Thank you Team for writting to me. The given task is related to image processing. As mentioned in the task problem statement, I have attached the python script for the Generating road without vehicle by averaging frames.

As the technique is already mention “averaging frame” for that we can use two commands 1) *accumulateWeighted* which I have used in this code 2) *RunningAvg*

**Problem: Generate road without vehicle by averaging frames**

What to submit:

a. Source code of your python script (either in email or link to your github repo)

b. Output of your program on the example video provided

c. List of websites/articles which you found helpful while doing your search

d. A small writeup

Write Up:

This script exctracts the background from the moving object frames.

The technique used is averaging the frames using the command

***“cv2.accumulateWeighted(src, dst, alpha[, mask]) → None”***

**Parameters:**

src – Input image as 1- or 3-channel, 8-bit or 32-bit floating point.

dst – Accumulator image with the same number of channels as input image, 32-bit or 64- bit floating-point.

alpha – Weight of the input image.

mask – Optional operation mask.

The function calculates the weighted sum of the input image src and the accumulator dst so that dst becomes a running average of a frame sequence:

**dst(x,y) <- (1- alpha) \* dst(x,y) + alpha \* src(x,y)**

**Useful Websites/Article**

<https://www.analyticsvidhya.com/blog/2020/04/vehicle-detection-opencv-python/>

<https://docs.opencv.org/3.4/dd/d9e/classcv_1_1VideoWriter.html>

<https://docs.opencv.org/4.2.0/dd/d43/tutorial_py_video_display.html>

<https://stackoverflow.com/questions/11561912/opencv-runningavg-implementation>

[https://docs.opencv.org/2.4/modules/imgproc/doc/motion\_analysis\_and\_object\_tracking.html?highlight=accumulate#accumulateweighted](https://docs.opencv.org/2.4/modules/imgproc/doc/motion_analysis_and_object_tracking.html?highlight=accumulate" \l "accumulateweighted)

<http://opencvpython.blogspot.com/2012/07/background-extraction-using-running.html>

<https://stackoverflow.com/questions/33631489/error-during-saving-a-video-using-python-and-opencv>

**Steps to genetate the road without vehicle by averaging frames**

#Step\_1 : Capture the Video frames

#Steps 2 :Read the frames from the video\_frames

# Step 3 : Pre-process the frames like resize and intialization other variables (optional)

# Step\_4 Read until video is completed and calculate the accumulateWeighteds average of all frames

#Step\_5 Calculates the running average over the input image

#Step\_6 : Save the resulted frames as a Video output

#Step 7 Release the video capture object and destroy all windows