

ABSTRACT

Indonesia is the third largest producer of bananas in the world, but its export volume is still very low because the sorting process has not been optimized according to export quality standards. To overcome this problem, this study designed a computer vision-based automatic sorting system that is able to classify the physical condition of bananas in real-time as an effort to improve post-harvest sorting efficiency.

The classification model was developed using a teachable machine platform with a total of 3,000 banana images evenly divided between fresh and rotten categories. The model was trained with 50 epochs and implemented using TensorFlow.js. The classification results are sent to the ESP8266 microcontroller to control the actuators in the form of servo motors, and displayed on the blynk dashboard via Wi-Fi connection for monitoring needs.

The test results show a classification accuracy of 90% from 20 tests, with an average system response time between 3 to 5 seconds. The system is able to run the sorting process automatically. This prototype fulfills all research objectives, as a solution for sorting automation in horticultural products.

Keywords: Automatic Sorting System, Internet Of Thing, Blynk, ESP8266