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Identification of Fruit Categories using a nine-layer Deep Convolutional Neural Network

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Abstract : Fruit category classification is essential for industrial, commercial and agricultural applications. This study proposes a novel framework for fruit category classification from images using Nine-layer Deep Convolutional Neural Network (9-Deep CNN). This model uses a dataset of 53,056 images of 79 different fruits. Image augmentation methods were used to enhance the dataset size to 1,06,650 images. Max pooling and stochastic gradient descent techniques were used to train the model. The 9-Deep CNN was trained for optimized hyperparameters such as batch sizes, training epochs,and dropouts. The experimental results show that the proposed fruit category classification model based on the 9-Deep CNN achieves an average accuracy of 99.56%. This accuracy is much greater than the accuracy of the state-of-art methods. Furthermore, 9-Deep CNN is tested for performance and reliability.

Keywords : Deep convolutional neural network, Fruit category classification, Hyperparameters, Transfer Learning.

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