 to 24 and reduced number of frames by 5 times. Rest of the procedure was carried in the same way as before and this time both the videos were in sync.

```
[7]: def chroma_key(filename1, filename2, output_path):  
  
    video1 = cv2.VideoCapture(filename1)  
    video2 = cv2.VideoCapture(filename2)  
  
    cnt = 0
```

```

while True:

    cnt += 1

    ret1, frame1 = video1.read()
    ret2, frame2 = video2.read()

    ret = ret1 and ret2

    if ret == True:

        frame1 = cv2.resize(frame1, (640, 360))
        frame2 = cv2.resize(frame2, (640, 360))
        frame1_copy = np.copy(frame1)
        l_bound = np.array([160, 160, 160])
        u_bound = np.array([255, 255, 255])
        mask = cv2.inRange(frame1_copy, l_bound, u_bound)
        masked_image = np.copy(frame1_copy)
        masked_image[mask != 0] = [0, 0, 0]
        background = frame2[0:360, 0:640]
        background[mask == 0] = [0, 0, 0]
        final_image = background + masked_image
        cv2.imshow("output", final_image)
        cv2.imwrite(output_path+"/frame"+str(cnt)+".jpg", final_image)

        if cnt==10 or cnt==30 or cnt==50:
            frame1 = cv2.cvtColor(frame1, cv2.COLOR_BGR2RGB)
            frame2 = cv2.cvtColor(frame2, cv2.COLOR_BGR2RGB)
            final_image = cv2.cvtColor(final_image, cv2.COLOR_BGR2RGB)
            print("\nSAMPLE FRAMES:")
            plt.imshow(frame1)
            plt.show()
            plt.imshow(frame2)
            plt.show()
            plt.imshow(final_image)
            plt.show()

            if cv2.waitKey(10) == 27:
                break

        else:
            break

    video1.release()
    video2.release()
    cv2.destroyAllWindows()

```

```
[8]: video_description('Data/Q3/vid1-1.mp4')
      video_description('Data/Q3/vid2.mp4')

      !rm -rf Results/Q3/vid1_1/*
      print("\nDirectory content before chroma keying:")
      !ls -la Results/Q3/vid1_1

      chroma_key('Data/Q3/vid1-1.mp4', 'Data/Q3/vid2.mp4', "Results/Q3/vid1_1")

      print("\nDirectory content after chroma keying:")
      !ls -la Results/Q3/vid1_1
```

Video source: Data/Q3/vid1-1.mp4

FPS: 120.0

Total frames: 603

Total Duration: 5.025 seconds

Video source: Data/Q3/vid2.mp4

FPS: 25.0

Total frames: 125

Total Duration: 5.0 seconds

zsh:1: no matches found: Results/Q3/vid1_1/*

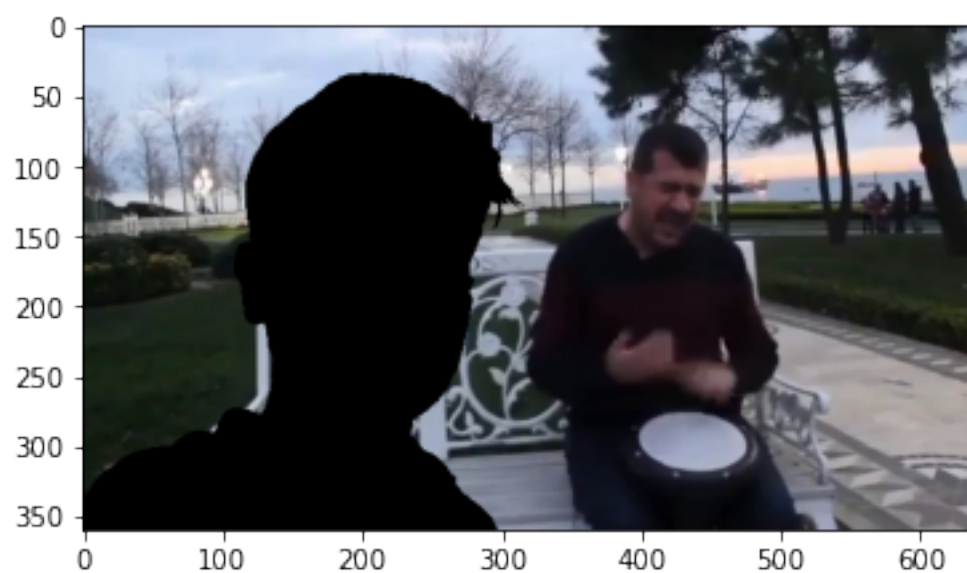
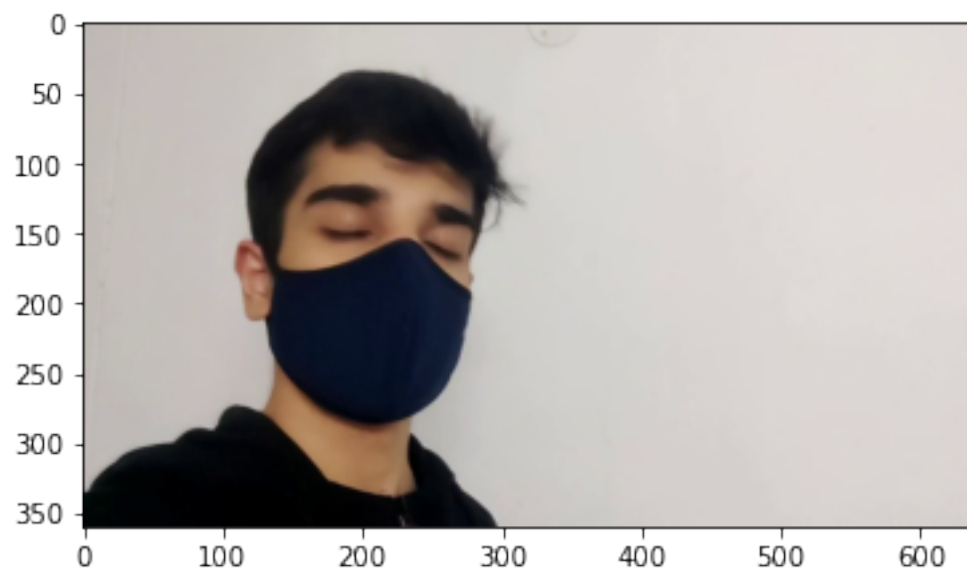
Directory content before chroma keying:

