



CABBAGE DISEASE DETECTION SYSTEM USING K-NN

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ABSTRACT

Identification of plant diseases is key to avoiding losses in agricultural yields and product quantities. Plant disease study means the study of disease patterns that can be visually seen on plants. The main objective of this research is to develop a prototype system to detect cabbage diseases which are Alternaria Leaf Spot Disease, Mosaic Virus Disease and Downy Fungus Disease. It is very difficult to monitor plant diseases manually because it requires a large amount of work, deep expertise in plant diseases, and also requires excessive processing time. This project focuses on image processing techniques used to improve image quality and K-NN techniques to classify cabbage diseases. Disease detection involves image acquisition, image pre-processing, segmentation and classification of disease. This paper discusses the methods used for the detection of plant diseases using cabbage leaf images as well as some segmentation and feature extraction algorithms used in the detection of cabbage diseases.

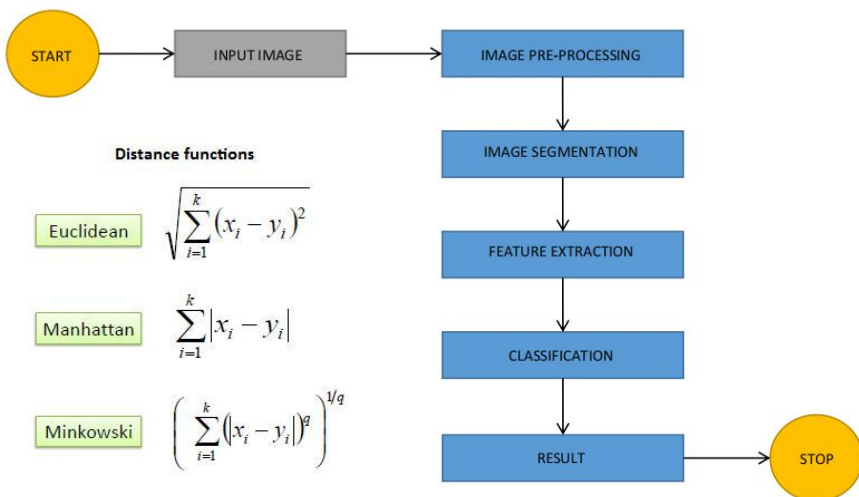
PROBLEM STATEMENT

Most of farmer faces many problems to harvest their cabbage because they had been attack by snail, worm and fungi. Furthermore, when the cabbage had been infected or attacked, the others areas had been exposed to be infected. Thus, it will decrease farmer's income. Currently, the farmer determines the type of disease manually. The errors might occur in order to determine the type of diseases. It also takes a lot of time as the farmers manually check the disease since the field is in wide area.

OBJECTIVES

- To design a disease detection system that can detect disease for the farmer to reduce the risk of losing their harvest from diseases.
- To develop and deploy a k-nearest neighbors (K-NN) algorithm that can perform disease classification on Cabbage plants using image processing.
- To evaluate the effectiveness of an early precaution through the deployed disease detection system.

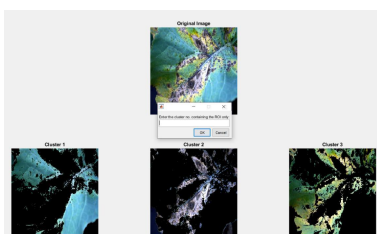
METHODOLOGY



HARDWARE AND SOFTWARE



IMAGE PROCESSING



IMPLEMENTATION

A. IMAGE ACQUISITION

Image acquisition is an initial step in the development of a system for obtaining image samples. Some samples were taken from the internet and some samples were captured manually using a camera. The sample has been saved to a folder on computer. So, there is no image acquisition process.

B. IMAGE SEGMENTATION AND PRE-PROCESSING

Image segmentation are use to extract the features for the selected sample

Enhance Contrast

Image sample need to be enhance so that the darker areas of images can be slightly increase contrast so that the printed image will better and increase the accuracy of the system detection.

Gray scale

Using and otsu algorithm method to convert the image from rgb to grayscale image. This algorithm takes the maximum inter class variance between the background and the target image as the threshold selection rule.

Histogram scale

Histograms give the frequency of each pixel. This scale tells how many values are contained in each pixel. It is a type of histogram that acts as a graphical representation of the tonal distribution in a digital image. It plots the number of pixels for each tonal value. By looking at the histogram for a specific image a viewer will be able to judge the entire tonal distribution at a glance.

C. FEATURE EXTRACTION

GLCM

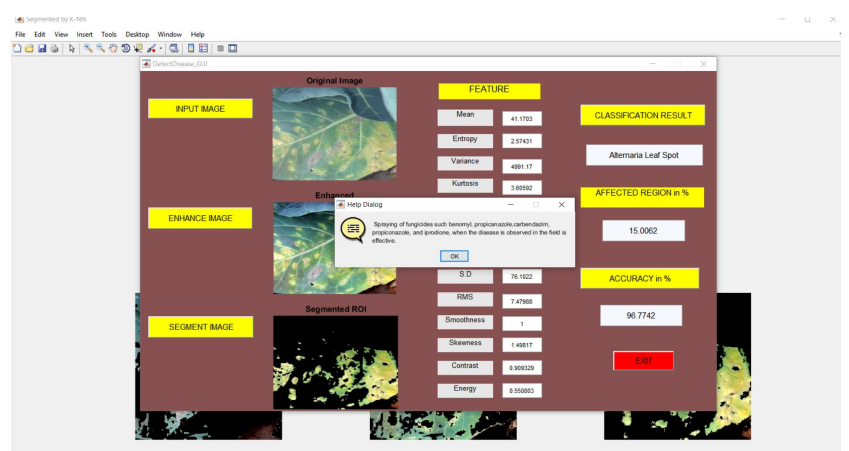
it is a method of extracting second order statistical texture features. The approach has been used in a number of applications, Third and higher order textures consider the relationships among three or more pixels.

D. ANALYSIS AND CLASSIFICATION OF CABBAGE DISEASE

KNN classification

After all classifications and feature extraction classifications are the parts of the main part of the proposed model, the KNN classifier will be used to obtain the final result for the proposed project.

E. RESULT



CONCLUSION

To develop a plant disease detection system using machine learning. This system will help the user to classify the plant disease easily with the help of KNN train algorithm. Moreover, the user also can take early precautions to prevent plant disease from spreading. In future work, this system should be implemented in mobile application development. So farmers just bring their phones to find out the type of cabbage disease.