

A Case Study for Surrogate Safety Assessment Model in Predicting Real-Life Conflicts

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Abstract

Conflict techniques enable transportation engineers to investigate hazardous network locations without the need to obtain crash data. These techniques are the most developed indirect measure of traffic safety. The concept of these techniques is based upon the ability to identify the occurrence of near accidents and therefore, offers a faster and, in many respects, a more representative way of estimating expected accident frequency and accident outcomes. One way to study conflicts is the use of microscopic models. Surrogate Safety Assessment Model (SSAM), a model developed by Federal Highway Administration, utilizes simulated vehicle trajectories to investigate conflict types, severity, and locations. This study investigates the feasibility of using SSAM to identify and classify traffic conflicts between vehicles and pedestrians by analyzing simulated trajectories. A case study of a major signalized intersection in the city of Doha was used. The traffic network was modeled using VISSM.

Simulated vehicular trajectories were generated and analyzed using SSAM. The results were then compared with the real-life conflicts extracted from the video data collected at the same intersection based on the time-to-collision criteria. Although the results indicate many similarities between the observed and simulated conflicts, the simulation results were found to overestimate the collision risks, especially in the case of pedestrians. The results also indicate that the simulation approach is capable of identifying conflicts related to special maneuvers such as merging and diverging at intersections.

Keywords

Traffic safety Surrogate Safety Assessment Model Traffic simulation Traffic conflict analysis Traffic operations Signalized intersections

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