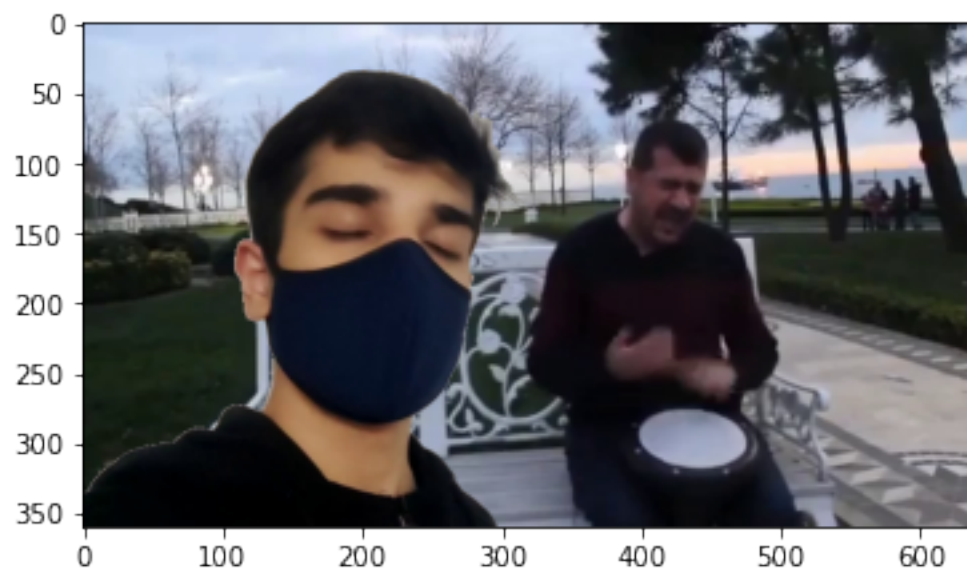
total 8

drwxrwxr-x 2 tusharc31 tusharc31 4096 Jan 17 22:50 .

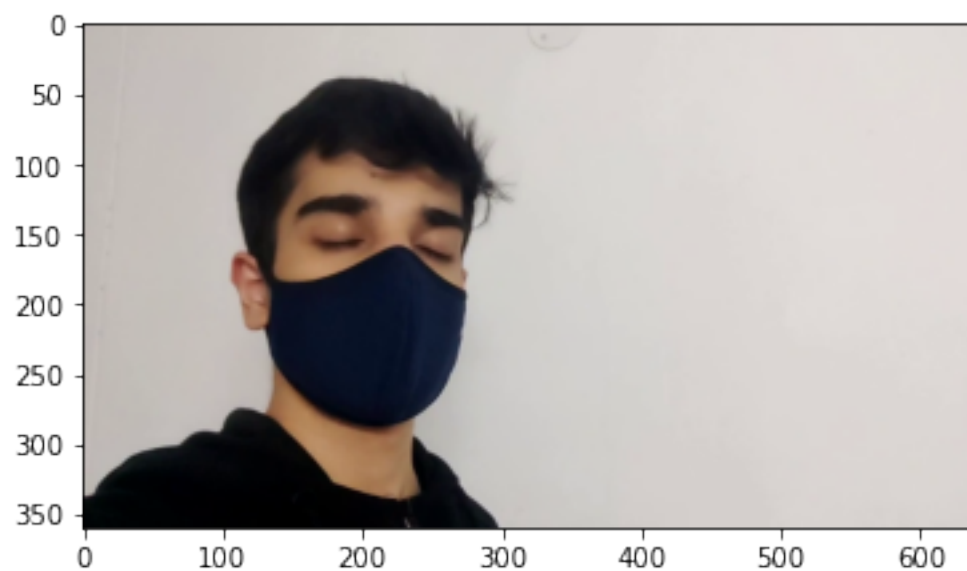
drwxrwxr-x 4 tusharc31 tusharc31 4096 Jan 17 22:51 ..

