CANNY EDGE DETECTION AND HARRIS CORNER DETECTION

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Observations made when performing canny edge detection:

- Canny edge detection output is highly dependent on the Sobel filter output. If the Sobel filter output has a lot of noise, then the edges won't be detected properly. Thresholding the Sobel output reduces the noise to a large extent and gives a considerably better output for edge detection.
- The inbuilt canny edge detector is very sensitive to small changes in the color/shade of the image. Whereas, the manual built from scratch function I made is not that sensitive. Sensitivity has advantages/disadvantages based on the application. (can be seen from result4)
- The computation time of the inbuilt function is less than the manual function. However, the manual function outperforms the inbuilt (in case of result3) in terms of the noise produced in the output.

Observations made when performing harris corner detection:

- The harris corner detector is highly dependent on the standard deviation and the size of the kernel used in gaussian filtering. Each image would have a separate optimum value of the standard deviation and size of the kernel. However, for most of the images, I found that a standard deviation of 4 and a kernel size of 5 works well.
- The computation time of the inbuilt function is less compared to that of the function that I made. However, The manual function outperforms the inbuilt function (in the case of result4)
- In the case of slightly complicated images, the inbuilt function performs considerably better than the manual function(in the case of result5). I had to apply a large size kernel with a high value to sigma to reduce the noise. The drawback of doing this is that the corner dot will appear to be large, i,e, the neighboring pixels of the corner will also be highlighted. The ambiguity of the corner slightly increases.

References:

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