EN.520.665 Machine Perception Fall 2021

Homework # 1

1. Justify the use of Gaussian smoothing filter in the context of a) Marr-Hildreth operator, 2) Canny edge detector and the SIFT operator. Compare and contrast the underlying assumptions and implications.
2. Design a general algorithm for sub-pixel extraction of edges and key points.
3. Justify why SIFT is insensitive to scale, illumination and view point (restricted).
4. Derive the rotational-invariance extension of the local binary pattern texture features.

Due 09/22/21