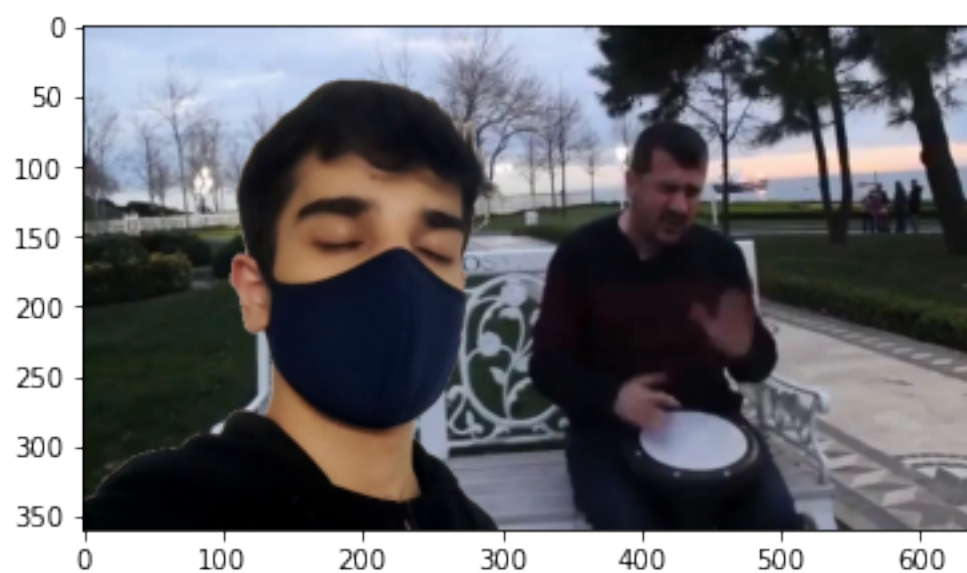
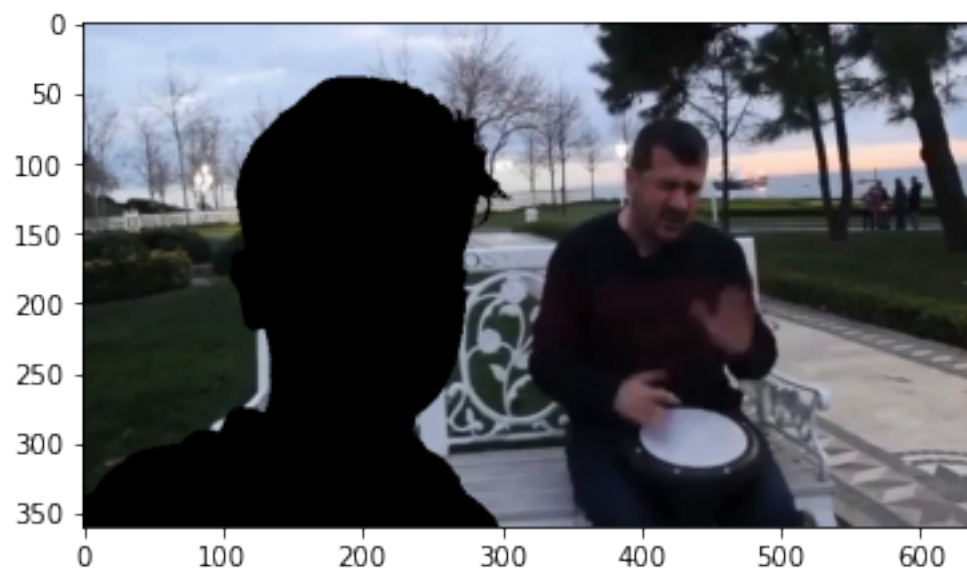
SAMPLE FRAMES:



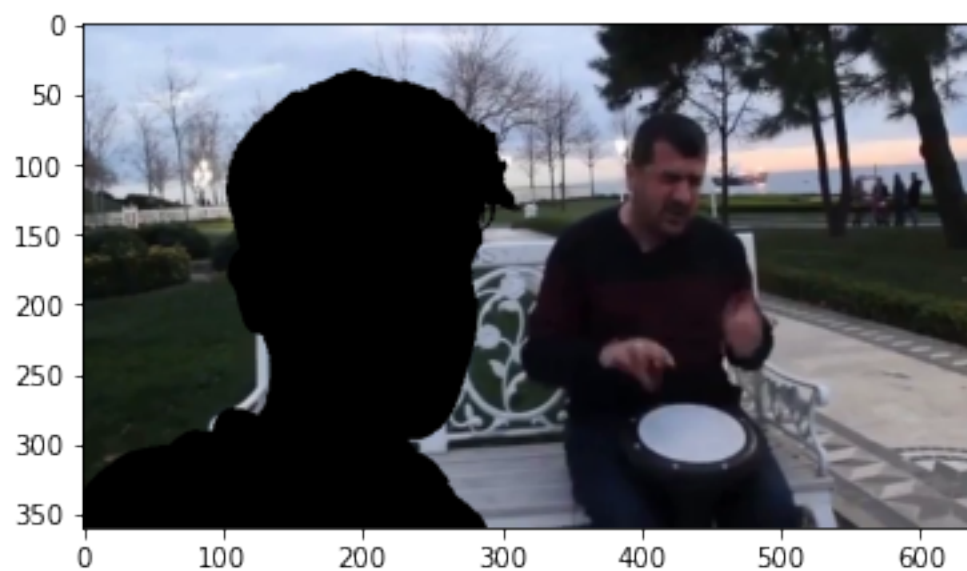
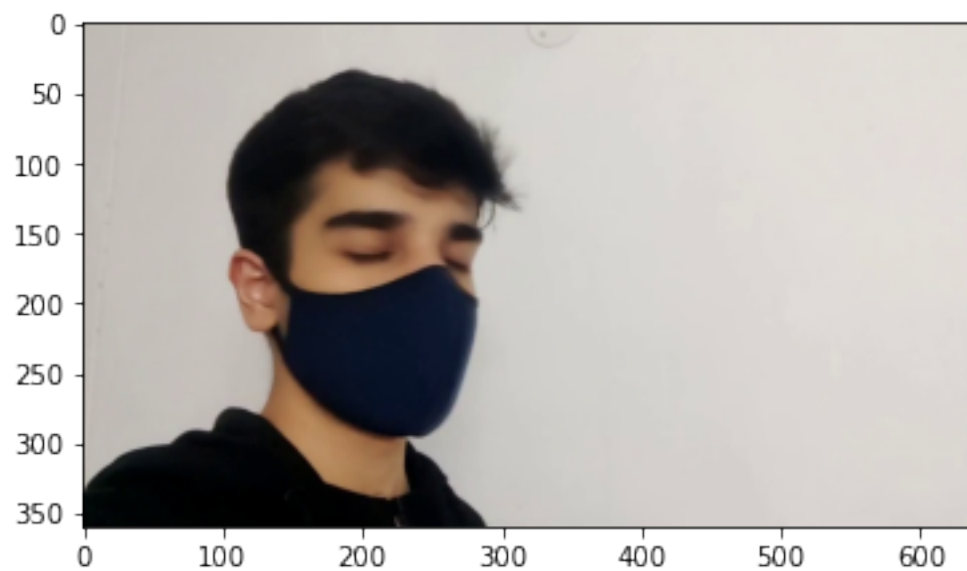


