

IoT HTR: Challenges and Excellences

Over the course of the semester, our team has gone through ups and downs related to the IoT HTR Software Development. In terms of challenges, our biggest challenge we seemed to face was the virtual nature of this project. It was hard to be able to figure out how to get data from sensors because we were not actually working with the physical sensors. Eventually, we decided to create csv files of sample data to simulate how data would be fed into our IoT engine from the sensors. Similarly, it was challenging to test some of the requirements, like the reliability and security testing due to the lack of a physical train. Last, more generally, our team faced trouble trying to find common times to meet and work on this project together. This issue was due to the fact that we are all full-time students, with other academic commitments.

While we faced challenges, we did find a lot of pros over the semester. The team felt as though this project simulated a real-world project because the client came back and asked for more requirements. For example, the horn feature was asked to be implemented last, after much of the rest of the project was finished. In addition, we felt as though the heavy documentation that was required throughout the semester was largely useful when it came to implementing the ideas. The code only took a few days to complete. Last, we felt as though doing this project virtually helped us for the future. In a time where the work-from-home environment is becoming more and more common, this project gave us first-hand experience of how that works in the industry.

For the next version of this project, we would take into consideration the fact that trains have different types of environments. For example, some trains go to particularly sunny areas, while others go to particularly rainy/snowy areas. If we took this into account, we would have been able to flag different types of environments and recommend more precise instructions to the conductor. Additionally, this could further lead to the development of a machine learning algorithm in place of the IoT Engine. In addition, we felt that if we used an agile process, we would have been able to finish the project faster. While implementing the horn, we used an agile process and found it to be much more efficient. Last, we noticed that if we looked over the technologies (ie: python GUI, python classes, etc.) before being tasked with the coding, we would have been able to eliminate the day or two spent trying to review those concepts.