CENTER RESEARCH SEMINAR

Theoretical Examination of Passing Sight Distance in Three Dimensions with Application to Marking No-Passing Zones

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Room 150 at Science Building

Abstract

Rural two-lane highways constitute the majority of the road system in the United States. Over 62 percent of Texas center line highway miles are two-lane highways. No-passing zones, which are indicated by solid lines separating the traffic moving in opposite directions, tell drivers where there are segments of two-lane highways that do not have sufficient sight distance to safely perform passing maneuvers. The presentation describes a method for automating the process for locating no-passing zones using global positioning system (GPS) data. The researcher developed a new analytical algorithm to evaluate three-dimensional passing sight distances that works for any arbitrary alignment of two-lane highway. The algorithm was incorporated into a computer model that uses GPS data as the input and results in the locations for no-passing zones. The steps involved in the process include collecting the GPS data, converting it to a form that models the roadway center line, evaluating the availability of passing sight distance, and determining the locations where no-passing zone markings should be placed. The automated system was tested on three different highway segments, and the results obtained were in general agreement with the existing locations of no-passing zone markings. The verification results indicate that the innovative algorithm and the computer program can be used as a useful tool to determine the availability of passing sight distance and locate no-passing zones. The developed model and the prototype are of interest to highway agencies and help them to locate no-passing zones on two-lane highways.

Biography

Mehdi Azimi is a postdoctoral research fellow in Urban Transportation Environmental Networks (UTEN) subproject of the NSF CREST Center for Research on Complex Networks at Texas Southern University. Dr. Azimi received his Ph.D. degree in Civil Engineering-Transportation Engineering from Texas A&M University. He has a Bachelor of Science degree in Civil Engineering and two Master of Science degrees, one in Civil Engineering-Earthquake Engineering, and the other one in Transportation Planning & Management. Prior to starting his graduate studies, he worked in the private sector for both consulting and construction firms, providing services in the areas of general civil engineering for more than four years. He worked as technical project manager in retrofitting of three major power plant projects and also as the head of the bids and contracts department in a private consulting company. While pursuing his advanced degrees at Texas A&M University, Dr. Azimi worked in the Operation and Design Division at Texas Transportation Institute (TTI), and engaged in various research projects related to transportation and traffic engineering. Dr. Azimi is the recipients of Dr. William J. Harris Outstanding Ph.D. Student Award and TTI/Trinity Outstanding Doctoral Student Award.