Brightness & Contrast Increase

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1. Report

1.1 Process

I worked at first with a grayscale image in order to make it easier on myself when first starting out. It took me a while before I realized that the histogram equalization wasn't the function that created the histogram and that histogram calculation was the one that did it. The trackbars to change the brightness and contrast were easier to figure out in comparison. The terminal will show a set of instructions on how to use the program to make it easier for the user.

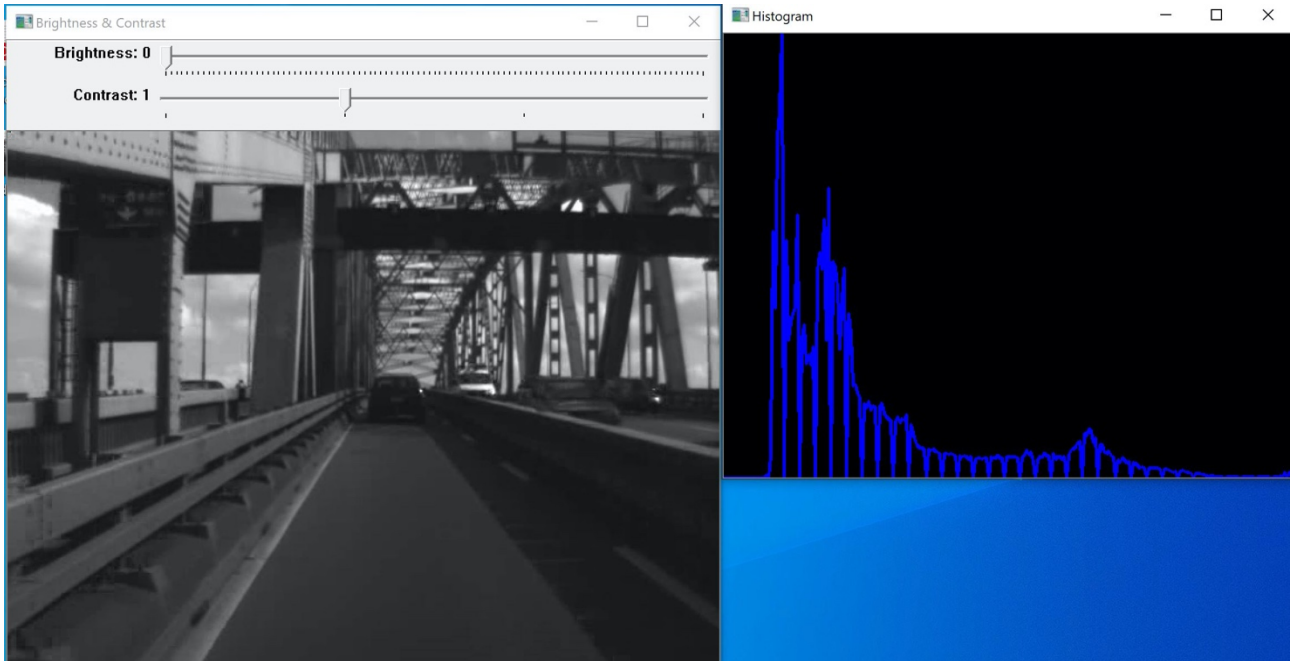

Figure 1. Histogram with normal unedited video

1.2 Results

As you can see from the figure below (fig2, fig3) the histogram changes depending on the amount of contrast/brightness applied to the video. The video will start with the preset brightness and contrast and if the user increases the brightness/contrast the video will then be increased/decreased the video from that point will be changed. The video will play depending on the amount of time that it being played when being edited.

