ΜΗΧΑΝΙΚΗ ΟΡΑΣΗ

Assignment 3: Detection

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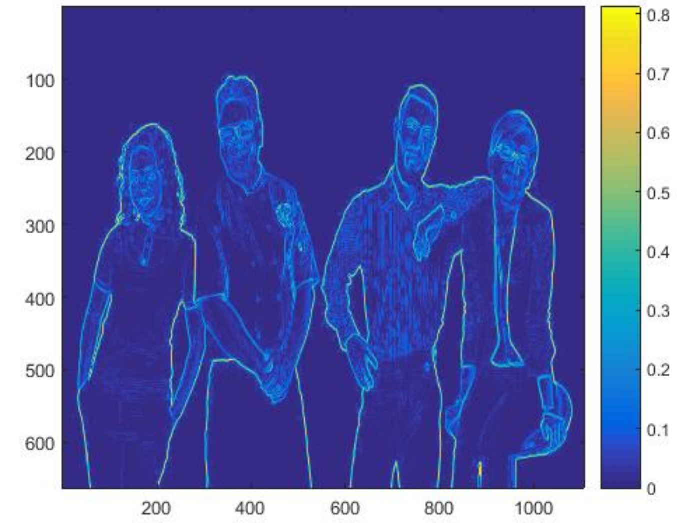
In this Assignment, we implemented the Histogram of Gradient Orientations algorithm, with the help of the given functions and scripts. Our team only implemented the first two parts of the assignment. Our results are shown below. The executional for this assignment is asssignment3.m.

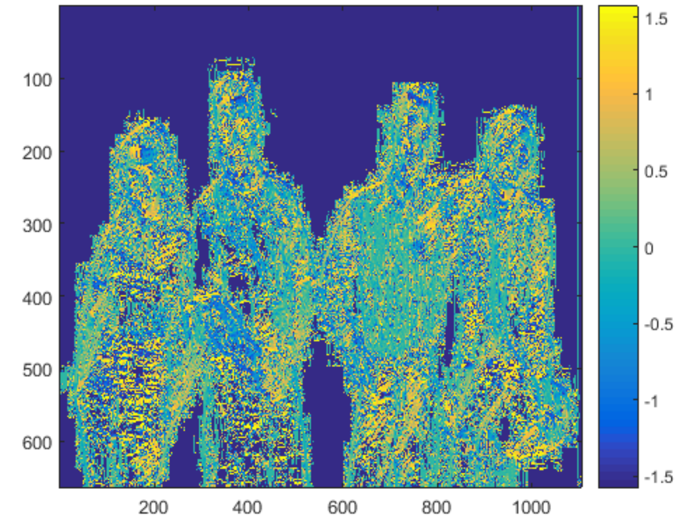
Image Gradient

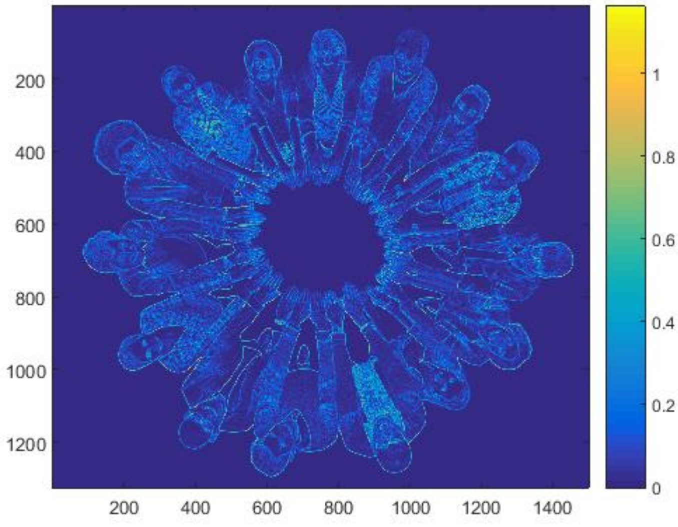
For the first part of our assignment e implemented the function mygradient which computes the gradient and orientation of each pixel of the image. The results of this phase are shown bellow.

