

ABSTRACT

Public transportation in Indonesia, especially in Jakarta, is currently experiencing rapid growth, one of which is Jakarta Transportation (TransJakarta). This transportation is managed by PT Transportation Jakarta (BUMD) which operates on a special route called a busway which is a separate route from private vehicles with the aim of speeding up travel time and increasing people's interest in using public transportation. The traffic problem in Jakarta is the very high level of congestion which has resulted in several private vehicles using TransJakarta routes that are not intended for them. Currently, to select vehicles that are allowed to pass on the special Transjakarta lane, human workers stand guard at the end of the lane and then open the gate if a Transjakarta bus is passing, but this method is considered less than optimal because human power cannot be on guard 24 hours a day. The methodology used in this research is to utilize a Convolutional Neural Network (CNN) network architecture image processing system with the application of the You Only Look Once (YOLO) algorithm. The data used is 533 images consisting of 4 classes, namely TransJakarta Buses, Cars, Trucks, Motorbikes. The results of vehicle object detection and classification have good performance with mAP values of 92,2%, Precision 89,5%, Recall 84,2%. It is hoped that this system can help PT Transportation Jakarta in maintaining the TransJakarta route so that it remains sterile from private vehicles that are not supposed to pass on the route more efficiently and accurately.

Keywords: *TransJakarta, Image Processing, Convolutional Neural Network (CNN), You Only Look Once (YOLO).*