

## Individual Reflection Report: ss tt

### Project Success in Achieving Outcomes

In the first three weeks of the project the team prepared for the first deliverable of the project, the initial project pitch. The first step that we took was a team discussion and a brainstorming session in the seminar of week 1. There is more information on this in 'Progress Report #1', found in the team x forum. Once we agreed on the parking sensor idea, we began designing the circuits for the project in multisim and we also started to consider the parts and components required for the project. As we approached the first major outcome of the project, deliverable 1, the team put together a series of presentation slides and agreed that half of the group would present the project pitch and the remaining half would present the final project presentation. Overall, the project pitch was successfully delivered and the four presenters, including myself, were able to answer all the questions that were given by our classmates.

Next, the group focused its efforts on preparing for deliverable 2, the multisim simulation and report. With the project pitch out of the way, the team was able to focus on developing and completing the multisim circuits started earlier. We completed the Multisim circuits of our state machine, traffic light warning system, collision reporting system and NE555 timer a few days ahead of the due date of deliverable 2. With the Multisim circuit component of the deliverable completed, all that was left to do was write the report. Each group member wrote a reflection for this stage of the project, which were added to the larger report. The group received full marks for deliverable 2.

The breadboarding stage of the project proved to be a tedious and frustrating period for the team, as encountered several major roadblocks as described later in this report. Week 7 turned out to be an even more challenging week, as both the NE555 timer and the state machine were not functioning correctly. A detailed description of the teams struggles with this stage of the project is provided in 'Progress Report #5' and 'Progress Report #6'. In the end, the group was able to present the four working circuits as well as a breadboarding report for deliverable 3. Ultimately, the team was able to secure a good score for the third deliverable.

The final design stage of this project involved implementing the circuits onto a Veroboard. While we had more time to prepare for deliverable 4, the difficulties and setbacks continued as described later in this report. With some perseverance the group was eventually able to implement the design with the interconnecting circuits working in unison through the Veroboard. We decided to simplify the design by using an Arduino implemented circuit for the traffic light response system, in which also experienced some setbacks but succeeded in the end. Ahead of the due date for deliverable 4, the team begun taking on some of the complementary tasks of the project, including budgeting, a parts list, a YouTube video, pamphlets and a poster for the innovation fair, as well as a model to demonstrate our design. All of these tasks were completed ahead of time with no significant issues.

The remaining four team members presented the final project presentation, deliverable 5, during the seminar of week 13. The presenters spoke well and conveyed all the necessary information on our project successfully. They received a variety of questions, in which they answered confidently. This presentation, much like the initial project pitch, was a great success overall. The team had been working on the final report for the project, deliverable 6, during the week leading up to its due date. The report was completed a day ahead of schedule and was

successfully submitted. There are more details about the team's management of the final report in 'Progress Report #10'.

### Individual contribution

Throughout each of the stages of the project I did my best to meet the requirements of my team role. My first role was sales and marketing, and I held this role for the first three weeks of the project. I was responsible for identifying the product's target market and developing a marketing strategy. In preparation for deliverable 1, I put together two slides for the presentation in which included "large scale implementation, design improvements, target market, predicted cost of sales and a graph demonstrating the effect of economies of scale." (Progress Report #1). I was one of the four presenters for the initial project pitch.

For the remainder of the project most of my contribution went to design related aspects, such as working with R in designing the NE555 timer, assisting G and M with the state machine where possible, and building the model for the innovation fair with B. For each of the reports that were due I did my best to complete my respective sections as fast I as could and to the best quality that I could provide. For the final report my primary contribution was writing the entirety of the executive summary as well as a small addition in the design section.

### Project related difficulties and how they were solved

This project offered an unexpectedly large number of setbacks and challenges for the team to overcome. The first of these setbacks occurred in week 6, where we discovered that we did not have all the necessary IC chips for the breadboard circuits. To resolve this, the group quickly put together a fully completed order sheet for both the university stores room and from external sources. This would ensure that we had the required parts and components for the following week's lab class. By a wide margin the biggest challenge for the team was in troubleshooting the breadboard and Veroboard circuits. The relentless series of setbacks arising from faulty circuit components and unreliable equipment, particularly from the thesis lab, held the groups progress back significantly and was the primary cause of our late submission for deliverable 4.

Unfortunately, the only way to resolve the problems was to troubleshoot and fault-find for hours outside of class time. Our efforts were rewarded however as eventually the cause of each of the problems was identified and fixed. We also experienced issues with the Arduino code, for the traffic light circuit; "Unfortunately, we could not properly integrate the Veroboard and the Arduino in the time allowed, so we had to accept a small mark reduction." (Progress Report #10). This was the final roadblock that stood in the way of our finished product. After a lengthy period of troubleshooting, O was able to find a solution and got it working correctly before the innovation fair.

### Improvements to the project

Considering that the issues with equipment held us back the most; "this ongoing battle with faulty equipment has significantly impeded in our ability to keep up" (Progress Report #6), I believe that avoiding the majority of the equipment-related issues should be the starting point for improving the project outcomes. This could be done by conducting a thorough testing of every circuit component, including the breadboard/Veroboard itself, before adding them to the circuit. While this would be tedious, it would avoid the frustration of fault-finding like we experienced. I personally would voice more of my ideas to the group and try to help more with the complicated aspects of the project, such as designing and building the state machine.