Biomedical image processing: Fall 2020

Homework 5

Due: **10/21 PM 9:10**

In the compressed file you can find three images (*HW5_ima1*, *HW5_ima2, and HW5_ima3*) with different additive noises. Please answer Problem 1 with both ima1 and ima2 and use ima3 for answering Problem 2 if applicable.

Problem 1 (ima1 and ima2)

Read HW5_ima1 and HW5_ima2 and answer the questions below for each image:

(a) Display the **noise** histograms by properly choosing the region of interest. Indicate what you think the noise PDFs are and its relevant parameters. (Hint: Use *roipoly* to specify your region of interest).

(b) Apply the most suitable approach as described in class to suppress the noise in each image. Comment about which of the filters you find best performing if two or more methods you applied.

BONUS: Problem 2 (ima3)

Design a Wiener filter to restore an original (unknown) image from the provided image. You will notice that motion blur and additive Gaussian noise are the sources of image degradation, but there is no further information revealed regarding the amount of motion blur and the Gaussian variance. Use a trial-and-error strategy to identify the best Wiener filter. Good luck.