Sistem Deteksi Kematangan Cabe Rawit Menggunakan Algoritma Yolov8 *(Chili Pepper Ripeness Detection System Using the Yolov8 Algorithm)* Mochammad Rifki Ulil Albaab, ST., M.Tr.T. (Dosen Pembimbing)

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ABSTRACT

Indonesia is the largest producer of bird's eye chili in Southeast Asia; however, the ripeness sorting process is still performed manually, resulting in inconsistent outcomes, low efficiency, and high operational costs. This study aims to develop a real-time ripeness detection system for bird's eye chili using the YOLOv8 (You Only Look Once version 8) algorithm. The waterfall model was adopted as the development methodology, comprising stages of requirement analysis, system design, implementation, testing, evaluation, and maintenance.

The dataset consisted of 1,800 images of bird's eye chilies categorized into three classes: ripe (red), unripe (green), and defective. These images were processed using Roboflow with a data split of 70% for training, 20% for validation, and 10% for testing. The YOLOv8s model was trained on Google Colab for 50 epochs. System performance was evaluated using a confusion matrix to measure classification accuracy. The resulting system is expected to detect and classify chili ripeness levels in real time with high accuracy, enhance post-harvest efficiency, reduce reliance on manual labor, and provide economic value for farmers and stakeholders in the chili industry in Indonesia.

Key words: Bird's eye chili, YOLO v8, Roboflow, Object Detection