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INTELLIGENT & INTERACTIVE INTERFACES FOR DRIVER ASSISTANCE SYSTEM

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ABSTRACT

Advanced driver-assistance systems have recently become one of the most active topics related to intelligent vehicles. Such assistance facilitates vehicular operation by allowing drivers, increased control and an enhanced driving experience. One of the principal approaches is to detect lanes using a vision system in the vehicle. Our project provides robust and accurate extraction of lane markings under varying lighting and road conditions. Our project also involves the use of a closed circuit video system together with rear view parking assistance, indicating the decreasing distance from the car to the rear end of the parking site and other important parking information as the car is being backed.

We also propose a dynamic visual system to detect and analyse the vehicles in front of our car, and then extract corresponding contextual information. This information of nearby vehicles can be used for driver-assistance systems to convey a warning. We also solve the problem of detecting sudden pedestrian crossings to assist drivers in avoiding accidents. To address this problem, we propose video-based framework that detects partially visible pedestrians just as they enter the camera view, with low false alarm rate and high speed detection. The framework is tested on a new collection of high-resolution videos captured from a moving vehicle and yields a performance better than that of state-of-the-art driver assistance system. We also propose a system that uses standardized methods to detect driver drowsiness in all conditions and also warns him early enough to avoid the accident.