Automated Traffic Violation Detection

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One of the most serious health risks has been and will continue to be road accidents. The number of deaths and injuries caused by traffic accidents has been proven statistically. Road accident is a most unwanted thing to happen, especially on the pedestrian crossings to a road user, though they happen quite often. Some reasons for the accidents and crashes are due to human errors such as drunk driving, high speed, red light jumping and overtaking on the pedestrian crossing, etc. Among these reasons, especially an overtaking on the pedestrian crossing is one of the most common traffic rules violations in Sri Lanka, and the accidents associate with this violation cause a huge loss to life and property. Although automated techniques for detecting some traffic offenses exist, such as detection of the speed limit and drunk drivers, currently there is no automatic mechanism for the detection of the vehicles which are overtaking on pedestrian crossings. Manual identification of overtaking vehicles on the pedestrian crossing is more critical than anything else because detection of moving vehicles, then tracking and classifying them in real-time in a complicated environment, is extremely tough. Therefore, an accurate and efficient automatic method for detecting traffic violations is a very useful tool for road safety. This paper describes an automatic detection of traffic violation offender on pedestrian crossings. This paper proposed an improved dynamic background-updating approach and a feature-based tracking method to detect overtaking vehicles on the pedestrian crossing. This can fill the gap of manual detection with automatic detection and no labour costs. Thus, it is beneficial in various ways such as the confirmation of road safety. The application is proposed as a mobile application. A complete traffic violation detection system is realized in C++ with Open CV libraries. The accuracy of the system was found as above 73% after the train and validate the model. In conclusion, the developed method can help to detect vehicles that have violated the traffic rules on the pedestrian crossing accurately.

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