HW6

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1. Homework 6

1) explain the difference between the Sober operator and Canny edge detector.

Sobel operator: Sobel operator finds the part in the image where the intensity changes rapidly and performs the operation to detect the edge. Since the intensity of the image changes in the x-axis and y-axis, respectively, the x-direction kernel and the y-direction kernel are used. Also, the angle is $\tan^{-1}(g_y / g_x)$. Sobel has the advantage of being strong against noise because of its small kernel, but many low-level edges are detected in complex images. Therefore, low-level-edge can be removed by preprocessing with blurring filter before sobel operator.

Canny operator: Canny removes unnecessary parts of the result from the sobel operator. Therefore, Canny receives the output of sobel as input. Canny thins out the values of the gradient spread across the pixel and removes unnecessary edges through hysteresis thresholding to get the dominant edge. In this process, the algorithm to which hysteresis thresholding is applied uses two thresholds. First, the maximum threshold is used to obtain the strongest edge. Also, if the low-bound threshold is set and the value is larger than that and is connected to the strongest edge, it can be detected as one object. As a result, better line detection than sobel is possible.