Advanced Image Processing - Homework Assignment - GUI Edges

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Assignment

GUI

The goal is to create a GUI, in which it is possible to load an image, add noise to it, smooth it and detect edges in it.

Specific

After loading the image it will be displayed in axes. All of the changes will be shown in the axes. The result after edge detection will be displayed on the side of the image in different axes.

Reset button

Add a button, which allows to reset the changes done to the original image (it will be displayed again as if it was loaded, but without the need to find it again in the computer).

Noise

Salt and pepper

Add a button into the GUI to add salt and pepper noise to the image. Two components will also be added (sliders, textbox) that will enable the user to choose the amount of noise added for both salt and pepper separately.

Additive Gaussian noise

Add a button for addition of Additive Gaussian noise to the image. Add a slider as well that determines the value of sigma.

Smoothing and edges

Median filtration

Add a button for median filtration

Gaussian smoothing

Add a button for Gaussian smoothing. Add a component which so that the user can choose a sigma for the smoothing.

Edges

Create a GUI element (buttongroup + radio button, or pop-up menu), which allows the user to choose a method from Sobel, Prewitt, Roberts and Canny. Add a button, which applies the method and the result is displayed in axes next to the original image.

Submission

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Submit the created .m a .fig files in a zip with filename surname.zip. Send it to kocurvik@gmail.com with subject PSO - DU1. Deadline is the beginning of the next labs 6.11.2019 at 14:50. The assignment is for 7.5 points. Each day of late submission is -1.5 points.

Points

When grading I will consider the logic of the positions of the UI elements. Make sure that when an elements allows user to select a value that the values that can be selected are reasonable and that it is clear what the values corresponds to. Instead of functions we have created you can use matlab functions (for adding noise, smoothing etc.), but make sure that their parameters correspond to our definitions.