SAMPLE FRAMES:





SAMPLE FRAMES:





Directory content after chroma keying:

total 8636

```
drwxrwxr-x 2 tusharc31 tusharc31 4096 Jan 17 22:53 .
drwxrwxr-x 4 tusharc31 tusharc31 4096 Jan 17 22:51 ..
-rw-rw-r-- 1 tusharc31 tusharc31 75339 Jan 17 22:53 frame100.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75661 Jan 17 22:53 frame101.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75705 Jan 17 22:53 frame102.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75712 Jan 17 22:53 frame103.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75586 Jan 17 22:53 frame104.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75325 Jan 17 22:53 frame105.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75496 Jan 17 22:53 frame106.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75686 Jan 17 22:53 frame107.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75730 Jan 17 22:53 frame108.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75775 Jan 17 22:53 frame109.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72996 Jan 17 22:53 frame10.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75745 Jan 17 22:53 frame110.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75827 Jan 17 22:53 frame111.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75677 Jan 17 22:53 frame112.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75817 Jan 17 22:53 frame113.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75770 Jan 17 22:53 frame114.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75800 Jan 17 22:53 frame115.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75192 Jan 17 22:53 frame116.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73159 Jan 17 22:53 frame11.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73643 Jan 17 22:53 frame12.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73539 Jan 17 22:53 frame13.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73808 Jan 17 22:53 frame14.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73592 Jan 17 22:53 frame15.jpg
```

```

-rw-rw-r-- 1 tusharc31 tusharc31 73659 Jan 17 22:53 frame16.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73454 Jan 17 22:53 frame17.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73803 Jan 17 22:53 frame18.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75936 Jan 17 22:53 frame19.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73303 Jan 17 22:53 frame1.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76139 Jan 17 22:53 frame20.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 76217 Jan 17 22:53 frame21.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75894 Jan 17 22:53 frame22.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75697 Jan 17 22:53 frame23.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75416 Jan 17 22:53 frame24.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75497 Jan 17 22:53 frame25.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75574 Jan 17 22:53 frame26.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75403 Jan 17 22:53 frame27.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75027 Jan 17 22:53 frame28.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74471 Jan 17 22:53 frame29.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73298 Jan 17 22:53 frame2.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75159 Jan 17 22:53 frame30.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74991 Jan 17 22:53 frame31.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74653 Jan 17 22:53 frame32.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74617 Jan 17 22:53 frame33.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74439 Jan 17 22:53 frame34.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74542 Jan 17 22:53 frame35.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74039 Jan 17 22:53 frame36.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74593 Jan 17 22:53 frame37.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73735 Jan 17 22:53 frame38.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74160 Jan 17 22:53 frame39.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73343 Jan 17 22:53 frame3.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72770 Jan 17 22:53 frame40.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73323 Jan 17 22:53 frame41.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72421 Jan 17 22:53 frame42.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73175 Jan 17 22:53 frame43.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72809 Jan 17 22:53 frame44.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72958 Jan 17 22:53 frame45.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73149 Jan 17 22:53 frame46.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73203 Jan 17 22:53 frame47.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72611 Jan 17 22:53 frame48.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73048 Jan 17 22:53 frame49.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72856 Jan 17 22:53 frame4.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73137 Jan 17 22:53 frame50.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73559 Jan 17 22:53 frame51.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73235 Jan 17 22:53 frame52.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73255 Jan 17 22:53 frame53.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73021 Jan 17 22:53 frame54.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73094 Jan 17 22:53 frame55.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73010 Jan 17 22:53 frame56.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73286 Jan 17 22:53 frame57.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73296 Jan 17 22:53 frame58.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73338 Jan 17 22:53 frame59.jpg

```

```

-rw-rw-r-- 1 tusharc31 tusharc31 73091 Jan 17 22:53 frame5.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73555 Jan 17 22:53 frame60.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73466 Jan 17 22:53 frame61.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73571 Jan 17 22:53 frame62.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73675 Jan 17 22:53 frame63.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73619 Jan 17 22:53 frame64.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73676 Jan 17 22:53 frame65.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73446 Jan 17 22:53 frame66.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73198 Jan 17 22:53 frame67.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73464 Jan 17 22:53 frame68.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73612 Jan 17 22:53 frame69.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73309 Jan 17 22:53 frame6.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73642 Jan 17 22:53 frame70.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73838 Jan 17 22:53 frame71.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74320 Jan 17 22:53 frame72.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74019 Jan 17 22:53 frame73.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73886 Jan 17 22:53 frame74.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74041 Jan 17 22:53 frame75.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74607 Jan 17 22:53 frame76.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74639 Jan 17 22:53 frame77.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74492 Jan 17 22:53 frame78.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74542 Jan 17 22:53 frame79.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73208 Jan 17 22:53 frame7.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74295 Jan 17 22:53 frame80.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74491 Jan 17 22:53 frame81.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74526 Jan 17 22:53 frame82.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74560 Jan 17 22:53 frame83.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74763 Jan 17 22:53 frame84.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74839 Jan 17 22:53 frame85.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74751 Jan 17 22:53 frame86.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74770 Jan 17 22:53 frame87.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74741 Jan 17 22:53 frame88.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74814 Jan 17 22:53 frame89.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73097 Jan 17 22:53 frame8.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74975 Jan 17 22:53 frame90.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75202 Jan 17 22:53 frame91.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74910 Jan 17 22:53 frame92.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74838 Jan 17 22:53 frame93.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74966 Jan 17 22:53 frame94.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75405 Jan 17 22:53 frame95.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75357 Jan 17 22:53 frame96.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75611 Jan 17 22:53 frame97.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75543 Jan 17 22:53 frame98.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75158 Jan 17 22:53 frame99.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73178 Jan 17 22:53 frame9.jpg

