Assignment: 0

Name: Nitin Kandpal

Roll Number: 2018802004

Part1: Installation of Opencv

Installing python OpenCv in linux :

1. curl
   -O https://repo.anaconda.com/archive/Anaconda3-5.2.0-Linux-x86_64.sh
2. bash Anaconda3-5.2.0-Linux-x86_64.sh
3. sudo gedit ~/.bashrc
4. export PATH=/home/lord/anaconda3/bin:$PATH
5. source ~/.bashrc
6. conda update conda
7. conda update anaconda
8. conda install -c menpo opencv3
9. spyder apps

To test the installation open anaconda spyder IDE and import cv2.

Part2: Croma Keying with OpenCV :

1 Video to images:

We need to read the video from given path and save them as image frames

----------Video to image CODE----------

```
@author: kandpani
"""

import numpy as np
import cv2
path_to_video = 'C:/LORD/video.MP4’
out_img = 'C:/LORD/images/'
camera = cap = cv2.VideoCapture(path_to_video)
count =0
while camera.isOpened():

    I,image = camera.read()
    size = image.shape[1], image.shape[0]

    cv2.imwrite(out_img+str(count)+'.JPEG',image)
    cv2.imshow('frame',image)
    k = cv2.waitKey(1) & 0xff
    if k == 27:
        break
    if (count > 100):
        break
    count = count+1
    print (count)
cv2.destroyAllWindows()
```

_____code end_____

Some outputs:

Images to Video:

Read the images from folder and save them as video file with controlled fps.

_____images to video code_____

```
import numpy as np
import cv2
import glob
folder = 'C:/LORD/images/*jpeg'
img_list= sorted(glob.glob(folder))
fourcc = cv2.VideoWriter_fourcc(*'MJPG')
vid = None
out_vid = 'C:/LORD/image_video1.avi'
fs = 25
count =0
for img_path in img_list:
        image = cv2.imread(img_path)
        size = image.shape[1], image.shape[0]
        cv2.imshow('frame',image)
        if vid is None:
                vid = cv2.VideoWriter(out_vid,fourcc,fs,size,True)
        vid.write(image)
        k = cv2.waitKey(1) & 0xff
        if k == 27:
```

```
            break
        if (count > 100):
            vid.release()
            break
        count = count+1
        print (count)
cv2.destroyAllWindows()
vid.release()
```

_____code end here _____

Below is the link of full google drive video

https://drive.google.com/open?id=1IdBJdtYIzilyT3HasFKJChWYh-qi0Hcq

Capturing images and video from camera:

We need to display and save the frames from usb camera feed.

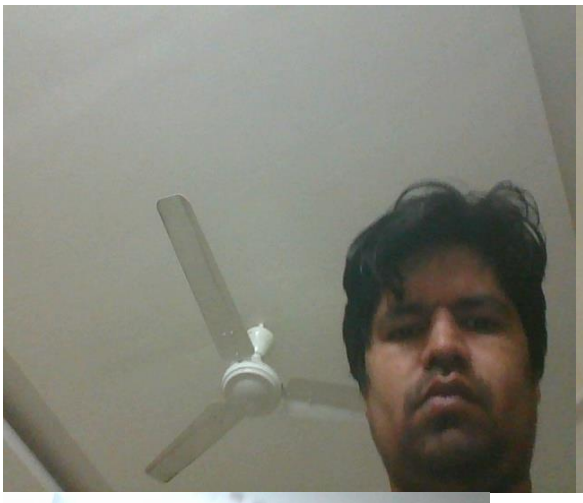
_____code start here _____

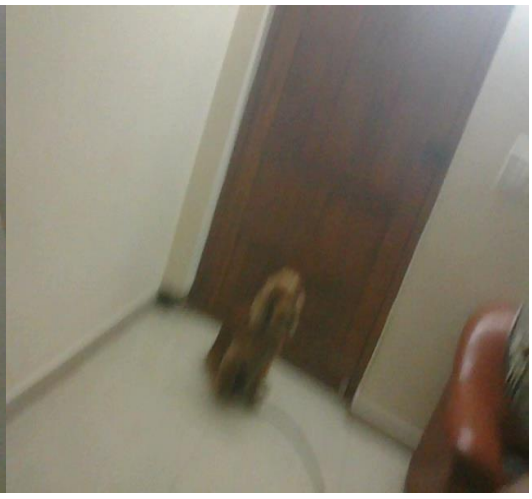
```
@author: kandpani
"""
import numpy as np
import cv2
camera = cap = cv2.VideoCapture(0)
savepath1 = 'C:/LORD/images/'
fourcc = cv2.VideoWriter_fourcc(*'MJPG')
vid = None
out_vid = 'C:/LORD/videos.avi'
count =0
while camera.isOpened():
    I,image = camera.read()
    size = image.shape[1], image.shape[0]
    cv2.imwrite(savepath1+str(count)+'.JPEG',image)
    cv2.imshow('frame',image)
```

