



ABSTRACT:

Methodology for clarifying the acceptable level of sensor reliability for collision avoidance at intersections

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2012-11-06

This study uses collision-prevention support information at a blind intersection as an example to discuss a methodology for estimating the collision mitigation ratio when the collision avoidance information is used by a driver. It also discusses the acceptable delay time for information presentation regarding a crossing vehicle at a blind intersection.

First, driver performance in terms of braking timing and deceleration operation for collision avoidance was analysed in a driving simulator when the onset timing of the information to notify the driver about a crossing vehicle was changed.

Next, a driver model was constructed that simulated a braking operation when a crossing vehicle appeared at a blind intersection where there were no traffic signals.

Through Monte Carlo simulations using this driver model, an estimation was made of the frequency of collisions to vehicles crossing the blind intersection. In addition to this estimation, the acceptable delay time for presenting the information was estimated. One of the results indicates that the delay time should be less than 2 s. This means the information should be presented to the driver when the time to collision (TTC) is longer than 3 s to mitigate the probability of collision.