

Name: Jay Goyal

Roll no.: C017

Semester: VI

Program: B.Tech

Branch: EXTC

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Experiment Number: 9

Aim:

- a. To study basic PYTHON commands used in video processing
- b. To extract a particular frame from the movie, process the frame and see its effect in the new video.

Conclusion: Outcome:

From this experiment we learnt about

1. To read and play digital video.
2. Convert individual frame as image.
3. Process the individual frames
4. Replace the processed frame in the original video

```
import cv2
import numpy as np
import IPython.display as ipd
from moviepy.editor import *
from google.colab.patches import cv2_imshow
import matplotlib.pyplot as plt

Imageio: 'ffmpeg-linux64-v3.3.1' was not found on your computer; downloading it now.
Try 1. Download from https://github.com/imageio/imageio-binaries/raw/master/ffmpeg/ffmpeg-linux64-v3.3.1 (43.8 MB)
Downloading: 45929032/45929032 bytes (100.0%)
Done
File saved as /root/.imageio/ffmpeg/ffmpeg-linux64-v3.3.1.
```

```
#Play the video file using moviepy
from moviepy.editor import *
clip=VideoFileClip("/content/garden_sif.y4m")
clip.ipynon_display()
```

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#Can obtain sample videos on the following site
#<https://media.xiph.org/video/derf/>

```
# Read the video and save the frames
new = cv2.VideoCapture('/content/garden_sif.y4m')
```

```
# checks whether frames were extracted
temp = 1
images=[]
count=0
while temp:
```

```
    # new object calls read
    # function extract frames
    temp, image = new.read()
    #Write this if loop to make the frame numbering length equal to three
    if len(str(count))==1:
        cv2.imwrite("/content/garden1/frame" + "00"+str(count)+".tif" ,image)
    elif len(str(count))==2:
        cv2.imwrite("/content/garden1/frame" + "0"+str(count)+".tif" ,image)
    else:
        cv2.imwrite("/content/garden1/frame" + str(count)+".tif" ,image)
```

```
# Saves the frames in images array
images.append(image)
count+=1
```

```
new.release()
```

```
#Blur the frames between 25 to 50
for i in range(25,51):
    img=cv2.imread("/content/garden1/frame" + "0" +str(i) + ".tif") #Read the frame
```

```
kernel = np.ones((5,5),np.float32)/25 #Create a smoothing/averaging mask
img_smooth= cv2.filter2D(img,-1,kernel) #Perform blurring
cv2.imwrite("/content/garden1/frame" + "0" +str(i) + ".tif", img_smooth) #Write the blurred frame in with the same name

# Reconstruct video from frames
import cv2
import numpy as np
import glob


img_array = []

for filename in glob.glob('/content/garden1/*.tif'):
    img = cv2.imread(filename)
    height, width, layers = img.shape
    size = (width,height)
    img_array.append(img)

out = cv2.VideoWriter('/content/project.avi',cv2.VideoWriter_fourcc(*'DIVX'), 15, size)

for i in range(len(img_array)):
    out.write(img_array[i])
out.release()

#Play the video file using moviepy
from moviepy.editor import *
clip=VideoFileClip("/content/project.avi")
clip.ipython_display()
```

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