Abstract

Vehicle license plates play a very important role in the process of registration and identification of motorized vehicles, as the primary repository of information regarding the vehicle and its owner. Currently, Electronic Traffic Law Enforcement (ETLE) uses the Automatic License Plate Recognition (ALPR) system to detect traffic violations. Nonetheless, implementation of ALPR in low light conditions still faces significant challenges. Therefore, this research leads to the development of computer vision-based solutions with a focus on their performance in low light conditions. This research aims to develop and improve the performance of the ALPR system so that it can operate effectively in low light conditions. In this study, the YOLOv7 model is used, a popular variant of YOLO which has high speed and high accuracy in real-time object detection. Through various experimental scenarios, the model proposed in this study achieved a precision of 98.1%, a recall of 95.5%, and mAP@0.5 of 99.3% for the Number Plate class. This study implements three OCR models, namely easyocr with an accuracy of 35.6%, Kerasocr with an accuracy of 52.5% and pytesseract with an accuracy of 19.7%.

Keywords: Object Detection, Automatic License Plate Recognition, YOLOv7, OCR