Computer Vision
Assignment 01

Corner Detection using Canny Edge Detector and Hough Transform

In this assignment, your implementation tasks are:

(1) Implement Canny Edge Detection algorithm[1] to find the edges in an image \
(2) Implement Hough Transform algorithm[2] to fit straight lines to the edges using Hough transform
(3) Implement a program combining the two steps above successively to find corners in the image using lines that intersect at close to right angles.

The user-sepcified parameters of your final program are:

- The threshold values Thigh and Tlow in Canny,
- Quantization step sizes in Hough transform,
- The number of lines in Hough transform,
- The angle thresholds in corner detection.

Your program should let the user specify these parameters and you should experiment to fine-tune these parameters.

Test your program with the image shown below, original to be used is available at:

https://www.dropbox.com/s/fj6f4jainph9r1e/pentagon.tiff?dl=0

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[1] For implementation details: http://en.wikipedia.org/wiki/Canny_edge_detector and references therein.
[2] For implementation details: http://en.wikipedia.org/wiki/Hough_transform and references therein.

The program output will consist of three images:

(1) Canny edges
(2) Hough transform lines drawn on the original image
(3) Corners marked with an x on the original image.

Your final task is to write the same program and produce the same kind of outputs but this time with existing implementations of Canny Edge Detection and Hough Transform available in Matla or OpenCV.

How do the two sets of results compare with each other? *You should comment on this in your report.*