United States Naval Academy
Department of Weapons, Robotics, and Control Engineering

Course: EW453 Intro to Computer Vision

Credits: 3 credits – 2 recitation hours – 2 laboratory hours

Course Description: An introductory course covering both theory and application of pattern recognition and machine learning techniques used for Target identification, automation, medical imaging, and remote sensing. [Spring only]

Pre-requisites: EW200 or Matlab programming experience

Course Coordinator: Prof. Broussard

Textbook: None (In-class Notes)

Course Objectives: To understand the fundamentals of computer vision tools and techniques:
a. Becoming proficient in a variety of image processing methods;
b. Developing skills for image understanding, object recognition and machine learning;
c. Developing a working knowledge of current technical issues in the field of computer vision;

Topics:
1) Image types, Color spaces and Color thresholding
2) Handwriting recognition
3) Morphology, Filtering and Edge detection
4) Motion detection, Optical flow and Cameras
4) Machine learning, Statistical classifiers and Artificial Neural Networks
5) Pyton and Open source libraries (OpenCV, Sikit)
6) Deep Learning artificial neural networks (Matlab and TensorFlow)

Last Updated: 01-December-2020