

عنوان مقاله:

Reduction of Freeway Accidents through Using of Intelligent Vehicular Networks

محل انتشار:

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خلاصه مقاله:

Increasing population growth on the one hand and the growth of transportation industry on the other have had numerous positive and negative impacts in societies. This issue has led to an increase in the volume of traffic demand in road networks and has hence increased the number of road accidents. 30% of accidents in the world, and 20% in Iran, have been of the rear-end type, in which human error has the greatest role. The use of VANETs as a module of intelligent transportation systems (ITS) could play a considerable role in reducing human error. This study offers a new method for investigating the role of vehicular ad-hoc networks (VANETs) in reducing the number of rear-end accidents in freeways by reducing drivers' reaction time. In so doing, by using the micro data of the traffic flow in the I-80 freeway of the NGSIM project, drivers' behavior in a specific time span was analyzed; and by using Urgent Deceleration Index (UDI), the safety of drivers at each moment was investigated. The results of data analysis reveal that the use of VANET communication networks can reduce the percentage of vehicles' exposure to danger in the car-following process from 68% to 15% by reducing drivers' reaction time.

کلمات کلیدی:

VANETs, Rear-end Collisions, Car Following, UDI Safety Indicator, Reaction Time

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