Using Poisson-Gaussian and Counterlet
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For the long-term cell and tissue imaging project, I will be using multiple imaging tools to identify and isolate cells. I will be manipulating the AV020429_03ah_014 dataset and use MATLAB to identify parts of the image.

The first step of the image manipulation is denoising the dataset. Incorporating denoising techniques into the segmentation process will improve the quality of the segmentation output. My approach to denoising in this project will be a Poisson-Gaussian filter [1]. This method is a self-supervised form of learning, and doesn't require any external input data. This should be sufficient in cleaning up the data for further manipulation.

Next, the dataset has to be segmented. The goal of segmentation would be to identify and isolate individual cells and tissue structures in the image for further analysis. To achieve this segmentation, I will use a combination of manual and automated segmentation techniques. Manual segmentation can involve selecting regions of interest in the image and using tools like the select tool in ImageJ or GIMP to manually trace the edges of cells and tissue structures. Automated segmentation will involve using algorithms like Watershed or counterlet [2] to segment the image automatically.

To validate the segmentation work, I would compare the results of manual segmentation to the automated segmentation output using metrics like Dice similarity coefficient [3], Jaccard index [4], and accuracy. I would also visually inspect the segmentation output to ensure that all cells and tissue structures are correctly identified and isolated.

Overall, the primary goal of the cell and tissue image analysis will be to accurately segment the image to identify and isolate individual cells and tissue structures. The validation process would involve comparing manual and automated segmentation results and visually inspecting the output for accuracy. Additional techniques like denoising could be explored to improve the quality of the segmentation output.

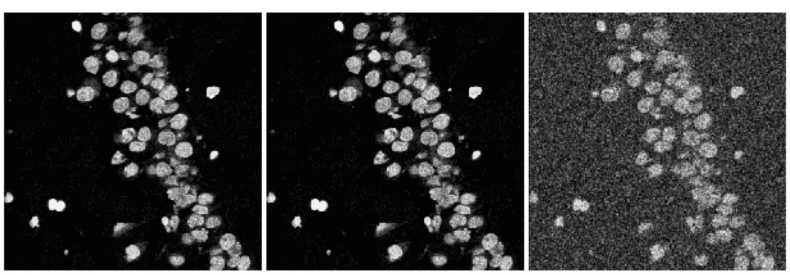

Fig 1-3. Denoising of seg_orig.tiff using Poisson-Gauss

Works Cited

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