

EE 417 Computer Vision

Comparison of Edge and Corner Detectors

Due: 12/11/2021, 23:55

In this computational assignment, you will separately detect the edges and the corners in an image using the following methods and compare their relative performances in Matlab environment.

- **Edge Detectors:**

1st Derivative Edge Detectors: Prewitt, Roberts and Canny.

2nd Derivative Edge Detector: Laplacian of Gaussian (LoG).

- **Corner Detectors:**

Minimum eigenvalue (Kanade-Tomasi) algorithm and Harris algorithm.

For edge detection, explore Matlab's **edge** function implemented in Image Processing Toolbox. For corner detection, however, explore Matlab's **corner** function implemented in Image Processing Toolbox together with **detectHarrisFeatures** and **detectMinEigenFeatures** functions implemented in Computer Vision Toolbox.

Do the followings for both edge detectors and corner detectors separately:

- Create your own images or download them from the internet.
- Write a Matlab script/function where you can read the images into the Matlab's workspace.
- Call the **edge/corner** function with various detectors such as 'prewitt', 'roberts', 'canny' and 'log' (for edge detection) and 'Harris' and 'MinimumEigenvalue' (for corner detection).
- Plot the original image and the detection result in different figures and comment on them.
- Compare performances of these detectors on various images.
- Provide a discussion about your results.