```

```
[9]: video_description('Data/Q3/vid1-2.mp4')
video_description('Data/Q3/vid2.mp4')

!rm -rf Results/Q3/vid1_2/*
print("\nDirectory content before chroma keying:")
!ls -la Results/Q3/vid1_2

chroma_key('Data/Q3/vid1-2.mp4', 'Data/Q3/vid2.mp4', "Results/Q3/vid1_2")

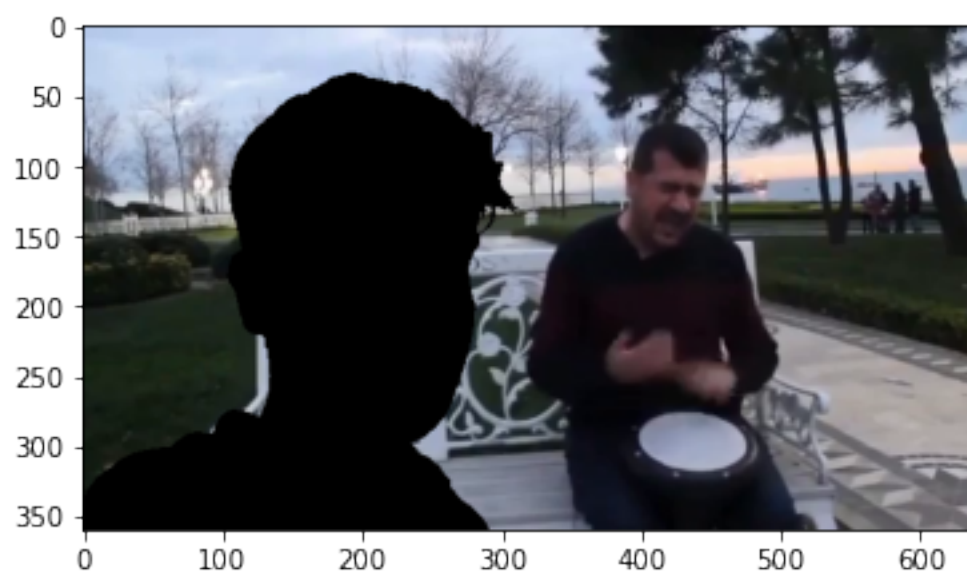
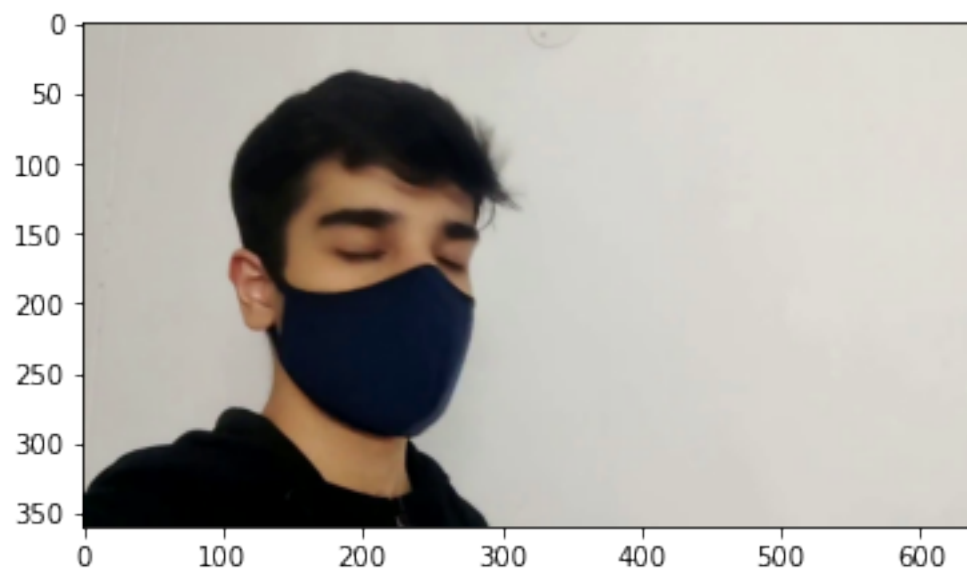
print("\nDirectory content after chroma keying:")
!ls -la Results/Q3/vid1_2
```

