Summary and Conclusions

The goal of the project was to aid in accident prevention through a device aiding users identify and anticipate obstacles in their vehicle’s blind spot. In addition, the device was to attain vehicle control and prevent the user from steering into obstacles in the blind spot. The prototype device was to be verified on scaled down vehicles under simulated road conditions. As planned, the device was subject to a range of modular, and system level testing. The results of these tests verified the success of the device, and the ideas that were behind the final implementation.

The main idea behind the implementation was to use simple ultrasonic sensors, and standard microcontrollers in calculating relative speeds between objects. This objective was successful, and it allowed us to reach the overall goal of determining the danger associated with lane changes according the amount of time the user has to perform the maneuver.

Though our design was implemented on scaled down remote controlled vehicles, the obstacle detection and anticipation module can be easily expanded to real life situations. With more advanced sensors, the implemented software and hardware can easily be ported to be used in real life vehicles. However, much more rigorous testing will need to be completed, and detection algorithms need to be improved for the design to become reliable enough for practical applications.

Though the device is meant to be used for automobiles, components of the project can be used for various other applications. The speed detector for example has many applications within law enforcement, organized sports, and science. The wireless component of the project can be applied to control remote vehicles, and robots. In addition, the real-time plotting tools developed during the project can be used for a wide range of applications within science, mathematics and engineering.

In future, the design can be improved by replacing the current sensors with more advanced alternatives. In doing so, the need for sluggish averaging algorithms will be eliminated, resulting in a more reliable device. The software itself can also be enhanced to improve response times, and account for anomalies in sensor readings. The automation module can also be further enhanced. The steering lock feature is rather dangerous in real situations, and can be substituted with counter-steering mechanisms. In addition, sensors can be placed at the front of the vehicles to check whether a more serious frontal collision is possible due to the steering lock. In such situations, the automation module should avoid the more serious accident.

In summary, the project meets the initially required goals, as proven by the validation and acceptance tests. In achieving the initial goal of designing a portable