Design and Development of a Smart Parking System Prototype Using OCR and Deep Learning Technology Based on a Website

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ABSTRACT

Smart parking system is a system developed to provide solutions to several problems that arise regarding parking problems such as parking security, messy layout, and confusion in finding an empty place. This research aims to design and develop a smart parking system that can detect license plates automatically using deep learning and OCR methods. This system is also integrated with an automatic gate mechanism when the vehicle enters after the license plate is detected using a website-based ESP32. In this study, the data set used was 3000 images of black, red, and white license plates with images of license plates of various conditions and shapes. The accuracy produced by the license plate detection system with 55 samples in the morning and at night in the automatic parking system using matrix evaluation reached an average of 96%, precision 96% recall 100% and f1-score value 98%. besides that black box functional testing with 9 sample scenarios was achieved with a success rate of 100%. This model is expected to be used as a tool in the facilities and infrastructure industry to facilitate the performance of parking officers and parking users to be more efficient.

Key Words : *Number Plate Recognition, Smart Parking, Deep Learning, Confusion Matrix*