

Project 1 – Report

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NOTE: I gained the access to course on 1st Feb, hence the late submission.

Short Description: During the assignment I learned how to set up open CV on C++ on my machine and learned how to get images from files and how they are stored. Next, I learnt how to access video capture devices and load live stream. After which we manipulated the video stream to add filters to it. I learnt about a few filters which we commonly use and understood how they work. Got some Hands-on experience playing with filters and live stream.

Required Images:

1. Task 3:

Display greyscale live video



ORIGINAL



cvtColor VERSION

$$\begin{aligned} \text{RGB to Gray:} \\ (0.299 * \text{R}) + (0.587 * \text{G}) + (0.114 * \text{B}) \end{aligned}$$

These weights are used to calculate a single intensity value for each pixel in the grayscale image.

2. TASK 4:

Display alternative greyscale live video

I have decided to calculate the greyscale value by getting the avg of **R** **G** **B** values.



Custom Function

$$\begin{aligned} \text{RGB to Gray:} \\ ((\text{R}) + (\text{G}) + (\text{B}))/3 \end{aligned}$$

3. TASK 5:

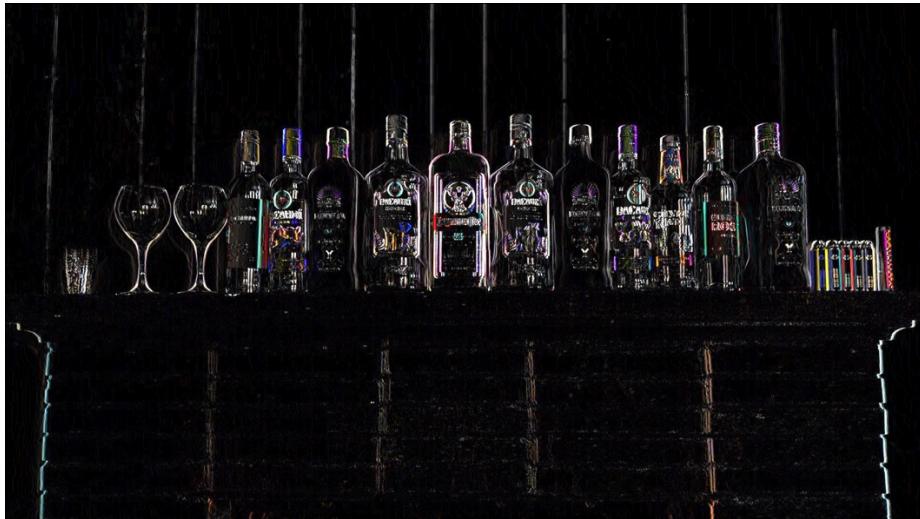
Implement a 5x5 Gaussian filter as separable 1x5 filters.



Blurred Version (on zooming in we can notice the blur effect)

4. Implement a function that generates a gradient magnitude image from the X and Y Sobel images.

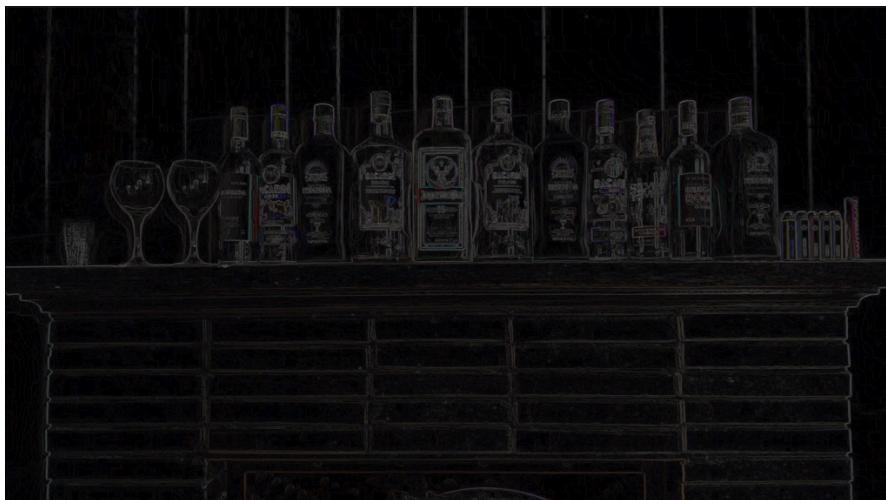
i) Sobel X



ii) Sobel Y



iii) Gradient Magnitude from X & Y Sobel



5. Implement a function that blurs and quantizes a color image



6. Implement a live video cartoonization function using the gradient magnitude and blur/quantize filters.



7. Pick another effect to implement on your video.

I have decided to implement the brightness filter.
We can increase as well as decrease the brightness.

