

PROGRAMMING ASSIGNMENT-V

COMPUTER VISION

Coding Standard and General Requirements

Code for all programming assignments should be **well documented**. A working program with no comments will receive **only partial credit**. Documentation entails writing a description of each function/method, class/structure, as well as comments throughout the code to explain the program flow. Preferred programming language for the assignment is **Python** with PyTorch framework for deep learning. You are free to use any other programming language and framework as well.

Submit by **Dec 4, 2023**, 11.59pm. There will be strictly no extension to this deadline.

Question: Image segmentation [5 pts]

In this question your goal is to implement Otsu thresholding to perform image segmentation. The algorithm will be discussed during a class lecture next week.

Your tasks:

- First implement a simple thresholding based image binarization algorithm. Plot the histogram for three different input images. Now based on the plot, perform binarization at three different threshold levels.
- Implement Otsu thresholding. Use the determined threshold to perform segmentation on the three input images.

NOTE: You are free to choose any 3 images. If the images are colored, you can convert them to greyscale by averaging the RGB values at each pixel. You can also use any library function to convert it to greyscale.

What to submit:

- Code
- A short write-up about your implementation with results (as indicated for each variation) and your observations from each result. For each image, you will have to show corresponding histogram and resultant segmented image.