

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

10/12/20 – 10/26/20

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:

- Final Presentation – Everyone
  - Wrote slides
  - Wrote scripts
- Meeting with Advisor – Collin, Joseph, Mitchel
  - Updated advisor on status of project, discussed plans for the next couple weeks.
- ESP32 Room – Collin & Joseph
  - Test environment is fully set up
    - Collected large amounts of CSI data for training
- Machine Learning – Mitchel
  - Continued experimentation with ML strategies
- Schematic & Layout Creation – Isaiah & Calvin
  - Layout complete
  - Door state detection method established
  - Prototype being built and coded

Pending issues:

Individual contributions:

| Name               | Contributions  | Hours this period | Hours cumulative |
|--------------------|--|-------------------|------------------|
| Mitchell Bratina   | Attended meetings, worked final presentation, worked machine learning training | 12                | 60               |
| Calvin Christensen | Attended meetings, worked final presentation, assisted                         | 12                | 60               |

|                      |   |    |    |
|----------------------|---|----|----|
|                      | prototyping, researched door state detection  |    |    |
| Isaiah Exley-Schuman | Attended meetings, worked final presentation, built up prototype of active door sensor, drafted reports | 12 | 60 |
| Collin Kauth-Fisher  | Attended meetings, worked final presentation, worked testing and data formatting                        | 12 | 60 |
| Joseph Kueny         | Lead meetings, worked final presentation, assisted with machine learning and testing                    | 12 | 60 |

Comments and extended discussion: NA

Plans for the upcoming weeks:

- ESP32 room – Collin & Joseph
  - Continue to maintain and improve ESP32 room capability
  - Continue to measure communications data (latency, success rate, etc.)
- ESP32 programming & calibration – everyone
  - Detect when a door is open and when it is shut per Calvins work
    - Keep things simple to train model
    - Add complexity if results are promising
- Create active sensor prototype – Isaiah & Calvin
  - Build prototype
    - Demonstrate functionality
    - Measure power consumption
- Machine learning code and training – Mitchel
  - Continue work with learning algorithms and training machines, collect data to compare across models (false positives, false negatives, training time, etc)

Summary of weekly advisor meeting: In our last meeting, Daji spoke to us about focusing on covering any questions that may be asked during the final presentation, giving some examples. Unfortunately, both team members responsible for the active sensor portion were unable to attend the meeting, so there was little talk on that front during the meeting.