**Team: NoiseHub (Team #8)**

**Team Leader: Benjamin Brewer**

**Next Team Leader: Alex Prior**

**Goals:**

* Hardware research and implementation
  + Lidar
  + Thermistor
  + Microphone
* Cognito set up
* IoT Core set up
* TimeStream set up
* Mobile application first build

**Roles:**

* Benjamin Brewer - Hardware Engineer
  + Sensor research
  + Lidar set up
  + Pi housing case design
  + Shark Tank presentation
  + Prototype 1 testing plan
  + Prototype 1 report
* Ibrahim Chand - Fullstack Developer
  + Create mobile application prototype
  + Mobile setup documentation
  + AWS set up
  + Shark Tank presentation
  + Prototype 1 report
* Alex Prior - Cybersecurity & Fullstack Developer
  + IoT Core research and set up
  + TimeStream set up
  + Application & TimeStream interaction
  + Gantt chart
  + Prototype 1 testing plan
  + Prototype 1 report
* Allen Zou - Hardware Engineer
  + Pi setup
  + Thermistor set up
  + Lidar set up
  + Prototype 1 testing plan
  + Prototype 1 report

**Progress:**

Our team was able to accomplish everything we planned for this period and is on schedule. On the backend, our IoT Core and TimeStream are now implemented, giving us solid security and the ability to query data from the app. From a hardware perspective, the Raspberry Pi is now reading data from both the thermistor and Lidar, then sending that data to TimeStream through the local network.

Significant progress was also made on the UI/UX design of the mobile application. Most screens for the first prototype are implemented, with basic page routing functionality on top of the existing user authentication. We also successfully queried data from TimeStream into the app in live time, giving us a proof of concept.

We met with Professor Konrad to discuss the headcount issue, and we’ve come to the decision to use a Lidar virtual trip point. To make this even remotely accurate, we’ll need to develop some algorithm or method of sorting the Lidars inputs and outputting people entering or exiting. We’ve also determined that because this method’s errors will propagate through time, we’ll need a safety check implemented, where users can say if the space is as crowded as the app reported.

**Issues:**

Our largest issue remains the head count, since it’ll be difficult to get even a rough count training Lidars as a trip point. To combat this, we will need to start writing a script for the Lidars and test rigorously.

Another issue is our microphone. The original mic we ordered is incompatible with the Pi 4, so we need to look into alternative ones to purchase. We believe a usb microphone would serve our purpose well, but still have to determine a model.

Our third issue is wiring our Lidars. The Lidar out pins are extremely small and close together, making them a challenge to solder. We’ve already bricked one in testing by shorting it while soldering, and breakout ribbons are difficult to find. We’ll likely try and solder the second one ourselves, after practice and research into best methods.

**Progress Measurement Methodology:**

To track progress and start organizing definitive tasks, we set up a Trello board. Trello essentially allows you to create upcoming tasks, assign team members to them, provide documentation within the task, and then mark them as complete. With a software board and a hardware board for tasks, it’s clear to see how much progress has been made, what tasks need to be completed currently, and what tasks are waiting in the future. Furthermore, these tasks can be broken down into subtasks, so that small progress can be tracked as well.

**Work for Next Period:**

* Improve UI/UX to start including locations, with options to sort
* Begin creating algorithm for Lidar trip point
* Purchase and set up microphone
* Finish set up of backend
* Complete first prototype of unit casing

**Personal Assessment:**

We had no team issues during my time as leader. We all worked together smoothly and efficiently. It was clear who was working on what tasks at all times throughout the period, and each member completed what they were supposed to. The only issue was myself getting ill and falling behind on some work, but was able to catch up with the help of the team. Overall, we have good chemistry as a team, and the future of our project looks bright.