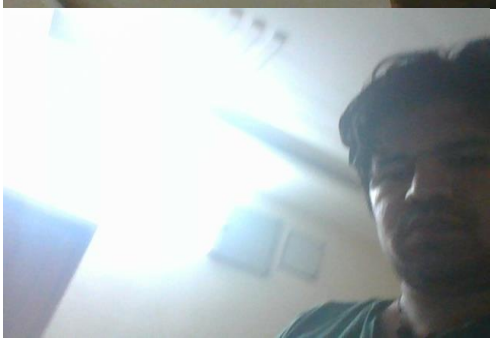
```
        if vid is None:
            vid = cv2.VideoWriter(out_vid,fourcc,25,size,True)
        vid.write(image)
        k = cv2.waitKey(1) & 0xff
        if k == 27:
            vid.release()
            break
        if (count > 200):
            vid.release()
            break
        count = count+1
        print (count)
cv2.destroyAllWindows()
cap.release()
```

_____code end here _____

Some output:







Croma key:

Take the videos or images one with croma key and replace the cromakey object to other video.

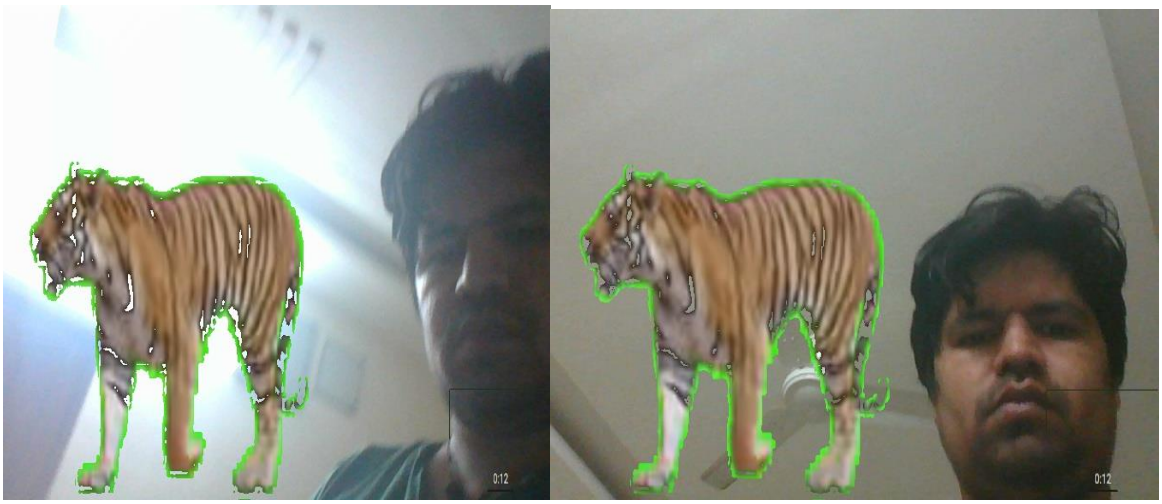
_____Croma key code start here _____

```
@author: kandpani
"""
import cv2
import numpy as np
def ChomaKey(fg,bg ,key_color):
        channel = 0
    #check the image is gray or RGB
        if(len(bg.shape)>2):
            rows,cols,channel = bg.shape
        else:
            rows,cols = bg.shape
        out_image = np.zeros([rows,cols,channel],dtype='uint8')
        #out_image = bg.copy()
        for i in range(rows):
            for j in range(cols):
                ## if fg color dont match exactly with key color replace the
color
                if((abs(fg[i,j,0]-key_color[0]) > 15) &
(abs(fg[i,j,1]-key_color[1]) > 15) & (abs(fg[i,j,2]-key_color[2]) > 15)):
                    #print ("nitin")
                    out_image[i,j,0] = fg[i,j,0]
                    out_image[i,j,1] = fg[i,j,1]
                    out_image[i,j,2] = fg[i,j,2]

                else:
                    out_image[i,j,0] = bg[i,j,0]
                    out_image[i,j,1] = bg[i,j,1]
                    out_image[i,j,2] = bg[i,j,2]
```

```
            return out_image


fg_path = 'C:/LORD/croma_key/'
bg_path = 'C:/LORD/fore_ground/croma_key.avi'
out_path =    'C:/LORD/croma_out/croma_out.avi'
fourcc = cv2.VideoWriter_fourcc(*'MJPG')
vid = None
camera = cap = cv2.VideoCapture(bg_path)
fg_img = cv2.imread(fg_path+ '3.png')
count =0
while camera.isOpened():
      I,bg_img = camera.read()
      if(I):
            size = bg_img.shape[1], bg_img.shape[0]
            num = count %3
            fg_img = cv2.imread(fg_path+ str(num+1)+ '.png')
            [h,w,c]    = bg_img.shape
            fg_img = cv2.resize(fg_img,(w,h))
            key_color = [10, 255, 47]
            croma_image = ChomaKey(fg_img,bg_img ,key_color)
            count = count+1
            print(count)
            if vid is None:
                  vid = cv2.VideoWriter(out_path,fourcc,25,size,True)
            vid.write(croma_image)
vid.release()
#cv2.destroyAllWindows()
cap.release()
```

_____code end here _____

Some output :



Below is the full video link of google drive

https://drive.google.com/open?id=1zXvGeJn7Df51vodiz951gvt-m9uboz5D