# *ABSTRACT*

**Muhammad Rivaldi Dwi Yulianto, 2026**. *Implementation of the SVM Algorithm for Classifying Cocoa Pod Ripeness Based on Color Features. Department of Electrical Engineering, Faculty of Engineering,* Muhammadiyah *University of* Makassar.

*The quality of the harvest is mostly dependent on how ripe the cocoa fruit is. However, the majority of the cocoa fruit ripeness classification procedure is still done by hand, which could result in mistakes. In order to identify cocoa fruit ripeness based on color data from digital photos, this study intends to apply a Support Vector Machine (SVM) algorithm and assess the model's accuracy. Using a dataset of 600 photos of unripe, mature, and rotten cocoa fruits, this study employed a quantitative experimental methodology. Image acquisition, preprocessing, RGB and HSV color feature extraction, splitting the dataset into training, validation, and test data, and training an SVM model with a RBF kernel were all steps in the research procedure. Metrics like accuracy, precision, recall, and f1-score were used to evaluate the model. According to the findings, the SVM model has a 93% accuracy rate in classifying the ripeness of cocoa fruit. The rotten class has the highest f1-score (0.95), followed by the ripe class (0.93) and the unripe class (0.89). These findings suggest that the color-based SVM approach works well for categorizing the ripeness of cocoa fruit. It is anticipated that this research will offer a way to increase the automated cocoa fruit sorting process's accuracy and efficiency.*

*Keywords: Support Vector Machine, Cocoa, digital picture, color characteristics, and categorization.*