

## EE/CprE/SE 492 BI-WEEKLY REPORT 3

9/14/20 – 9/28/20

Group number: 18

Project title: Magic Door Sensors

Client & Advisor: Daji Qiao

Team Members/Role:

Mitchell Bratina/ Project Plans Engineer

Calvin Christensen/ Engineering Activities Director

Isaiah Exley-Schuman/ Reports and Documentation Management

Collin Kauth-Fisher/ Conflict Resolution and Server Management

Joseph Kueny/ Meeting Facilitator

Past week accomplishments:

- Meeting with Advisor – everyone
  - Updated advisor on status of project, discussed plans for the next couple weeks.
- PRIM Slides – everyone
  - Worked on slides for upcoming PRIM meeting, building slides and preparing spoken elements
- Component Testing – everyone
  - Various supercapacitors were tested for hold-up capability
  - Ideal component was selected for use in active sensing system
- ESP32 Room – Collin & Joseph
  - ESP32's are transferring data
  - Remote access is possible, Collin and Joseph are running tests as needed
- Machine Learning – Mitchel
  - Identified key toolkits and learning systems for data analysis
  - Began implementation of K-nearest neighbors strategy on SKLearn toolkit
- Test Method – Calvin
  - Established tests for machine learning training and functional requirements which adhere to social distancing guidelines
- Schematic & Layout Creation – Isaiah
  - Scope expanded- Schematic for active sensing backup circuit board underway

Pending issues: Presently, none

Individual contributions:

Name	Contributions	Hours this period	Hours cumulative
Mitchell Bratina	Attended meetings, contributed to PRIM prep, researched machine learning opportunities, began implementation of machine learning	12	36
Calvin Christensen	Attended meetings, contributed to PRIM prep, investigated testing methods	12	36
Isaiah Exley-Schuman	Attended meetings, contributed to PRIM prep, began PCB design, drafted reports	12	36
Collin Kauth-Fisher	Attended meetings, contributed to PRIM prep, established ESP32 communication	12	36
Joseph Kueny	Attended meetings, contributed to PRIM prep, assisted with ESP32 room	12	36

Comments and extended discussion: NA

Plans for the upcoming weeks:

- ESP32 room – Collin & Joseph
  - Continue to maintain and improve ESP32 room capability
  - Measure communications (latency, success rate, etc.)
- ESP32 programming & calibration – everyone
  - Detect when a door is open and when it is shut per Calvins work
- Create active sensor prototype – Isaiah & Calvin
  - Deliver PCB files for manufacturing within 2 weeks
- Machine learning code and training – Mitchel
  - Implement a learning algorithm and train machine, collect data to compare with other models (false positives, false negatives, training time, etc)

Summary of weekly advisor meeting: In our last meeting, we prepared a presentation for Daji to inform him on our progress. He expressed interest in the ESP32 progress and the machine learning research, weighing in with his opinions of various toolkits and methods of training. Daji also expressed support for the active component of our design as a backup sensing method.