

To: Dr. Dean

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Right now, we are in the data acquisition stage of the project. We are in the process of cropping images needed to construct the Haar Cascade Classifier. We hope to start the computation starting tomorrow because it will take about a week of continuous computation to complete.

We all met last Wednesday at the Aquatics center and a few of us swam while the others used the picamera connected to the raspberry pi which was then connected to a computer, to record the data. We captured several thousand images which will be used to train our Haar Cascade Classifier. These images were divided among the group members to be processed manually. We needed two sets of images: positive and negative. The positive contain images of the swimmer, the negative do not. Once we process these images, we will be able to determine what other experiments need to be completed. We also captured a few videos, which we will be able to use to test the tracking system. On Friday, we connected the existing system to a computer to monitor the analog signal sent between the Arduino and sabertooth motor controller. We found that the amplitude of the signal ranges from 0 to 240 (arbitrary units). For the current system, 0 represents move left at full speed, and 240 represents move right at full speed. A signal of 120 tells the motor to stop. Furthermore, we altered the Arduino code to enable multiple modes of operation. The system starts in manual mode. The user presses the 'Y' button on the controller to change to automatic mode. We have started developing a communication protocol to control the interaction between the Raspberry Pi and the Arduino. This will be one of the focus areas for next week. We contacted the IT department to get internet access to the Raspberry Pi. Unfortunately, that didn't work correctly, and we will need to follow up sometime this week. Lastly, we are in a position to begin installing the raspberry pi into the cart. We still need to figure out how to power the device, however.

This past week we were able to accomplish a good bit. We captured the data we needed in order to start the tracking algorithm. We figured out the method they used for the analog signal from the Xbox controller to the Arduino. We altered the Arduino code to enable multiple both modes of operation.