

Josh Virtell

Professor Nadovich

ECE 491

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Statement of Individual Goals

For this project, my leadership goals include being the wireless charging subsystem leader and the safety manager. As the wireless charging subsystem leader, I will be the main point person for relaying the progress completed on the system, if the subsystem is on schedule, and what tasks are to be completed next. I will also play a big role in the calculations and component selection required for the system as well as be heavily involved in the testing that will occur. By November 15th, I expect to have completed bench experiments that confirm that a few amps (around 5A) can be received wirelessly using our designed coils and a 24 V signal. After this, a prototype using an H-Bridge to produce the 24 V signal will be created and tested by November 22nd. By then, I should hopefully have completed battery specifications from the power subsystem team, and I can redesign the wireless charger to work for the battery. The redesigned system for the battery specifications will be completed by December 13th. To finish up the semester, a basic enclosure for the system will be fabricated by December 20th. Starting in the Spring semester, optimization will start on the charger. By February 7th, a bench test will be completed proving the functionality of using a float charged battery to power the system in the event of a power outage. The end goal will be a wireless charger that can charge a 12V battery

using an H-Bridge to drive the coil. It will incorporate techniques to help localize the robot in its environment and safeguards against power outages.

As the safety manager, I will take responsibility for all written safety plans and mitigation strategies. I will also be ensuring that every team member has read through the safety rules and understands the risks associated with their roles. For November 1st, I have completed a preliminary safety plan detailing manufacturing risks and Lafayette College created safety plans along with a risk assessment of the intended uses of our robot. This document will be continuously updated to provide more safety information as the design evolves. For November 29th, an update will be written to include procedures to follow in the event of part failures on the AuBi system. Following updates will include a detailed user manual describing the steps to safely power on and off the robot, interact with the robot, and update AuBi's operation.

I will also be a member of the external communication team and drive system team. I will attempt to help out on these teams as much as possible, but my primary focus will be on my leadership positions.