APPLICATION OF YOLO-V8 DEEP LEARNING MODEL FOR OBJECT POSITION TRACKING ON A HEXACOPTER DRONE

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ABSTRACT

Recent advancements in drone technology have significantly enhanced real-time object recognition capabilities, which support drone functionalities such as autonomous package delivery and object tracking. One of the most widely used models for fast and accurate object detection is You Only Look Once (YOLO). This study aims to implement the YOLO-v8 model for real-time detection of a tors-shaped object using a hexacopter drone. The research methodology includes problem identification, objective formulation, literature review, system hardware and software design, object detection model implementation, as well as system performance testing and analysis. The dataset used was specially trained to recognize the torus object to improve classification accuracy. Performance evaluation based on the confusion matrix showed that the model achieved 100% accuracy, precision, recall, specificity, and F1-score. These results indicate that the YOLOv8n model is highly reliable for detecting torus-class objects and is suitable for object recognition applications in drones.

Keywords: YOLOv8n, Hexacopter Drone, Object Detection, Confusion Matrix.