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Banana Ripeness Classification Using Computer Vision-based Mobile Application

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Abstract
The integration of smartphone applications with the increasingly growing influence of artificial intelligence provides users with new ways to do about anything and allows users to be practical. In this paper, a mobile application to identify the ripeness of banana fruits is built by implementing a computer vision technique. Image classification is performed by adopting transfer learning to extract edges from a pre-Trained model. Convolutional neural network (CNN) model is used to train the classifier. Banana is chosen as an instance due to its short shelf life and widely consumed by Malaysian. For this project, Google Colab is utilized for the code execution as it is run on cloud and well-suited for machine learning. TensorFlow Lite with Model Maker library simplified the process of adapting and converting a TensorFlow neuralnetwork model to particular input data before deploying to an Android application. The result emerged with an accuracy of 98.25%. The app can instantly recognize banana live image, display the ripeness level on the screen based on highest percentage matched and display the ripeness, enabling the users to identify the banana ripeness quickly and easily. © 2021 IEEE.

Author Keywords
banana ripeness classification; computer vision; convolutional neural networks (CNN); deep learning; machine learning; mobile application; transfer learning

Index Keywords
Convolutional neural networks, Fruits, Learning systems, Mobile computing, Transfer learning; Android applications, Banana fruits, Code execution, Computer vision techniques, Input datas, Mobile applications, Model makers, Smart-phone applications; Computer vision

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