Technical Journal (Damian Avery)

Week 09/19/21

In this week we fully integrated with our CS counter part to discuss and plan the electrical hardware in conjunction with the interfaceable IOS app. We tasked each EE team member with a research project and report deadline. Each EE member was to research a sensor for vehicle detection and provide why it would or wouldn’t be a good fit for the project.

During our report meeting we concluded that a magnetometer would be the most applicable sensor. We still have concerns that a 2nd sensor type would be needed to effectively complete our project. During this meeting, we created a basis for how the system will operate collect data and communicate. A magnetometer IC (integrated Computer) will be attached to an Arduino LoRa (Long Range) transceiver. This Arduino will be able to take the data from the magnetometer and send signals to a raspberry pi gateway. Each of our nodes/sensors will be configured to simply send a 0 when measuring the Earths magnetic field. When a disturbance is detected due to vehicle occupancy of the parking stall the Arduino will send an update signal of 1 in near real time to the gateway. We plan for all our sensors to be completely wireless and battery powered. The raspberry pi gateway will utilize a Rak 2245 LoRa hat which will allow the Raspberry Pi to receive data from the Arduino. This gateway will send off updates to the cloud where the phone app will update and interface with the user.

Week 09/26/21

Hardware purchases were made to begin integration and testing. CS team is updated accordingly with statuses of shipping dates and arrivals. One team member already owns a magnetometer IC and the Arduino LoRa transceivers arrived. Configuration of the prototype is crucial and a high priority item. We will begin learning about Arduino setup and test for data collection and calibration of magnetometer. We have completed our project planning paper and our next tasks to accomplish are getting sensors configured and working and creating a live power point to prepare for midterm presentations.