**TASK-1**: VIDEO CAPTURING AND FLIPPING

**CODE**:

1. **VERTICAL FLIP**

import cv2

import numpy as np

cap = cv2.VideoCapture(0)

count = 0

while True:

ret, frame = cap.read()

if count==0:

cv2.imshow('frame', frame)

count = 1

else:

vflip = cv2.flip(frame, 0)

cv2.imshow('frame', vflip)

count = 0

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

cap.release()

cv2.destroyAllWindows()

2. **HORIZONTAL FLIP**

import cv2

import numpy as np

cap = cv2.VideoCapture(0)

count = 0

while True:

ret, frame = cap.read()

if count==0:

cv2.imshow('frame', frame)

count = 1

else:

hflip = cv2.flip(frame, 1)

cv2.imshow('frame', hflip)

count = 0

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

cap.release()

cv2.destroyAllWindows()

3. **VERTICAL FLIP EVERY N FRAMES:**

import cv2

import numpy as np

cap = cv2.VideoCapture(0)

count = None

while True:

ret, frame = cap.read()

cv2.imshow('frame', frame)

#\*\* Vertical flipping every 50 frames \*\*

if count==50 or count==None:

vnflip = cv2.flip(frame, 0)

cv2.imshow('flip', vnflip)

count = 0

cv2.imshow('flip', frame)

count += 1

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

cap.release()

cv2.destroyAllWindows()

**MEANING**:

The first sub-task asks to flip the video feed vertically, which is achieved by using the cv2.flip() function which takes the frame to be flipped and a flag (0, 1, -1) as arguments.

(“0” flag flips the image vertically, “1” flag flips horizontally, and “-1” flag flips both vertically and horizontally)

The second sub-task was to flip the feed horizontally which was achieved by putting in “1” flag in the argument list

The third sub-task asks to flip the feed every “n” upright frames( n taken as 50 ).

To count the number of frames, a “count” variable is used inside a for loop. Everytime the count hits 50, an if condition is executed where the flipped frame is displayed until a key is pressed, after which both the feeds continue showing upright frames until the next 50 frames have passed.

**PROBLEMS**:

I considered “flipping” as a 180 degree “rotation”.

**SOLUTIONS**:

I searched for an approach which rotated the image by a certain angle

lst = frame.shape

rows = lst[0]

cols = lst[1]

M = cv2.getRotationMatrix2D((rows/2,cols/2), 180, 1)

dst = cv2.warpAffine(frame,M,(cols,rows))

v2.imshow('flip', dst)

This rotated the feed by 180 degrees

After the long approach, I searched for any inbuilt function which did the same thing as above, after which I found cv2.flip() and cv2.rotate() functions. Then I realized the mistake in my approach and corrected the code to “flip” the frames rather than “rotate” them.