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Assignment Lesson 12: Image Segmentation II

Question

1) Find a mask or kernel X and Y of Sobel filter (3x3)?

2) In your opinion, what is the range of threshold except black and white image? (from which value to which value)

Answers

1). Find a mask or kernel X and Y of Sobel filter (3x3)

- Sobel X kernel: Horizontal gradient mask

$$\begin{bmatrix} -1 & 0 & 1 \\ 2 & 0 & 2 \\ -1 & 0 & 1 \end{bmatrix}$$

The horizontal intensity variations are highlighted by this mask. Lower values indicate greater darkness, and higher values indicate greater lightness relative to nearby pixels.

- Sobel Y kernel: Vertical gradient mask

$$\begin{bmatrix} -1 & -2 & 1 \\ 0 & 0 & 0 \\ 1 & 2 & 1 \end{bmatrix}$$

The vertical intensity variations are highlighted by this mask. Greater values indicate brightness, and lower values indicate darkness relative to the neighbors above and below.

2). I think the range of threshold except black and white image when consider about thresholding for the color images, the range value would be start from 0 to 255 for each color channel. In standard 8 bits color image, such as RGB, each color channel has intensity values ranging from 0 to 255. Therefore, the thresholding operation can be applied independently to each color channel within those range. Furthermore, it's important to experiment with different threshold values to find the optimal value for specific color image.