



Progress Report For

Blind Spot Detection System

Urban Wheel

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Introduction

Over the past three months, Urban Wheel has been developing the proof of concept of the blind spot detection system. We have finished individual module testing of the distance reporting system and the warning system. Next step is to finish the video switcher integration, polish the overall system, and field testing. This progress report will give a general overview of the schedule, budget, current progress of the project and future developments.

Schedule

Below is our original planned schedule, we are currently behind schedule. According to the original plan, we should be at the debugging stage and everything should be integrated. We are currently missing the video switcher system and still undergoing integration.

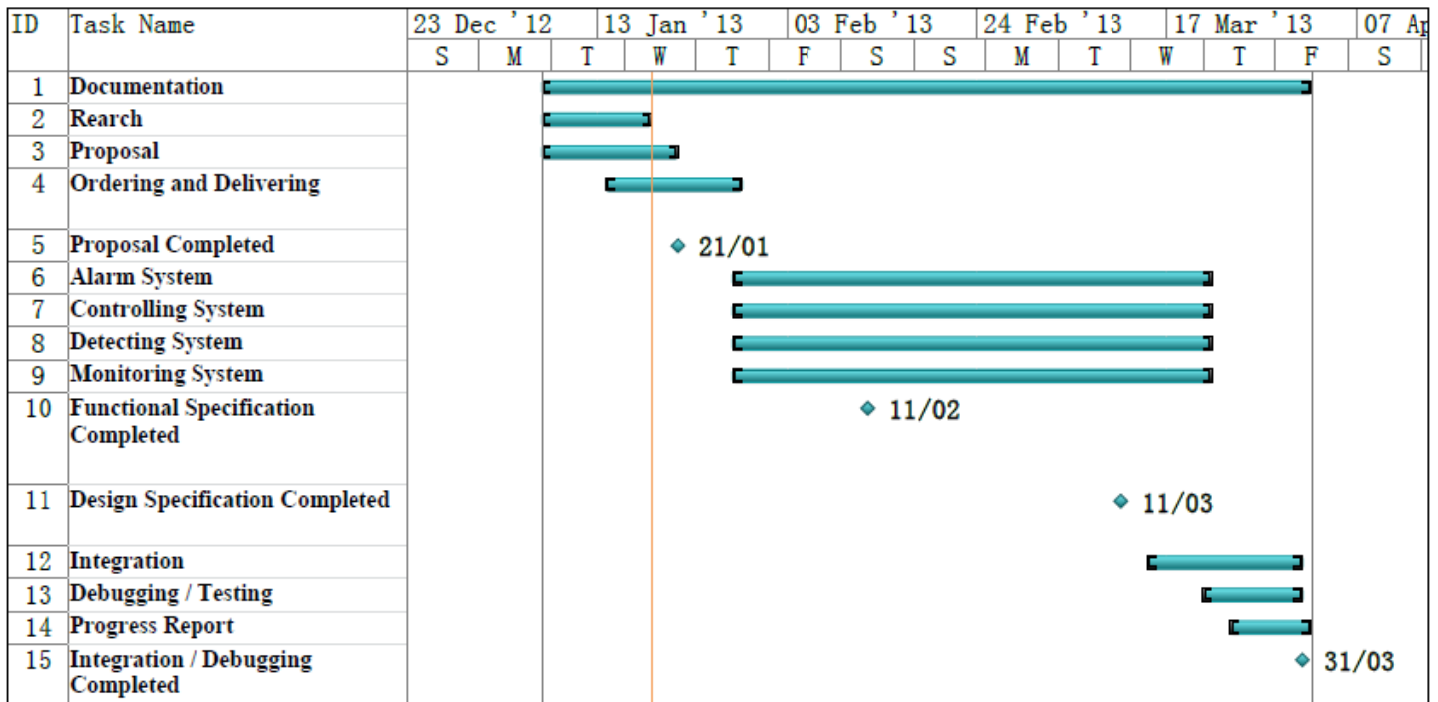


Table 1: Gantt Chart

To remediate the current schedule slippage, we will conduct more group meetings in order to create more work opportunity. We will divide the workload equally to work efficiently. Our group will come up with a new revised schedule and strictly follow it, and frequently monitoring our progress relative to the milestone. Each of our members are willing to contribute their own personal time including Easter holiday and weekends.

Financial

We are currently within the budget limit of \$600, reaching approximately \$295. We have purchased most of the parts and material. We expect the total cost for parts and material will not exceed \$320.

Human Resources

Our team has superb group dynamic. We have at least two scheduled meetings per week, and it does not interfere with our other course work. Other than in-person meetings, communication between members is also conducted through email. Our team has yet to encounter any conflicts between members, and is confident our team will stay strong.

Current Progress

Distance Reporting System

The sensors are correctly reporting the distance to the Warning Reporting System, and through the debugging console, the distance are accurate. Because of limited numbers of I/O pins on the UNO boards, we have decided to move the buzzer and vibration motor out of the Warning System, and integrated into the Distance Reporting System. The Buzzer can give correct warning patterns depending on the turn signal switch and the reported distance (e.g If turn signal is engaged, and there is obstruction in the danger zone, then the buzzer and the motor will respond, and vice versa).

Warning System

Upon receiving the distance, the warning system can successfully determine the safety threshold and give the correct warnings (e.g. The distances are displayed on the LCD display, and LEDs have correct pattern depending on the distance). The LCD will give a correct response when a push-button is pushed.

Sensor Casings

The sensor casings are prototyped using corrugated plastic boards, and water resistance measure has been applied, the circuit boards are fully enclosed and the gaps on the case are sealed with hot glue. The casings are designed to minimize aerodynamics effect on the vehicle ideally. The casings are made with the correct theoretical angles, which is calculated to be 15 Degrees. The wires from the sensors are carefully insulated and are changeable.

Next Steps

Camera/Video switcher mechanism

The camera switching system will be integrated to the turn signal switch, which should give the correct video signal depending on the turn signal status.

Main Control System Casings

The casings for the LCD display, UNO boards, and corresponding circuits will be done.

Code optimization and polishing

An error checking routine will be performed at the system startup, checking for any abnormality on the sensors or software, and error message will be displayed on the LCD display to notify the user of such errors.

LCD display

The UI of the LCD interface will be finished and polished, making it more user friendly. An extra language will also be added. The LCD display orientation might be redesigned to make it easier to understand.

Field testing

The finished prototype will be mounted to an actual vehicle and will be tested on an empty parking lot.

Summary

Our project are currently slightly behind schedule, one subsystem is yet to be integrated. Financially we are well within budget, and no more future purchase is needed. Each components have passed their unit test. Over the next weeks, the system should be fully finished, integrated and field tested as planned. We are confident to make up of the progress with our strong team dynamics.