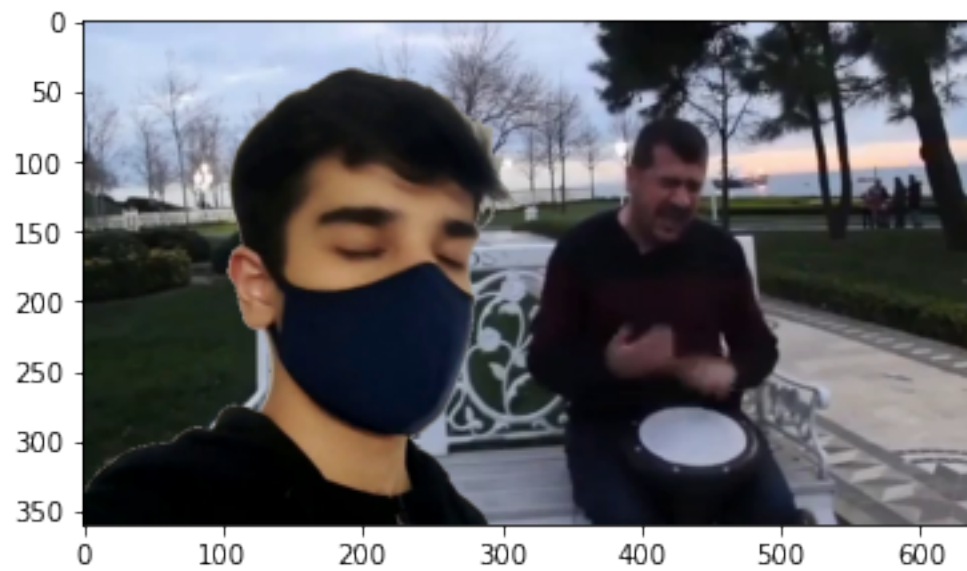
Video source: Data/Q3/vid1-2.mp4
FPS: 24.0
Total frames: 119
Total Duration: 4.958333333333333 seconds

Video source: Data/Q3/vid2.mp4
FPS: 25.0
Total frames: 125
Total Duration: 5.0 seconds

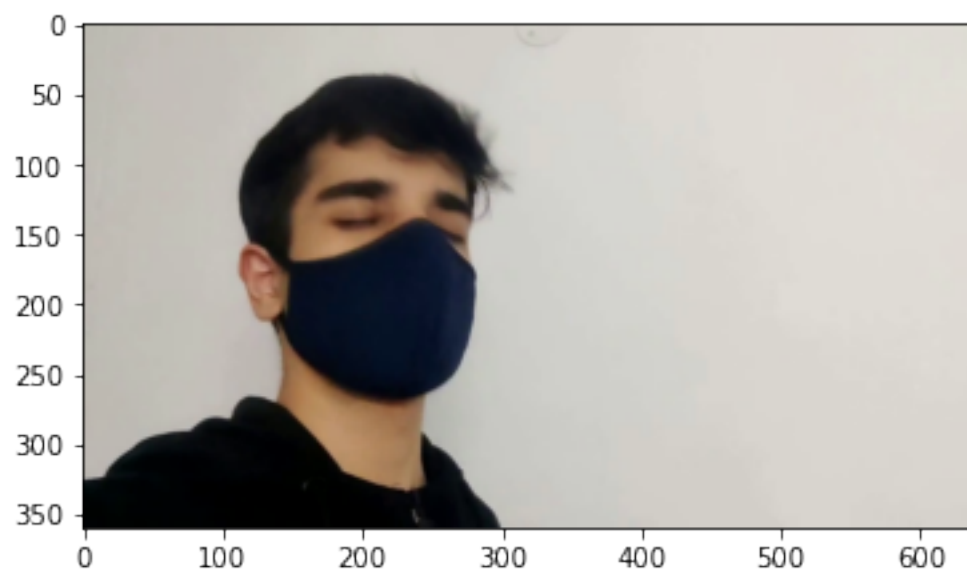
Directory content before chroma keying:
total 8
drwxrwxr-x 2 tusharc31 tusharc31 4096 Jan 17 22:53 .
drwxrwxr-x 4 tusharc31 tusharc31 4096 Jan 17 22:51 ..

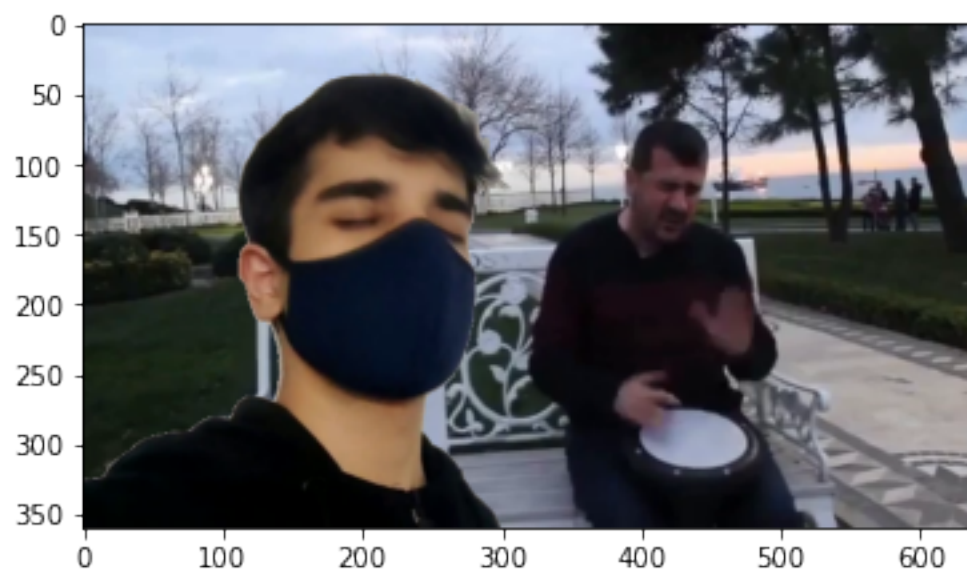
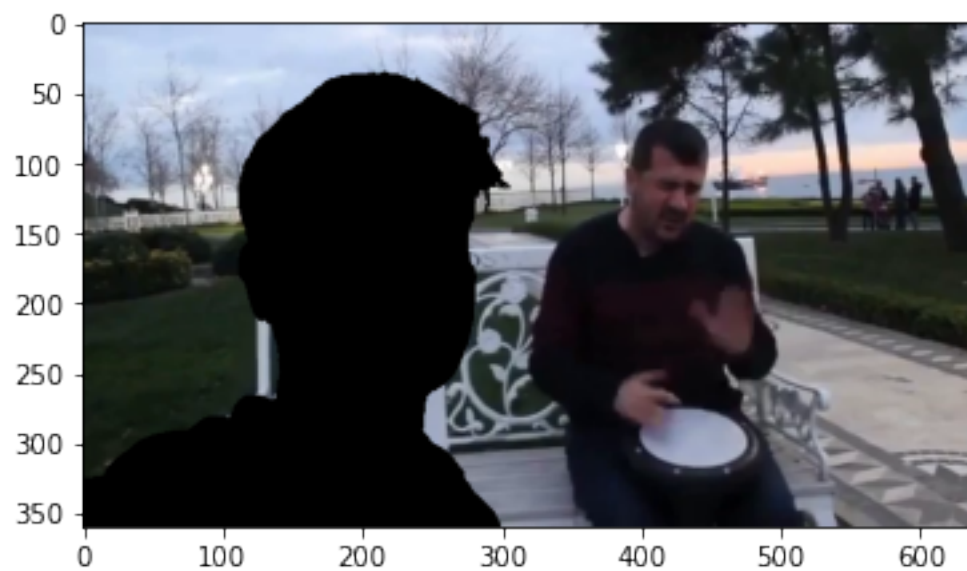
SAMPLE FRAMES:



