

## Senior Design Bi-Weekly Status Report; Fall 2023

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Team Name: sdmay24-44

Team Members: Chris Agyare, Jaxon Dennis, Taylor Moore, Simon Aguilar, Zech Mundy, Vince Quattrone

Report Period: feb 11 – feb 24

### Team members:

- Taylor Moore – Team Lead/Representative
- Christopher Agyare – Machine Shop Specialist
- Jaxon Dennis– 3D Modeling Specialist
- Simon Aguilar – Software Development Lead
- Vincent Quattrone – Software Researcher
- Zechariah Mundy – Software Testing Specialist

### Past Week Accomplishments:

- The hardware group (Taylor, Chris, and Jaxon): The Faraday cage has been completed and tested and is thereby deemed satisfactory. Initial measurements and designs were completed for the moving wall and the wheels and axels should be created via a 3D printer in the very near future.
- The software group (Simon, Vincent, and Zechariah): Met to discuss the upcoming cybersecurity traps. Discussed the possibility of radio frequency hijacking.
- The software/hardware group (Everyone): We had a meeting to discuss which traps should be worked on next. We came to the consensus that moving wall should be worked on to provide enough work for both the software and hardware teams in the upcoming weeks

### Pending Issues:

- Determining the radio frequency being used by the RC Car teams
- Deciding which moving wall trap design to use

### Individual Contributions:

- Jaxon Dennis – Completed the fabrication of the Faraday cage and tested it with a normal RC car.
- Taylor Moore – Sketched the design for the moving wall and it's wheels and axels. Also met with team representatives from car teams to determine what materials could be used for the moving wall that would perform adequately with their respective sensors.
- Christopher Agyare- Found an outside resource to aid in the 3D printing of the wheels and axels for the moving wall.
- Simon Aguilar – Went over Arduino programming and wiring with the rest of the software group.
- Vincent Quattrone – Organized the collaborated hardware/software team meeting. Began researching radio frequency scanning/analyzing. Continued research on Arduino coding to further the efficiency of the moving wall trap.
- Zechariah Mundy

### Plans for Coming Weeks:

- Continued collaboration with hardware and software teams on integration efforts
- Implementation of feedback from testing
- Create the code needed to operate the motors on the moving wall trap

- Continued testing of track assembly to ensure that traps work together

### Broader Context:

- Identification of new effects
  - Economic: Since this race track is an attraction, this will likely lead to an increased tourism revenue and possible indirect benefits to local businesses due to the influx of visitors attracted to the race track.
  - Environmental: A possible need to reduce noise pollution caused by the RC track. Since this is a tourist attraction, as well as a spectator event, further analysis of noise generated during an event may show that the races exceed local noise ordinances or lead to complaints by nearby residents.
- Demonstrate Evidence of Positive Effects
  - In order to argue for the positive effects caused by this project, we would have to gather anecdotal evidence, as well as empirical data and expert opinions that would support these claims. For the economic impact benefit, we would have to conduct surveys with other local businesses after the installation of the attraction. We would also have to look at the impact that other similar projects have had on local communities to demonstrate the positive impacts that similar recreational activities had on tourism.
- Address Negative Effects
  - Addressing the issue of noise pollution caused on the environment would require us to do ongoing monitoring of the noise levels generated by the racetrack during peak times. If these levels begin to exceed the local ordinances, we think that scheduling these events during more active times and installing additional soundproofing measures will help minimize the impact on the surrounding community.