

Paper Title : Implementation of Deep Learning Methods to Identify Rotten Fruits.

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Why they have conducted this research?

In this paper they classify fresh and rotting fruits. Because the agriculture sector very huge all over the world. The classification of fresh and rotting fruits is typically carried out by humans. Where it is very critical to identifying rotten fruits. It is time consuming and also increase production cost. They conducted to this research for reducing human effort, lowering production costs, and shortening production time.

Previous Research Gap?

1. <https://doi.org/10.18280/ria.340512> → In this paper, a CNN model is proposed for feature extraction from an input image of fruits that are apple, banana, and orange. To compare the accuracy with the proposed model, VGG16, VGG19, Xception, and MobileNet transfer learning models are used which shows that the proposed model exceeds in accuracy.
2. **DOI: 10.1109/OPTRONIX.2019.8862367** → In this paper, proposed a method that implements the segmentation technique to detect rotten fruits. Marker-based segmentation, color-based segmentation, and edge detection techniques are utilized after the image data is converted to grayscale, and filtering and thresholding to reduce noise.
3. <https://doi.org/10.1007/s00542-020-05123-x> → In this paper, proposed a semantic segmentation technique using uNet and En-UNet deep learning architecture to detect rotting in fruit from image data.

Proposed System

They proposed a model to prevent the propagation of rottenness. From the input fruit images, the proposed model classifies the fresh and rotting fruits. They utilized three different varieties of fruits in this project: apple, banana, and oranges. The features from input fruit images are collected using a Convolutional Neural Network, and the images are categorized using Max pooling, Average pooling, and MobileNetV2 architecture.

Architecture:

In this model they used Convolutional Neural Network (CNN) architecture. From this architecture they used MobileNetV2 architecture. For classification and image recognition, CNN is used. CNN tries to identify elements that are useful inside it. In CNN there are several hidden layers, as well as an input layer and an output layer. Here they used three convolution layers. They applied Maxpooling and Average pooling with convolution layer. They used ReLu as an Activation layer.

MobileNetV2 is extremely effective for image classification. MobileNetV2 is consisting of 19 layers of bottleneck. Here used Caffemodel to detect the front side of a fruit image. For ignoring dataset overfitted they used Dropout layer. This model contains 256 hidden layers . In hidden layer they used ReLu activation function and softmax activation function used in the fully connected layer. For better accuracy they define learning rate 0.001.