

Machine Vision untuk Deteksi dan Identifikasi Obyek Bergerak Menggunakan Algoritma Hybrid Fuzzy Neural Network

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ABSTRACT

Machine vision can be applied in various fields to evaluate, identify and classify a stationary or moving object. This study aims to propose new algorithms on machine vision technology for the detection, identification and classification of moving objects using hybrid fuzzy neural networks (FNN). Fuzzy logic is an algorithm whose working principle mimics the way of human thinking with IF-THEN method, while neural network is an algorithm that mimics the workings of the human brain by learning. The combination of the two Artificial Intelligence (AI) algorithms mentioned above will overcome the deficiencies of each in detecting, and identifying moving objects received by the smart camera. To test the performance of the proposed algorithm, wine is used as a moving object on a conveyor or dryer. The object is detected, identified using a machine vision camera combined with the Multi-layer Perceptron (MLP) method. Computer vision is for taking grapes' image on the conveyor, whereas MLP is for controlling grape drying machines and classifying its output. To evaluate the proposed, several types of grapes are put on the machine and their images are taken every two minutes. Some parameters of the drying machine are measured for determining the drying performance, including temperature, humidity, airspeed temperature, and the dried grape condition. Those parameters are fed on inputs of MLP to adjust an appropriate the output, including grape mover, heater, and classifier. The results show that the grape could be dried faster with better performance.

Kata Kunci: *Machine vision, drying grape, Multi-layer Perceptron (MLP)*