DETECTION AND CLASSIFICATION OF FRUIT DISEASES USING IMAGE PROCESSING & CLOUD COMPUTING

link-https://ieeexplore.ieee.org/document/9104139

Summary:

This paper is about detecting fruit diseases using image processing and cloud computing.The fruit details and the identification of disease from the feature extraction are stored in the database. The entire database is viewed and compared with the captured image. The mobile application is developed for processing the data and providing intimation to the farmers. Thus the variation in image from the database also indicates the disease in the fruits.

Methodology:

The technique identifies the infection at the initial stage by processing the images using MATLAB and provides the required information about the diseases. The cloud database contains the details of leaf, fruit and stem infections and they can be utilized by the farmers at any time using mobile application. And it improves the production and helps the farmers by direct usage.

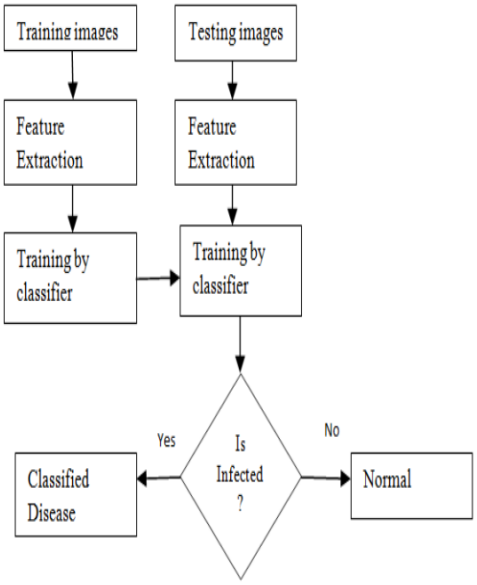


Fig.3.1.System Design of Disease Detection

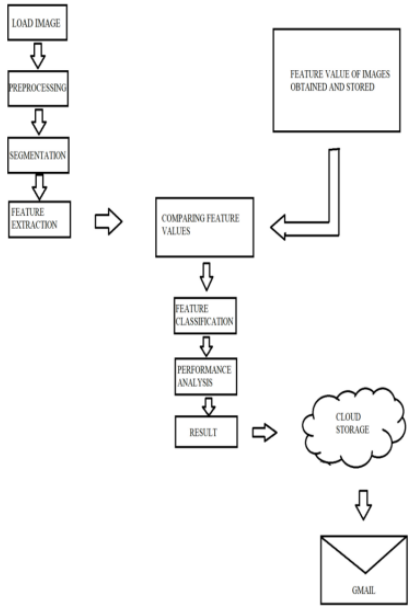


Fig.4.1. Block Diagram of Infection Detection

Findings:

The fruit images with infection and the healthy fruits are provided as the sample for the processing. Initially the natural image of fruit is provided as the input for the system. The image is involved in preprocessing, segmentation and the features are identified from the image

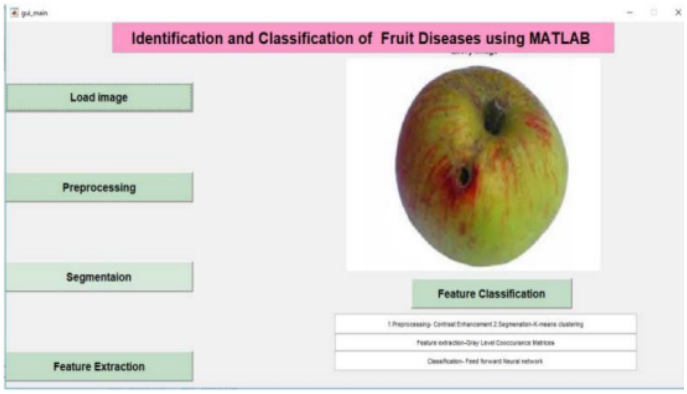


Figure 5.1. Image processing page

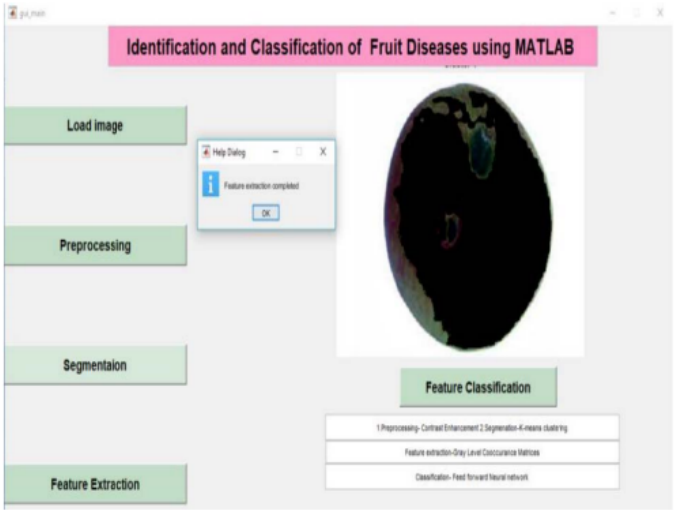
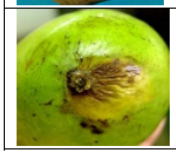


Figure 5.2. Process of performing feature Extraction

Table 5.1: Various sample images of disease name with its control measures

SAMPLE IMAGE	DISEASE NAME	CONTROL MEASURES
	Powdery Mildew	Alternate spraying of Wettablesulphur 0.2 percent(2g ulfex/litre), Tridemorph 0.1 per cent (1 ml Calixin/litre) and Bavistin @ 0.1 % at 15 days interval are recommended for complete control of the disease
	Anthracnose	Spraying twice with Carbendazirn (Bavistin 0.1%)at15 days interval during flowering controls blossom infection. Spraying of copper fungicides (0.3%)is recommended for the control of foliar infection. Postharvest disease of mango caused by anthracnose could be controlled by dip treatment of fruits in Carbendazim (0.1%) in hot water at 520C for 15 minutes.
	Sooty Mould	Pruning of affected branches and their prompt destruction followed by spraying of Wettasulf (0.2%) + Metacid (0.1%) + gum acacia (0.3%) helps to control the disease.

Algorithm:

The classification and segmentation of fruit images were performed using K-Means Algorithm and SVM technique.

Analysis:

The total number of samples provided, the true and false positions, the true and false negativities, the accuracy and the specificity are also indicated in an alert box. And the entire database of fruit infections and the control measures to reduce the infections are stored in the cloud database and the data can be retrieved using the application.