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(57) Abstract :

Human sleepiness, inattention, or drowsiness are the leading causes of driving accidents. Using in-car sensor signals such as vehicle and engine speed, throttle position, and engine load, machine learning technology has recently been utilized to reliably identify driving styles and recognize unsafe behaviors. We investigated using external sensors like a gyroscope and a magnetometer in conjunction with in-vehicle sensors to improve machine learning detection of unsafe driving behavior. Based on such signals, we created a set of features that can accurately describe the driver's behavior. After that, a CNN and an artificial neural network were trained and evaluated using many features calculated over a 200-kilometer journey. The ground truth needed to evaluate categorization performance was being established using an objective methodology based on the vehicle's speed, lateral, and longitudinal acceleration. CNN confirmed that the proposed methodology has the capacity to detect unsafe driving habits.

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