To: Dr. Dean
From: Nicholas Thompson, Dustin Spencer, Avion Foreman, William Stewart, Jungihn Kim, Harrison Burch, Demetris Coleman
Subject: Weekly Status Report
Date: April 11, 2017

We have finished our tracking algorithm and we are currently working on the controls for the robot. We are also working on the hardware integration for the robot.

This past week we have been tweaking and testing the controls algorithm. Initially, we were using the x-location of the swimmer and designating a motor speed based on the distance from the origin. This was causing the robot to overshoot the target then try to compensate and come back, which would make it overshoot again and so on. Therefore, our robot was oscillating around the target. We have since been working with Dr. Hung to try to design a compensator to make our controls more accurate. He suggested that we use a phase lead compensator. To design this we needed to collect some data. Therefore, we recorded the oscillation and timed the cycle. We got some data points that gave us an average cycle of 4.6 seconds. Working with Dr. Hung, we have come up with a compensator to experiment with for the controls. We will try different values for the gain, poles, and zeros to see what works best. We are currently working on implementing this into our code. We also worked on building the tracking camera arm. We have the main part of the arm built; we just need to design the base where the camera will sit. We are going to try to install an adjustable base, so that we can adjust the angle of the camera.

We are going to pick up the belts from Dr. Weimar today, so once we get these, we can test the tracking algorithm against these belts. We might need to collect some video of us swimming wearing the belts in order to get the RGB values for the belts under water. Our plan is to get the system running optimally in the hallway first, and then set up a time to take it to the pool to test.