Team Name: sdmay21-40
Team Members: Abdalla Abdelrahman, Daniel Nikolic, Benjamin Schneider, Noah Thompson, Mason Walls, Cole Weitzel
Project Title: Dancing Swarm of Robots
Report Period: Sept. 28 - Oct 11
Advisors: Dr. Akhilesh Tyagi, Dr. Diane Rover, Dr. Phillip Jones

Summary of Progress in this Period

During the fourth period, our group completed our first version of the Design Document. Leading off from there, we began the preliminary work on the second version of the Design Doc for completion in the next period. With the help of Leland Harker from the ETG, we acquired design schematics of the CprE 288 CyBot platform for modelling in WeBots. Utilizing these diagrams, preliminary simulated modelling of the entire physical platform began. The motion algorithm simulation was further enhanced as well. Turning motions are now incorporated in a restricted capacity due to limitations with the software used.

At an advisor meeting, it was decided to limit lead robot maneuvers to those similar to bird flock patterns. As birds aren't able to instantaneously stop and rapidly turn in place in the air, all lead robot turns should be made while already in motion. Neutral steering by the leader should not be allowed, simplifying movement patterns somewhat.

Our weekly advisor and group meetings continued as usual, with updates on individual work and the progress of our simulations being given. Additionally, an extra meeting was held online to discuss the Areas of Professional Responsibility reflection assignment. Individually, group members completed the Software Development and Software Testing talk awareness writeups.

Pending Issues

As our LiDAR sensor is not pre-made in WeBots, we will have to construct this node from scratch. This will pick up once our model of the added acrylic plates, circuit boards, and sensor head servo are fully finished.

Plans for Upcoming Reporting Period

In the next period, work on V2 of the Design Document will be finished. Our simulations will continue to be developed, with controller design starting once the physical models are fully finished. This will include the motion control of the iRobot Create platform, the servo moving the LiDAR head, and the LiDAR sensor itself. Individually, group members will be completing the Entrepreneurship, Signal Acquisition, and Dealing with Noise talk awareness assignments. Regular group and advisor meetings will be held on October 13th and 20th as well, with extra meetings scheduled as needed.