

THE PROTOTYPE OF THE BRIDGE MAINTAINING MONITORING SYSTEM WITH DIGITAL IMAGE PROCESSING METHOD BASED ON DEEPLARNING

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ABSTRACT

Bridges are urgent facilities and infrastructure in the territory of Indonesia as a maritime country to link one area with others. The existence of bridges helps people to travel using land transportation easily. Therefore, maintenance detection monitoring of bridges becomes necessary. There are several variables to control and maintain a bridge such as the vehicle load that crossing the bridge. CCTV was used to control and monitor the passing vehicles. The purpose of this study is to apply a deep learning-based digital image processing method using the YOLO (You Only Look Once) algorithm on CCTV cameras to monitor bridge traffic density which then classifies the type of vehicle to predict the vehicle weight. This algorithm uses a single neural network on the entire image. This network divides the image into regions then predicts the bounding box and its probability of classifying as an object or not. The performance of the algorithm in this study detected accuracy value of all types of vehicles by 80% of the 30 sample vehicles detected. In other words, 24 vehicles were detected and 6 others were not. The results of this detection still have a large error due to the angle from the camera position that does not view all areas.

Keywords: Bridge, deep learning, digital image, CCTV