

Efficient Deep Neural Networks for Real-Time Strawberry Freshness Monitoring: A Transfer Learning Approach

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Abstract : A real-time system architecture is highly effective for monitoring and detecting various damaged products or fruits that may deteriorate over time or become infected with diseases. Deep learning models have proven to be effective in building such architectures. However, building a deep learning model from scratch is a time-consuming and costly process. A more efficient solution is to utilize deep neural network (DNN) based transfer learning models in the real-time monitoring architecture. This study focuses on using a novel strawberry dataset to develop effective transfer learning models for the proposed real-time monitoring system architecture, specifically for evaluating and detecting strawberry freshness. Several state-of-the-art transfer learning models were employed, and the best performing model was found to be Xception, demonstrating higher performance across evaluation metrics such as accuracy, recall, precision, and F1-score.

Keywords : strawberry freshness evaluation, deep neural network, transfer learning, image augmentation

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