Bi-Weekly Report 4

1. Summary

The last two weeks hardware and software made great strides. Hardware received their Raspberry Pi and OBD to USB device. The Pi has quickly been incorporated. Bluetooth connection between the Pi and Philip's phone was successful. The OBD to USB hasn't worked as well. The team plans to use an alternate product called the PiCan. In terms of software, implementation has begun. This starts with the user interface for the app. To start testing, we are working on a test page.

2. Individual contribution (finish before tmr afternoon)

   a. Member contribution to progress.
   b. Hours worked by each member for the week.
   c. Total Cumulative hours for each member.
   Our team is working seamlessly, and we are making some progress. Our goal is to have a prototype for the project by the end of the semester, so with our current pace, we will be able to achieve that goal. As of now, the exact work details and timeline are not clear, therefore the time spent on the project by each team member varies. All the team members are a valuable asset for this project and each one is contributing in their own way. The following paragraphs display what each member did and the amount of time spent by each one.
   d. (Philip) Philip checked out a Raspberry Pi from the ETG. The team decided on the 3B+ model. Philip successfully linked his phone to the Raspberry Pi via bluetooth. He also installed packages that help with the ease of making the connection for the future. Since the connection, he has researched methods to send a signal from the Pi to phone without downloading an additional app. Finally, Philip made the final revisions to the Lightening Talk #2.
   e. (Ali) Ali attended both of the team meetings, where we discussed our next step in this project. The app will be implemented on two platforms IOS and Android, Ali started the implementation on Android using Android Studio. He is still in the early stages but will soon have a test page that implements the bluetooth communication library. This will allow us to test the communication between the raspberry pi and the app, which is vital to our project.
   f. (Shuang) Shuang has attended both weekly meetings and kept meeting notes. She started researching how to incorporate bluetooth to iOS apps and how to configure and input and output data from app to bluetooth then to the Raspberry-Pi. The next step is to create the iOS in Xcode and program the UI, then incorporate the bluetooth functionalities and test if the app can successfully receive and send data. After that she will start integrating the firebase backend to the iOS app.

g. (Isaac) Isaac attended our second meeting with our senior design advisor to get his opinion on the design diagram we came up with for the hardware part of the Road Safe Phone Case. He was able to ask our advisor on his opinion on the design diagram and how we might be able to improve on it. He also asked if our advisor had some ideas that would improve on our design structure in general. Isaac also did some research on the raspberry pi microcontroller and was able to help the team decide on which microcontroller to choose. He was also responsible for doing some deeper research on the the different types of bluetooth protocols that would be ideal for our design.

h. (Chad) Chad ordered the OBD-II to USB device through the ETG and picked up the Raspberry Pi with Phillip. Chad also spent a long time getting the Raspberry Pi set up and teaching himself how to program with the Raspberry Pi. He worked on trying to get the Raspberry Pi to read the OBD-II outputs from his car but has not yet been successful. He researched alternative ideas and concluded the Pican2 would be a better solution than the scanner. He then picked the Pican2 board up from the ETG. Chad also attended the weekly team meetings and biweekly advisor meeting.

i. (Shihab) Shihab started working on the raspberry pi Bluetooth feature and with the help of Philip. They were able to connect the raspberry pi with any phone and make it discoverable to other devices. He also started learning Python and started working on a way to send a file from the raspberry pi to the phone to connect the devices for the project. This step will help the overall project progress by connecting the hardware to the software. The goal from Shihab's work is to have this part working by the end of the Spring break so the other parts of the project get connected.

Name	Weekly hours	Cumulative hours
Philip	4	25
Ali	8	20
Shuang	4	21
Chad	16	25
Isaac	5	13
Shihab	7	20

3. Pending issues

Our main pending issue right now is getting far enough in the implementation to be able to test the bluetooth connection between the raspberry pi and the phone app. This includes two parts, first, the implementation of the app to the point where testing the bluetooth connection is valid. Second, writing the program on the raspberry pi that allows it to send data to the app. Another pending issue we have is understanding the protocol associated with the OBD-II and the different pieces of data we can collect from it.

4. Plans for next 2 weeks

The next two to three weeks are going to be tricky with the recent COVID-19 outbreak. The team is planning on working on all of our parts separately and having Skype meetings instead of our usual weekly meetings at the library. Our main goal for the next two weeks is to have a hardware device which can decipher OBD-II codes and communicate which gear the car is in to an app that the software team is going to design. This is going to require a lot of collaboration between the two teams, which may be difficult due to the closures. However, we believe that this goal is still feasible and are going to continue pushing forward to get closer to a working prototype. We are also hoping to have a Skype meeting with our client and advisor during this period to let them know about the progress we have made.