o **Weekly Summary**

During the past 2 weeks we have made significant progress in our implementation. On the hardware side, we have completed almost the entire design. One if the final steps we completed was adding the additional 2 sensors for the front ultrasound sensor array. We also added our photo-electric sensors for border detection. We of course tested the sensors within the larger design to ensure they worked in the larger electrical design of our vehicle. One of the only hardware items remaining is to obtain wiring and finalize the wiring process. This process will include adding breadboard wiring once our order is received, then implementing a semi-permanent/more stable wiring solution for consistency during testing and final race.

In software, we have also made significant strides in the implementation of automation. With access to all our sensors to be used in tandem with the control of the ESC and Steering Servo, we were able to start testing basic object and wall avoidance with the ultrasound sensors and border detection and following along them with the photo-electric sensors using tape along the ground.

Summarize the feedback you received (both written and verbal).

The other teams mentioned that we do not have any way to read sensor values in real time. They also brought up the potential problem of us being limited by the number of ports on the Arduino model we currently have installed. Another concern was the relative size of our vehicle, as we chose to go with a larger platform than the other car team. Lastly, there were also concerns about power drawn from our battery since we had a previous battery die.

Describe any new insights your team generated based on this feedback.

We considered purchasing a Wi-Fi based Arduino to allow for live sensor data to be transmitted.

We also considered new suspension components to support the weight we added to our vehicle.

The issue with the old battery was caused by our circuit design which we addressed before we ordered a new one, we have not had issues with it since then.

What steps are you taking based on the feedback?

We have a greater scope of consideration for some of the possible issues we may encounter with the limitations of our vehicle, and we will continue to work to ensure the best result with the parts we have selected.

- ○ **Past weeks accomplishments**

    Andy Nguyen – Helped set mounting points for the additional ultrasound sensors and the photo-electric sensor with Carson. Included the additional sensors into the circuit design and implemented them into the current hardware design. Assisted software team with sensor testing via hardware needs.

    Aaron Gienger – Continued testing the sensors with the motor and steering control. Modifying the C code to handle object detection and line detection and maneuver around them in order to move forward. Created test track for car as well.

    Ben Dubin – Continued to participate in software design and documentation as well as discussion about the limitations of our vehicle and what potential changes we could make to improve and finalize the design and implementation.

    Blake Carlson – Tested more complex scenarios with the ultrasound sensors. Began testing with the IR sensors on the car and discovered the proper threshold values. Then tested all of the components together on the car while modifying the C code to handle the values.

    Carson Tow – Continued significant communications between the track team, the other car team, and team 06. Carson also worked on sensor mounting points for the additional ultrasound sensors and the photo-electric sensors. Carson also worked on setting up the first few basic test tracks to test the photo-electric sensors used for border detection and navigation.

- ○ **Plans for the upcoming week**

    Andy Nguyen – Andy will work on implementing a more permanent and cleaner circuit implementation. This will involve the possible use of a PCB and soldering.

Aaron Gienger – *Aaron will continue to work on debugging and programming test cases to continue development of track navigation automation. Aaron will be working to ensure quality on the completed logic to ensure proper and expected movement.*

Ben Dubin – *Ben will continue working on writing up documentation for the software development process as we progress with developing automation. Blake will be taking a focus on the core logic for the navigation algorithm.*

Blake Carlson – *Blake will continue to work with Andy to ensure smooth integration between the hardware and software as we finalize circuitry. Blake will also be working to ensure a strong code base as we develop the navigation for out vehicle.*

Carson Tow – *Carson will continue to work on inter-team communications with the other car team as well as the track team to ensure proper specifications for all parties as the test dates approach. Carson will also work on assisting in setting up basic environments for test cases for the software implementation.*