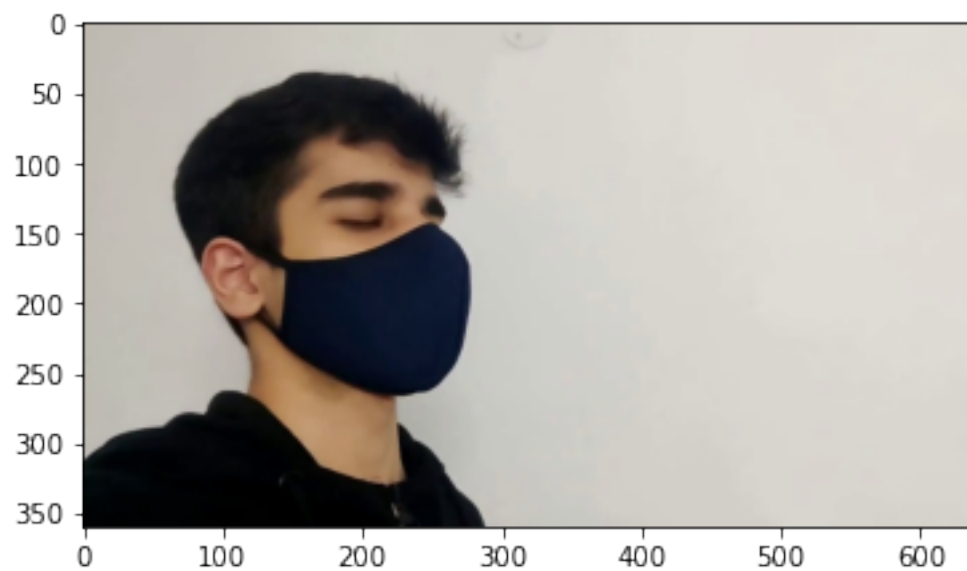


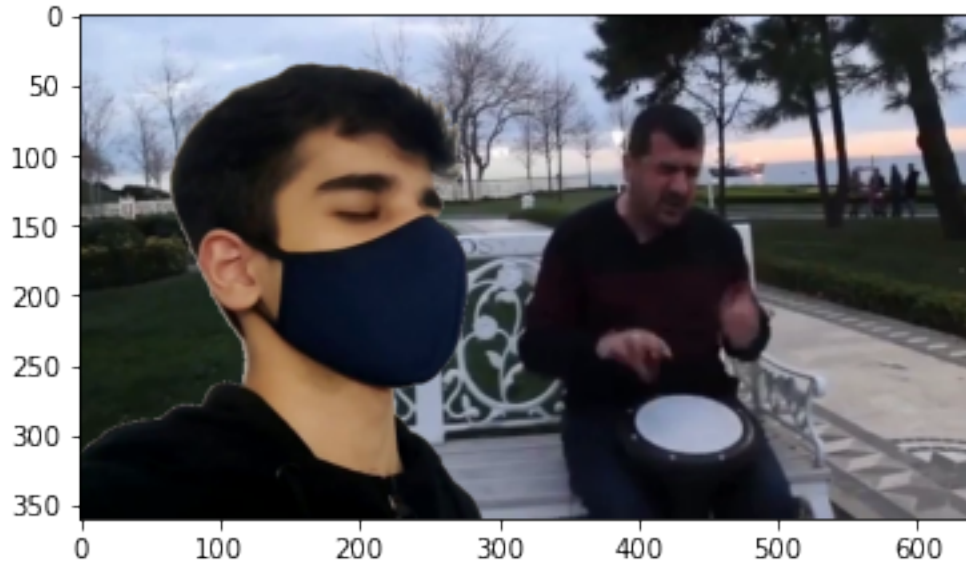
SAMPLE FRAMES:





SAMPLE FRAMES:





