

# 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 1, 2022**, 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.