Answers to questions in

Lab 2: Edge detection & Hough transform

Name: \_\_\_\_\_Ching-an Wu\_\_\_\_Program: \_Systems, Control and Robotics\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Instructions**: Complete the lab according to the instructions in the notes and respond to the questions stated below. Keep the answers short and focus on what is essential. Illustrate with figures only when explicitly requested.

Good luck!

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**Question 1**: What do you expect the results to look like and why? Compare the size of *dxtools* with the size of *tools*. Why are these sizes different?

Answers:

Edges arises when the intensities of the pixels change significantly. We can find the intensity change by applying difference operator (deltax and deltay) in order to compute the gradient in the x and y direction.

In order to find the vertical edges, we convolve the image with the x-direction gradient operator. The gradient image shows several extreme values, either positive or negative, which present in black line and white line. Similarly, when it comes to the horizontal edges, the same rule applies.

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**Question 2**: Is it easy to find a threshold that results in thin edges? Explain why or why not!

Answers:

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**Question 3**: Does smoothing the image help to find edges?

Answers:

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**Question 4**: What can you observe? Provide explanation based on the generated images.

Answers:

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**Question 5**: Assemble the results of the experiment above into an illustrative collage with the *subplot* command. Which are your observations and conclusions?

Answers:

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**Question 6**: How can you use the response from *Lvv* to detect edges, and how can you improve the result by using *Lvvv*?

Answers:

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**Question 7**: Present your best results obtained with *extractedge* for *house* and *tools*.

Answers:

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**Question 8**: Identify the correspondences between the strongest peaks in the accu-mulator and line segments in the output image. Doing so convince yourself that the implementation is correct. Summarize the results of in one or more figures.

Answers:

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**Question 9**: How do the results and computational time depend on the number of cells in the accumulator?

Answers:

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**Question 10**: How do you propose to do this? Try out a function that you would suggest and see if it improves the results. Does it?

Answers:

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