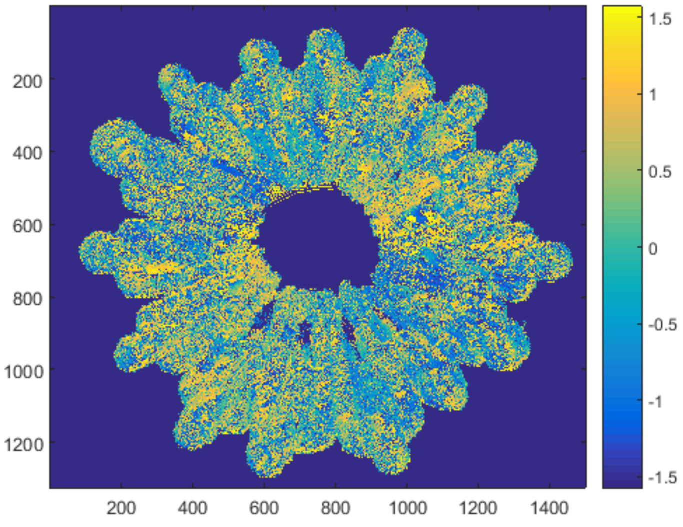
MAGNITUDE

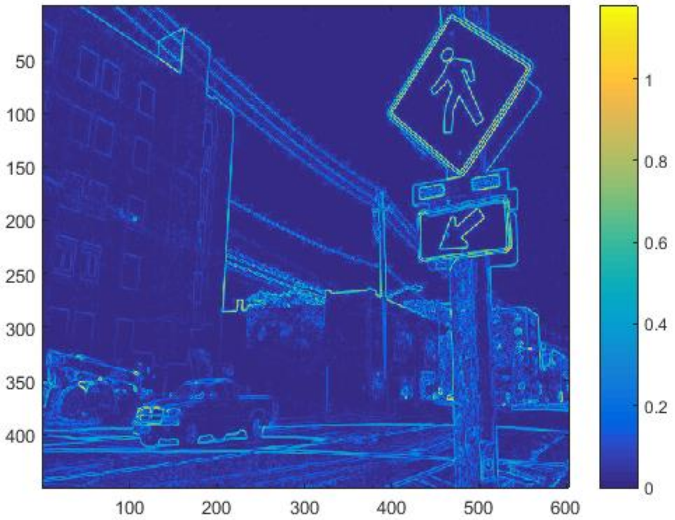
ORIENTATION

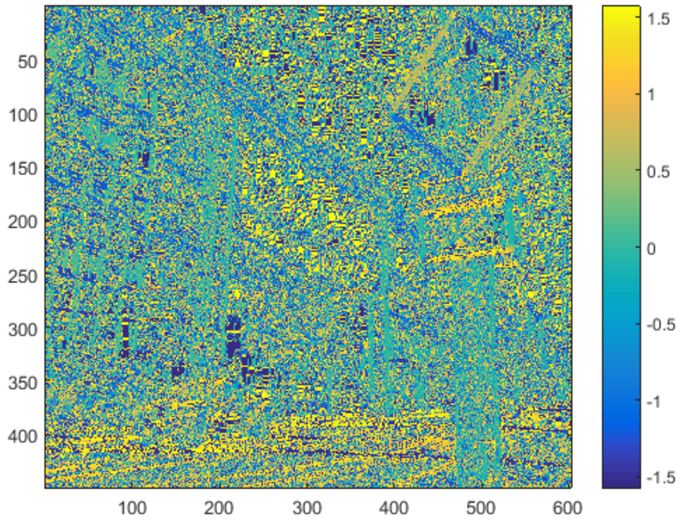


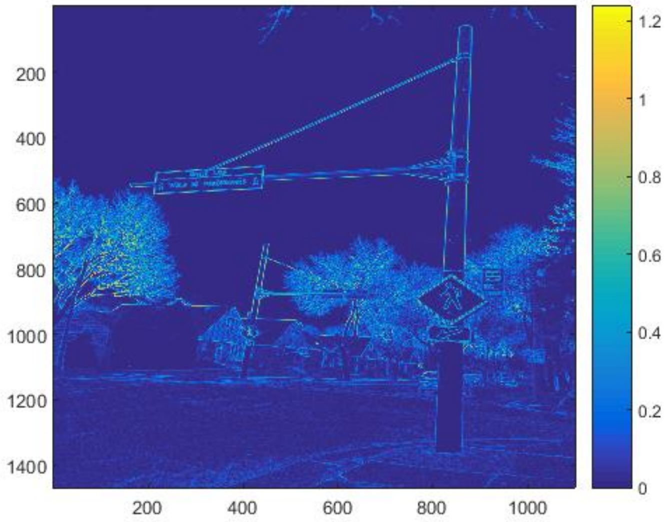


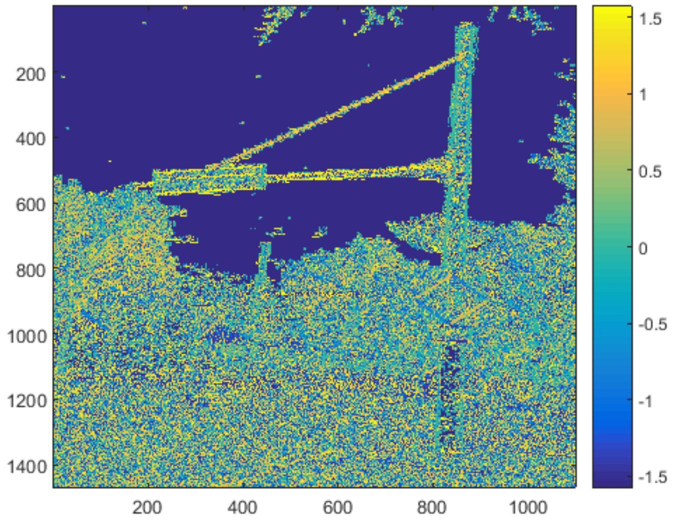








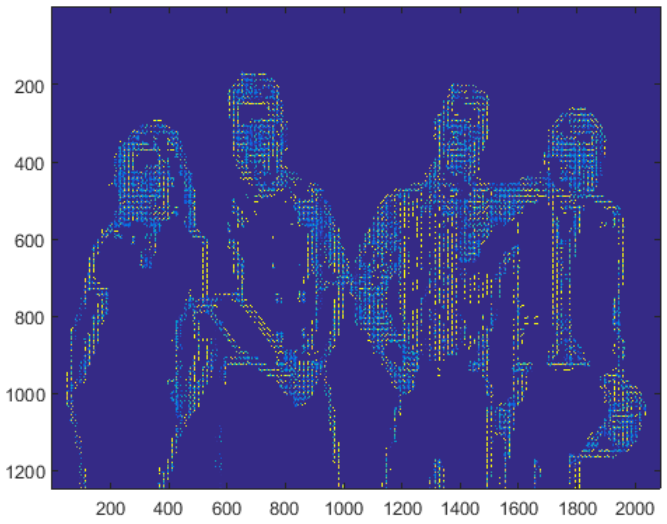


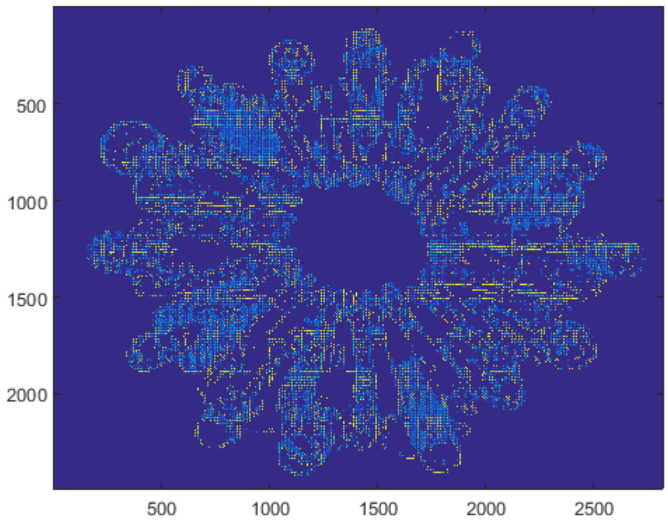


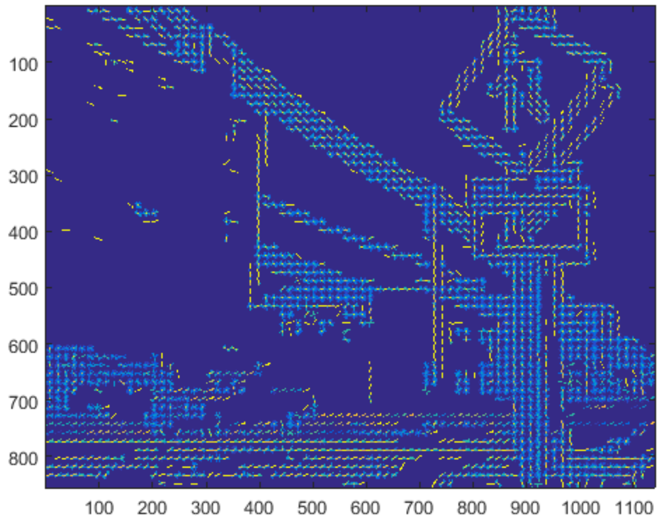
Histogram Of Oriented Gradients

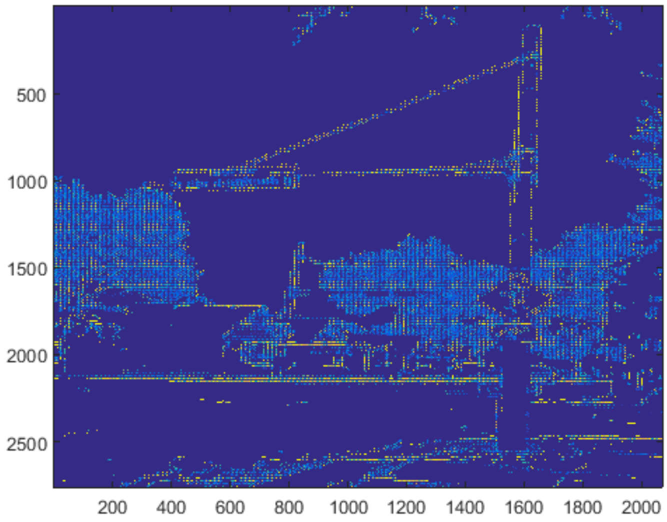
For the second part of our assignment, we implemented the hog function in the following steps. Firstly, we used mygradient to determine the magnitude and orientations of the image. Second, we assigned thresholded the pixels based on their magnitude and assigned them to 9 orientation bins . Following we broke the image down to 8*8 blocks and for each block we calculated the histogram vector. We then normalised each vector by dividing it by its sum. Finally, we used the given function hogdraw to depict the final results. The results of the given images are shown below.

The threshold used for all the images was the one suggested, although with a little bit of experimenting we found that it can be tailored to preform better for each individual image. The reason we left the threshold at 0.1*max(mag(:)) was that this is a value which performed better universally.









Final Thoughts

Due to the fact that we partially executed this assignment we can only comment on the results of the hog algorithm implementation. The results of the algorithm are very good considering that we can get even better results when we fine tune the thresholds used in the algorithm.