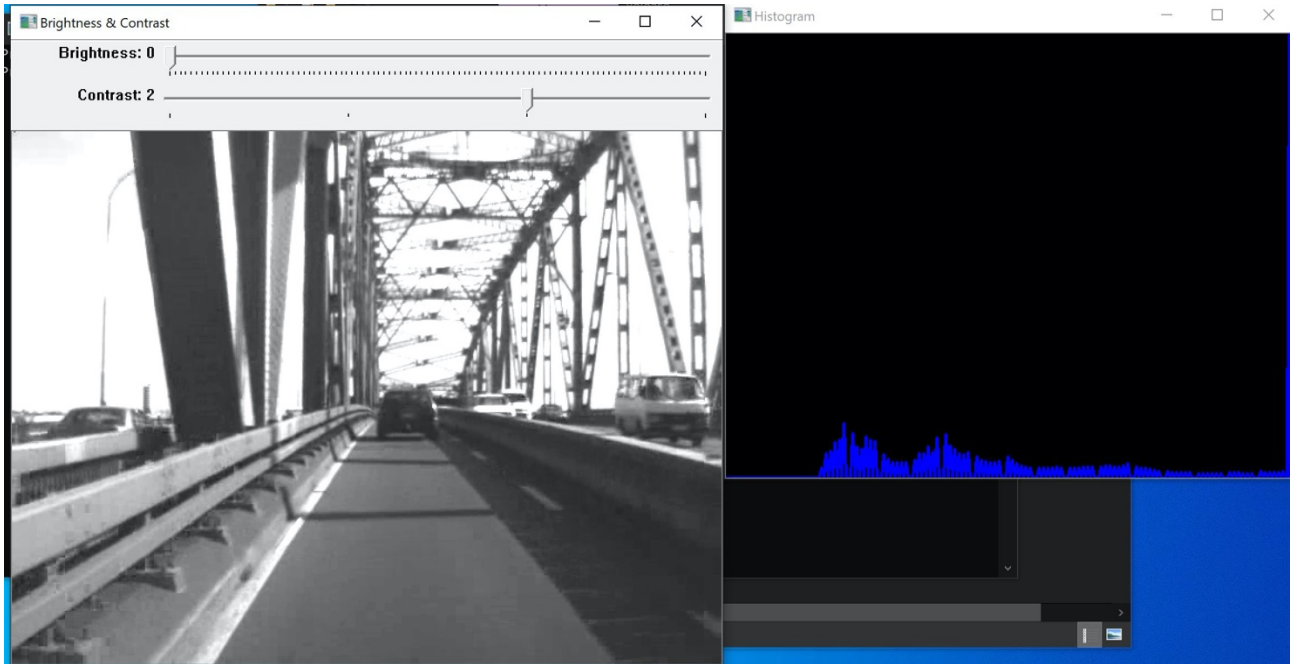

Figure 2. Histogram with increased contrast

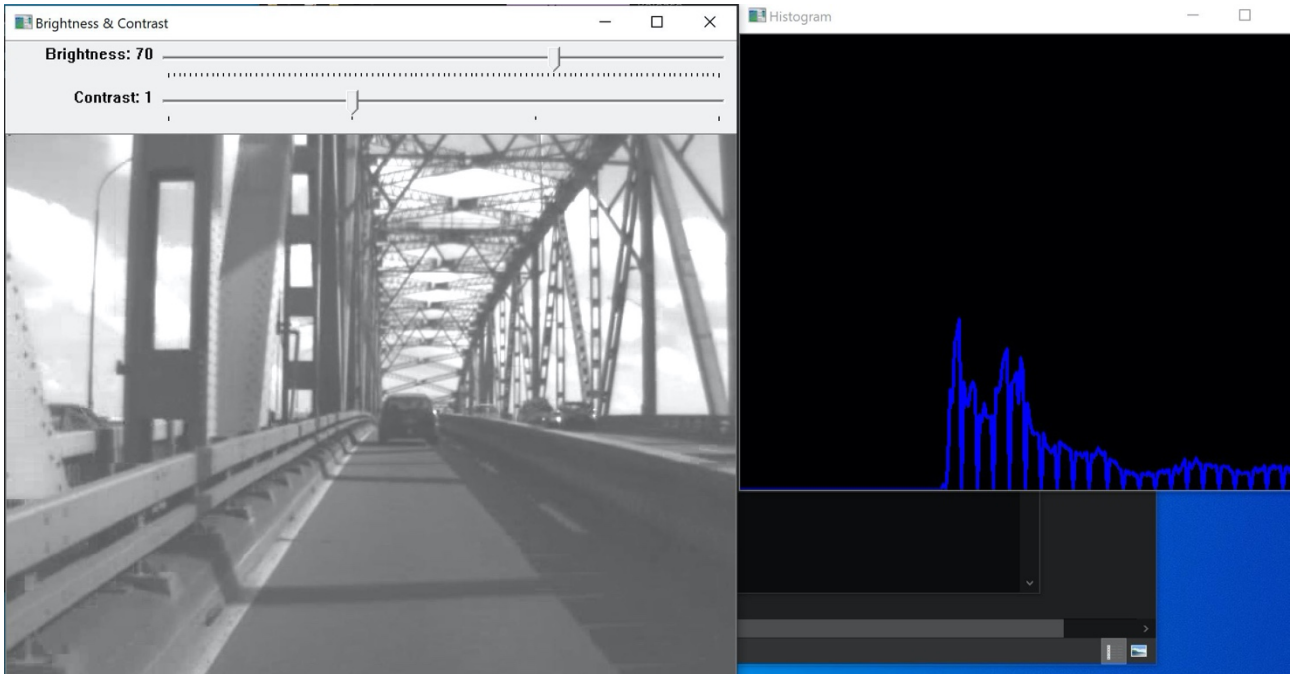

Figure 3. Histogram with increased Brightness

1.3 Product Scope

In this project the objective was to change the brightness and contrast of a grayscale video using either trackbars or a curve. Once the video has been edited, the user presses the ‘S’ key in order to save and create a new copy of the video with the edited properties. While the video is playing the user should be able to see a histogram to show the number of pixels between 0 – 255. The histogram should change accordingly whenever the video is edited.

References

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[2] "OpenCV Trying to Read or Write to Video File Causes VIDEOIO Exception 'Can't Find Starting Number' (IcvExtractPattern)." *Stack Overflow*, 27 Oct. 2019, stackoverflow.com/questions/58579987/opencv-trying-to-read-or-write-to-video-file-causes-videoio-exception-cant-fin.

[3] "Reading and Writing Images and Video — OpenCV 2.4.13.7 Documentation." Opencv.Org, 2011, docs.opencv.org/2.4/modules/highgui/doc/reading_and_writing_images_and_video.html.

[4] Manivannan Murugavel. "Keyboard Control for Save Image and DestroyWindow in OpenCV." *Medium*, Medium, 16 Oct. 2017, medium.com/@manivannan_data/keyboard-control-for-save-image-and-destroywindow-in-opencv-335c084fe742.

[5] "Read, Write and Display a Video Using OpenCV (C++/ Python) | Learn OpenCV." *Learnopencv.Com*, 5 June 2017, www.learnopencv.com/read-write-and-display-a-video-using-opencv-cpp-python/.