

Development of a Portable Traffic Safety Information System for Congested US Roadways using V2V-assisted V2I communication using DSRC technology

Principal Investigator

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Project Abstract:

To save lives and prevent injuries on US highways, the need of having vehicle to vehicle (V2V) and/or vehicle to infrastructure (V2I) communication has become the primary mission of IntelliDriveSM, an initiative of USDOT. **In the current phase** of research, we are developing a portable traffic safety information system utilizing **only V2I** DSRC communication technology for congested US roadways caused by work zone environment, rush hour traffic or an accident. However, in this system, the safety message broadcast range will depend upon roadside DSRC infrastructure, and also congestion coverage length is less than half a mile, limited by the access range of one DSRC roadside unit (RSU). **In this proposed phase** of research, we intend to increase the message broadcast range, and to achieve longer congestion coverage length using **V2V-assisted V2I** DSRC communication. To increase the message broadcast range and to achieve longer congestion lengths, a few selected vehicles on the road approaching to congestion area and already on the congestion area are engaged to facilitate traffic data acquisition and to relay the traffic safety messages to the vehicles much farther from the congestion area. By incorporating V2V communication, much longer broadcast range (up to a few tens of kms) and much longer congestion coverage (up to a few kms) could be achieved, which will be shown by a filed demonstration at the successful completion of this phase of research. Furthermore, the DSRC technology will be used as a tool to design and implement V2V communication based traffic safety message relay system and one of the objective of the proposed project is to evaluate the limitations for potential use of DSRC technology for V2V based applications.

Anticipated Duration of Project; 12 Months