ABSTRACT

The increasing number of motorized vehicles in Indonesia has created various challenges in traffic management, such as vehicle control and monitoring. To address this issue, Automatic License Plate Recognition (ALPR) systems have become a highly relevant solution. This research aims to implement TrOCR (Transformer-based Optical Character Recognition), a modern OCR technology based on the Transformer architecture, to detect and recognize characters on vehicle license plates in Indonesia. This model is designed to capture visual patterns and text simultaneously using a vision encoder and a text decoder. This model can capture the spatial relationships between characters more effectively than traditional methods or those based on Convolutional Neural Network (CNN) by utilizing the attention mechanism in Transformers. Evaluation results show that the developed model achieves an accuracy of 96,46% and CER of 3,13% on the test set of 160 images data in recognizing vehicle license plates. This research contributes significantly to the development of ALPR technology and supports the modernization of transportation systems, optimization of urban mobility, and smart city initiatives in Indonesia.

Keywords: *Transformers,* OCR*, Automatic License Plate Recognition,* TrOCR*, Deep Learning*