Project 2

Part A – Image Filtering

In the following you will find two imperfect images. First analyze these images and discuss ways to determine the problems in them. Then use image filtering techniques covered in class to reduce noise in these images. Compare different filters and conclude the one that delivers the best result.

You can use MATLAB built-in functions for this task. You can also challenge yourself by writing your own code for image filtering.

Part B – Edge Detection and Line Detection

Test your edge detectors on the following images. For color images, convert them to gray-scale images before proceeding.

1. Apply the Prewitt and the Sobel filters and compare the results.
    a. Compute and display the sum of squared gradient magnitude.
    b. Select a threshold that produces the best edge map and display it.
2. Apply the LoG Operator. Discuss the effects of mask size on the output.
3. Apply the Canny Edge Detector to the images. Discuss the effects of threshold and σ on the output.
4. Apply Hough Transform to extract lines from the edge map in the previous step. Overlay the detected lines onto the original image.


©2005 Matt Jalbert - exuberance.com


Portland, OR