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Design of Target Selection for Pedestrian Autonomous Emergency Braking System

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Abstract : An autonomous emergency braking system is an advanced driving assistance system that enables vehicle collision avoidance and pedestrian collision avoidance to improve vehicle safety. At present, because the pedestrian target is small, and the mobility is large, the pedestrian AEB system is faced with more technical difficulties and higher functional requirements. In this paper, a method of pedestrian target selection based on a variable width funnel is proposed. Based on the current position and predicted position of pedestrians, the relative position of vehicle and pedestrian at the time of collision is calculated, and different braking strategies are adopted according to the hazard level of pedestrian collisions. In the CNCAP standard operating conditions, comparing the method of considering only the current position of pedestrians and the method of considering pedestrian prediction position, as well as the method based on fixed width funnel and variable width funnel, the results show that, based on variable width funnel, the choice of pedestrian target will be more accurate and the opportunity of the intervention of AEB system will be more reasonable by considering the predicted position of the pedestrian target and vehicle's lateral motion.

Keywords : automatic emergency braking system, pedestrian target selection, TTC, variable width funnel
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