

ABSTRAK

Deteksi dan klasifikasi objek visual merupakan salah satu bidang penting dalam pengembangan teknologi visi komputer, khususnya dalam upaya pelestarian budaya dan identifikasi objek religius. Penelitian ini bertujuan untuk mengimplementasikan model *YOLOv8* dalam mendeteksi dan mengklasifikasikan patung Bunda Maria berdasarkan ciri-ciri visual seperti pose, atribut, dan pakaian. Model dilatih menggunakan data set gambar patung Bunda Maria dari berbagai kategori, dengan pengujian sebanyak 162 kombinasi parameter pelatihan, yaitu *epoch*, *learning rate*, *batch size*, *confidence threshold*, dan *IoU threshold*.

Hasil penelitian menunjukkan bahwa model *YOLOv8* mampu mendeteksi dan mengklasifikasikan patung Bunda Maria secara akurat. Kombinasi parameter terbaik diperoleh pada konfigurasi 50 *epoch*, *learning rate* 0.0005, *batch size* 16, *confidence threshold* 0.5, dan *IoU threshold* >0.5, dengan akurasi mencapai 0.973, *precision* 0.978, *recall* 0.968, dan *mAP@0.5* sebesar 0.957. Rata-rata durasi pelatihan untuk satu kombinasi berkisar antara 4 hingga 12 menit.

Penelitian ini membuktikan bahwa *YOLOv8* dapat digunakan secara efektif dan efisien dalam sistem deteksi objek berbasis citra untuk tujuan dokumentasi dan pelestarian karya seni religius.

Kata kunci: Deteksi Objek, Klasifikasi Gambar, *YOLOv8*, Patung Bunda Maria, Deep Learning.

ABSTRACT

Visual object detection and classification are crucial areas in the development of computer vision technology, particularly in cultural preservation and the identification of religious objects. This study aims to implement the YOLOv8 model to detect and classify statues of the Virgin Mary based on visual characteristics such as pose, attributes, and clothing. The model was trained using a dataset of images of statues of the Virgin Mary from various categories, testing 162 combinations of training parameters: epoch, learning rate, batch size, confidence threshold, and IoU threshold.

The results show that the YOLOv8 model is capable of accurately detecting and classifying statues of the Virgin Mary. The best parameter combination was obtained with a configuration of 50 epochs, a learning rate of 0.0005, a batch size of 16, a confidence threshold of 0.5, and an IoU threshold >0.5 , with an accuracy of 0.973, a precision of 0.978, a recall of 0.968, and a mAP@0.5 of 0.957. The average training time for a single combination ranged from 4 to 12 minutes.

This research demonstrates that YOLOv8 can be used effectively and efficiently in an image-based object detection system for the documentation and preservation of religious artworks.

Keywords: Object Detection, Image Classification, YOLOv8, Virgin Mary Statue, Deep Learning.