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FruitSense: An Android-Based Fruit Quality Detection Mobile Application Using Machine Learning and Image Processing

[Proceedings of International Conference on Artificial Life and Robotics](#) • Conference Paper • 2026

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Abstract

Fruit quality is crucial for human nutrition and health, however, traditional visual inspection for fruit freshness is time-consuming and inconsistent. The growing adoption of AI offers new possibilities for improving traditional methods. Accordingly, FruitSense was developed to classify the ripeness of bananas, apples, and tomatoes using machine learning techniques. Implemented with TensorFlow Lite and Google Teachable Machine, it analyzes color, defects, and size. A diverse dataset of fruit images representing various ripeness stages was obtained from Kaggle to train separate models for each fruit. The models were integrated into an Android app for real-time ripeness detection. Evaluation of the application through system, usability, and performance testing revealed

that it meets the project objectives and was positively received. © The 2026 International Conference on Artificial Life and Robotics (ICAROB2026).

Author keywords

Agricultural Technology; Deep Learning; Fruit Quality Detection; Image Processing; Machine Learning; Mobile Application; Support Vector Machine (SVM)

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