**CS 4350-5350**

**Computer Vision with Embedded Systems**

**Video Frame Capture, Image Edge Detection and Histogram Analysis**

**(400 pts.)**

Date: 12-3-2020

Due: 12-11-2020 (5 pm)

**Given:** Sample Video (RGB)

**1. Find: (400 pts.)**

Utilizing the sample video captured (minimum 2.5 seconds: approximately 50 frames) from your video source, perform the following frame capture, image edge detection and histogram analysis on the sample video.

**a)** Frame grabbing of approximately 50 frames from 2.5 seconds of video saved into a unique folder: render a minimum of 25 frames for your assignment

**b)** Utilizing the 50 video frames (I\_xy\_RGB\_i, i=1 to 50) identify an object of interest and track the object using both Meanshift and CAM methods.

**c)** Plot the centroid of the object of interest as it moves through the frames for both methods.

**d)** Plot the histogram for the PMF of the object of interest for 10 frames.

**e)** Construct the CDF for the 10 frames and plot these.

**f)** Discuss the two methods and the pros and cons of each. Be sure to compare your results as part of the discussion.

(Extra Credit, 100 pts.) Implement the above in stereo (50 frames left, 50 frames right)

Discuss how you might use the centroid of the object of interest to calculate disparity and finally the z-distance to the centroid.

HAPPY HOLIDAYS!