Image Processing with Machine Learning

Summer 2021

Assignment 01

Due date: 06/20/2021

Total points: 20

Instructions:

1. Submit your code and also a readme file on how to run your code.
2. Submit the output
3. You can zip the code and the output file together and upload them to Blackboard.

Assignment task:

Write a script in Matlab/ any IDE of your choice that will perform the following:

a. Read the attached image
b. Convert the image to grayscale and binary and save those
c. Extract metadata (Height, width, BitDepth, colorType) from the image
d. Show the histogram of the image.
e. Smooth the image with Gaussian (try for different standard deviation value of your choice)
f. Calculate the gradient magnitude and direction using the directional gradient
g. Add some salt and pepper noise (try various noise density)
h. Use canny edge and sobel for edge detection of that image

Think Deep: This part is voluntary, I want to know your idea

- Assume that you smooth an image with Gaussian trying various standard deviations, and then detect the edge with canny edge detector. For which standard deviation value you got the best edge detection result? Why? Can you conclude something from those results about the image?