Throughout the first 3 months of this project, I have been focused on the software development and IOT capabilities of the system. The first item I designed was the source code for hosting the Metaverse Maintenance website. W3 Spaces was utilized to host this website. I used JavaScript, CSS, and HTML programming languages to design a user interface that interacts with the cloud based IOT platform, Losant. Moreover, I used an API to interact with Noda.io. This API allowed vehicle node point data to be brought into a virtual reality environment. Thus, the data visualization of live vehicle data can be done via the web application or in a virtual environment.

The other major aspect of the project I have contributed to was in the design and development of the Raspberry Pi data collection system. Using the OBD python library and an OBD to USB connection cable, the Raspberry Pi can communicate with the diagnostic sensors of any modern vehicle. I utilized a blues wireless cellular notecard to create a network connection for transferring to the Losant data system. Moreover, an active GPS antenna was installed to create an asset tracking system for the project.

Over the next semester, I will focus on continuing to develop the virtual environment to create an immersive user experience. This will primarily consist of designing and developing interactive user dashboards to display live and historical vehicle data. I will also research the OBD sensors used for diagnostic readings to understand what maintenance can be provided when a given metric is out of specification. With this data in mind, I believe the system can be modified to offer maintenance information such as when and how to replace a malfunctioning sensor, or to notify a user of when a vehicle needs service.

Overall, I am very satisfied with the current state of the project and believe that we can complete the system on-time. I believe the most difficult portion of the remaining project timeline will be designing the OBD to Bluetooth connection. This component will require a significant amount of time to design the circuit board and fully test the connection with the rest of the system. I am confident that Cory and I will be able to fully develop this component, however, there may be changes and simplifications required to complete it within the project timeline.