

# Oil palm fruit maturity classification based on texture feature extraction of fruit thorns and supervised machine learning classifiers using image processing technique

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## Abstract

There is a processing need for a fast, easy and accurate classification system for oil palm fruit ripeness. Such a system will be invaluable to farmers and plantation managers who need to sell their oil palm fresh fruit bunch (FFB) for the mill as this will avoid disputes. In this paper the authors have investigated and presented the way of grading the oil palm FFB automatically by using the digital image processing techniques based on the Gabor, GLCM and BGLAM texture feature extraction and K nearest neighbourhood (KNN) and artificial Neural Network (ANN) supervised machine learning. The results show that the oil palm fruit bunch maturity inspection system using GLCM technique based on the ANN classifier with ROI 1 yields the best quality classification result at 91.3% compared with the systems of the BGLAM based ANN classifier with ROI 3 and Gabor based KNN classifier with ROI 1 which obtained results with AUC test accuracy up to of 91.3 and 88.7%, respectively.