ABSTRACT

As transportation develops, a sophisticated surveillance system is needed, one of which is a vehicle license plate and vehicle type detection system. Therefore, information about vehicle license plates and vehicle types must be presented easily and quickly. The vehicle license plate detection system uses the Optical Character Recognition (OCR) method and the vehicle type uses the you only look (YOLO) method. OCR and YOLO are digital image processing technologies that can be used to automatically recognize vehicle license plates and vehicle types. This system can help speed up the vehicle identification process for various purposes, such as automatic parking, traffic monitoring, and so on.

The system's ability to detect vehicle types and vehicle license plates is greatly influenced by the light intensity and dataset used. This study analyzes the accuracy of two main methods: You Only Look Once (YOLO) for vehicle type detection and Optical Character Recognition (OCR) for vehicle license plate detection. The test results show that the accuracy of YOLO in detecting vehicle types varies based on the time of image capture. In the morning, the detection accuracy for the car class reaches 85.33% and for the motorcycle class 90.25%. During the day, the average accuracy drops to 84.6% for cars and 82.8% for motorcycles with. In the afternoon, the accuracy decreases further to 82.14% for cars and 74.5% for motorcycles with. At night, the accuracy decreases significantly with an average value of 52% for cars and 63.2%. With the fastest average processing time in the afternoon of 84.31 and the slowest during the day with a processing time of 139.99ms. Meanwhile, for OCR, the accuracy of vehicle license plate detection in the morning reached an average of 28.39%. During the day, the accuracy decreased to 23.75%, in the afternoon 22.67%, and at night 1.42%. These results indicate that light intensity greatly affects the performance of the detection system, with the best performance in good lighting conditions.

Keywords: (detection system, OCR, YOLO)