Nick McClorey

Individual Capstone assessment

The goal of our senior capstone project is to build a monitor and alert system to warn parents if they accidently leave a child in a hot car. Every year, dozens of children die because they are forgotten in a hot car for a couple hours. It may seem strange but all it takes is an unexpected change or interruption in routine for a parent to forget their child is in the car. The purpose of this project is to build a monitoring system that will sense if a parent has left their child in the car. When this happens, the next goal is to alert parents or nearby people.

There will be a lot of upfront research and planning for this project. My time taking software engineering (EECE3093C) has given me a taste of what that process looks like. Once we begin to implement our solution, I expect there to be software and hardware challenges. I'm confident that I can solve any software related challenge as I've become very comfortable in this area. Classes like Data Structures and Python Programming have taught me a lot. Operating systems and Systems Programming (EECE4029) could also come in very handy. It's also important we document our progress so our professors can follow our progress. However, I've had many similar assignments in Technical and Scientific Writing (ENGL4092) so this shouldn't be an issue.

I expect the car monitor to run on a small board such as a raspberry pi or something similar. My time working at Infinera made me very comfortable running and testing code on a small board. The boards I worked on at Infinera are going to be very different from whatever we use for this project. However, they both run Linux and both of them will be accessed remotely. I'm confident that my knowledge acquired from Infinera will be very helpful throughout this project.

I'm excited to work on this project because there is a very clear and grave problem with an appropriately challenging solution. There's a couple different approaches, each with their own benefits and challenges. For infants, a sensor could be activated and deactivated whenever a buckle is attached or detached. This would be very accurate as a parent always unbuckles something before they remove a child. Other sensors could manifest themselves as weight sensors or even a camera. We also need a way to figure out when the car has been turned off. Alternatively, we could use a thermometer to make sure the temperature doesn't get too high. Finally, we need a way to notify parents, this could be a text message but we may not have a connection to do that. We could send a notification via Bluetooth but that has limited range. This is one of the biggest problems we'll need to solve.

I hope to build a prototype that works well without inconveniencing parents. Accuracy and alerting are the two primary objectives. I don't want false alarms or failed notifications. As a secondary objective, I'd like it to be a portable solution that can be easily installed in a variety of cars and variety of child seats. At a minimum, I expect a solution that accurately alerts parents. If we can do it without inconveniencing them, I'd be satisfied. If that solution is portable, I'd be very happy with the results. I can contribute by using my sedan as a prototype. I can get a child's car seat and try to find the best monitoring solution.