Developing an Intelligent Decision Support System for the Proactive Implementation of Traffic Safety Strategies

Principal Investigator

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Project Abstract:

The growing number of traffic safety strategies including the Intelligent Transportation Systems (ITS) and low cost proactive safety improvement strategies calls for an integrated approach to optimize resource allocation systematically and proactively. To assist decision makers at different levels to select treatment sites and the corresponding safety strategies, an intelligent decision support system is proposed in this project. The system will help assess the effectiveness of individual as well as combined traffic safety strategies under different road and weather conditions, identify possible dependencies among safety improvements in related locations, and optimize the implementation of traffic safety strategies in a proactive way. Underlying algorithms will be symbolically deducted and programmed. Therefore, as more data are collected and input to the system, the assessment results for existing and emerging traffic safety strategies will be continuously improved. A Geographic Information Systems (GIS) based user interface will be developed for the system. In this way, the concerned areas can be selected directly from the map. Once an estimated budget is input, optimized safety strategy implementation plans for the chosen areas will be suggested together with the total investment needed for implementation, operation and maintenance. To demonstrate the application of the developed algorithm and decision support system, a case study will be conducted to help solve the budget allocation problem faced by District 1 engineers to determine an optimal solution to distribute $22 million to two competing safety improvement projects in Ely area.

Anticipated Duration of Project : 18 months