Directory content after chroma keying:

total 8568

```
drwxrwxr-x 2 tusharc31 tusharc31 4096 Jan 17 22:53 .
drwxrwxr-x 4 tusharc31 tusharc31 4096 Jan 17 22:51 ..
-rw-rw-r-- 1 tusharc31 tusharc31 74244 Jan 17 22:53 frame100.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74576 Jan 17 22:53 frame101.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74899 Jan 17 22:53 frame102.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75038 Jan 17 22:53 frame103.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75321 Jan 17 22:53 frame104.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75204 Jan 17 22:53 frame105.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75341 Jan 17 22:53 frame106.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75767 Jan 17 22:53 frame107.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75330 Jan 17 22:53 frame108.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75040 Jan 17 22:53 frame109.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 71906 Jan 17 22:53 frame10.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74827 Jan 17 22:53 frame110.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74408 Jan 17 22:53 frame111.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73850 Jan 17 22:53 frame112.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73643 Jan 17 22:53 frame113.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73599 Jan 17 22:53 frame114.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73495 Jan 17 22:53 frame115.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73414 Jan 17 22:53 frame116.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 71802 Jan 17 22:53 frame11.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 71194 Jan 17 22:53 frame12.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 70746 Jan 17 22:53 frame13.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 71364 Jan 17 22:53 frame14.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 71317 Jan 17 22:53 frame15.jpg
```

```

-rw-rw-r-- 1 tusharc31 tusharc31 71555 Jan 17 22:53 frame16.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 71606 Jan 17 22:53 frame17.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72087 Jan 17 22:53 frame18.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74473 Jan 17 22:53 frame19.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 71378 Jan 17 22:53 frame1.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74671 Jan 17 22:53 frame20.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74847 Jan 17 22:53 frame21.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74502 Jan 17 22:53 frame22.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74329 Jan 17 22:53 frame23.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73344 Jan 17 22:53 frame24.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72718 Jan 17 22:53 frame25.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73206 Jan 17 22:53 frame26.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73073 Jan 17 22:53 frame27.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72632 Jan 17 22:53 frame28.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72175 Jan 17 22:53 frame29.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 71931 Jan 17 22:53 frame2.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72842 Jan 17 22:53 frame30.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72892 Jan 17 22:53 frame31.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73099 Jan 17 22:53 frame32.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73216 Jan 17 22:53 frame33.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73307 Jan 17 22:53 frame34.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73524 Jan 17 22:53 frame35.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72728 Jan 17 22:53 frame36.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72728 Jan 17 22:53 frame37.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72098 Jan 17 22:53 frame38.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72831 Jan 17 22:53 frame39.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72267 Jan 17 22:53 frame3.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 70898 Jan 17 22:53 frame40.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 71214 Jan 17 22:53 frame41.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 70294 Jan 17 22:53 frame42.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 71466 Jan 17 22:53 frame43.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 71304 Jan 17 22:53 frame44.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 71546 Jan 17 22:53 frame45.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72264 Jan 17 22:53 frame46.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72461 Jan 17 22:53 frame47.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72480 Jan 17 22:53 frame48.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72658 Jan 17 22:53 frame49.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72430 Jan 17 22:53 frame4.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73068 Jan 17 22:53 frame50.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73403 Jan 17 22:53 frame51.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73540 Jan 17 22:53 frame52.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73440 Jan 17 22:53 frame53.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73222 Jan 17 22:53 frame54.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73138 Jan 17 22:53 frame55.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72877 Jan 17 22:53 frame56.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73444 Jan 17 22:53 frame57.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73717 Jan 17 22:53 frame58.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74247 Jan 17 22:53 frame59.jpg

```

```

-rw-rw-r-- 1 tusharc31 tusharc31 72780 Jan 17 22:53 frame5.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74819 Jan 17 22:53 frame60.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74685 Jan 17 22:53 frame61.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75278 Jan 17 22:53 frame62.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75522 Jan 17 22:53 frame63.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75659 Jan 17 22:53 frame64.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75527 Jan 17 22:53 frame65.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74967 Jan 17 22:53 frame66.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74351 Jan 17 22:53 frame67.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73447 Jan 17 22:53 frame68.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73421 Jan 17 22:53 frame69.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73059 Jan 17 22:53 frame6.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73146 Jan 17 22:53 frame70.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73404 Jan 17 22:53 frame71.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73489 Jan 17 22:53 frame72.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73262 Jan 17 22:53 frame73.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73636 Jan 17 22:53 frame74.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73828 Jan 17 22:53 frame75.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74422 Jan 17 22:53 frame76.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74522 Jan 17 22:53 frame77.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74504 Jan 17 22:53 frame78.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74503 Jan 17 22:53 frame79.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72977 Jan 17 22:53 frame7.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74290 Jan 17 22:53 frame80.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74336 Jan 17 22:53 frame81.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74470 Jan 17 22:53 frame82.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74328 Jan 17 22:53 frame83.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73892 Jan 17 22:53 frame84.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 73790 Jan 17 22:53 frame85.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74090 Jan 17 22:53 frame86.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74519 Jan 17 22:53 frame87.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74850 Jan 17 22:53 frame88.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75407 Jan 17 22:53 frame89.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72809 Jan 17 22:53 frame8.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75579 Jan 17 22:53 frame90.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75487 Jan 17 22:53 frame91.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75331 Jan 17 22:53 frame92.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75247 Jan 17 22:53 frame93.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75308 Jan 17 22:53 frame94.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 75517 Jan 17 22:53 frame95.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74635 Jan 17 22:53 frame96.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74364 Jan 17 22:53 frame97.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74294 Jan 17 22:53 frame98.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 74118 Jan 17 22:53 frame99.jpg
-rw-rw-r-- 1 tusharc31 tusharc31 72710 Jan 17 22:53 frame9.jpg

```

[]: