

AVOCADO DAMAGE DETECTION SYSTEM (Persea Americana Mill) USING GAS SENSOR WITH THE STRATIFIED K-FOLD CROSS VALIDATION METHOD

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Abstract

The purpose of this research is to build a model that can detect damage to avocados, using gas sensors that are accurate, precise, specific, and sensitive. The specific goal is to get the best model from the several machine learning methods used. The best model will be obtained through a classification algorithm. The input data to be processed is gas data in units of ppm measured from damaged and normal avocados that have been stored for 7 days. Gas data recording uses the TGS 2600, MQ-3, MQ-4, MQ-2, and MQ-8 sensors. Each data quality will be improved by cleaning and normalizing data. The quality-enhanced data is then used as input to the machine learning system. The machine learning model used is the Ada-boost, Decision Tree, Multi Layer Perceptron (MLP) classification model and the Stratified K-Fold Cross Validation method. The trained model is then tested with a comparison of the number of test data and training data which is 70:30. The test results show the accuracy of the avocado damage detection system using ppm data obtained using the gas sensor and the Stratified K-Fold Cross Validation method with system accuracy on the Ada-boost value having an accuracy of 100%, 100%, 100% and 50%, with a method accuracy value classifier with 4x repetitions.

Keywords: Avocado, Damage, Detection System, Classification Model, Stratified K-Fold Cross Validation method

INTRODUCTION

Avocado fruit (*Persea americana* Mill) is a fruit plant that is in great demand by consumers. This plant is spread across several regions in Indonesia, one of which is

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