Joseph Baruch

CS 212: Practical Python

Assignment 6

November 17, 2023

OpenCV Line Detection

Description

Using a low contrast image and exclusively OpenCV, first convert the image to grayscale and resize to (256, 256). Then perform edge detection. After, using the same original image, perform a histogram equalization and then perform line detection. After, compare the results of the 2 final outcomes.

OpenCV Function Descriptions

The functions used in this program are listed below with a short description:

* cv.imread(): Reads and inputted image and returns an object of that image.
* cv.resize(): Resizes the inputted image and returns the resized version passed on the passed parameters.
* cv.cvtColor(): This function converts the image to a speficied color scheme passed as a parameter. I used cv.COLOR\_BGR2GRAY to convert to grayscale.
* cv.Canny(): This function performs edge detection on the image using the Canny algorithm.
* v.equalizeHist(): This method performs histogram equalization on the image.
* cv.imshow(): This method displays the image in a pop up window.
* cv.waitKey(): This function pops the display to be seen by the user.
* cv.destroyAllWindows(): This method removes all existing windows.

Images

A screenshot of a phone

Description automatically generated

A screenshot of a phone

Description automatically generated

A screenshot of a phone

Description automatically generated

A screenshot of a phone

Description automatically generated

A screenshot of a phone

Description automatically generated

Conclusion

To conclude, you can see in the comparison of the two edge detection images that the skyline is now disable after histogram equalization. This was the least contrasted part of the image which is now visible. Also, scene in the grayscale images the objects in the images are much more visible after histogram equalization.