LEAF DISEASE DETECTION AND SUGGESTING PESTICIDES USING CONVOLUTIONAL NEURAL NETWORK

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ABSTRACT: *Identification of the plant diseases is the key to preventing the losses in the yield and quantity of the agricultural product. The studies of the plant diseases mean the studies of visually observable pattern seen on the plant. Health monitoring and disease detection on plant is very critical for sustainable agriculture. It is very difficult to monitor the plant disease manually. It requires tremendous amount of work, expertise in the plant diseases, and also require the excessive processing time. This project is concerned with a new approach to the development of plant disease recognition model, based on leaf image classification, by the use of convolution neural networks for classification. The filtering process is based on the different features found in the image. The filtering of the image is performed using inception model. We used CNN based classification of diseases. The developed model is able to recognize three different types of plant diseases out of healthy leaves, with the ability to distinguish plant leaves from their surroundings. The training model we have achieved is 89%.*
Keywords: CNN algorithm, Diseases.

I. INTRODUCTION

Problem Statement

Carefully observe all symptoms associated with a condition. Note that description in your mind or on paper and check to see whether the statement is true without exception. Compare plants to see whether they are similarly affected in all parts of the field. Check whether non-related plants are similarly affected. Most disease-causing organisms are host specific and they don't affect large number of types of plant. If a similar leaf spot or burn is observed on different plant types, then we might expect a drift of toxic substances. On the other hand, certain diseases like cotton root rot can affect number of plants, but we could rule out corn or other grasses, which are not susceptible. Try to get as much information as possible to help detect that problem. County Extension agents have a number of publications that will be helpful to us. If it don't work to correctly identify the problem then, we can select a representative person for observation by the county extension agent.

II. PREVIOUS WORK

In existing system, the naked eye observation by experts through which identification and detection of plant disease is done. So a faster identifying system is required to develop a strategy to ensure quick and optimal resurrection of the plant's health. It would be better if having a tool which can identifies names of the disease used in the input image of the plant leaf[3]. Carefully observe all symptoms associated with a condition. Note that description in your mind or on paper and check to see whether the statement is true without exception. Compare plants to see whether they are similar affected in all parts of the field. Check whether non-related plants are similarly affected. Most disease causing organisms are host specific and they don't affect large number of types of plant. If a similar leaf spot or burn is observed on different plants types, then we might expect a drift of toxic substances. On the other hand, certain diseases like cotton root rot can affect number of plants, but we could rule out corn or other grasses, which are not susceptible. Try to get as much information as possible to help detect that problem. Country Extension agents have a number of publications that will be helpful to us. If it don't work to correctly identify the problem then, we can select a representative person for observation by the country extension agent. In paper[3] they worked on identifying and classifying diseases. In paper[7] they consider the leaf colour and size to classify the diseases.

III. PROPOSED WORK

We propose an idea of Identifying pesticides for the diseased plants. Here, digital camera or similar devices are used to take images of leaf of different types and then those are used to identify the affected area in leafs. Then we use CNN based classification of diseases. After detecting the disease of a plant we suggest required pesticides for the crops .Those suggested pesticide names are sent to the particular owner /farmer of a crop through a message to a mobile phone by using the SMS24INDIA.We extracted some part of database from paper[4].Following table shows the list of diseases that we worked on:

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Tomato Target Spot	Chlorothalonil ,Macozeb
Tomato Late blight	Actinovate ,Copper
Tomato Septoria leaf spot	Chlorothalonil ,Macozeb
Tomato Yellow Leaf Curl virus	Dinotefuran imidacopid"
Tomato Spider mites Two spotted spider mite	Horticultural oil
Tomato Bacterial Spot	Sodium Hypochlorite
Tomato Early blight	Bacillus Subtilis , Hydroperoxyl
Pepper bell Bacterial spot	liquid copper
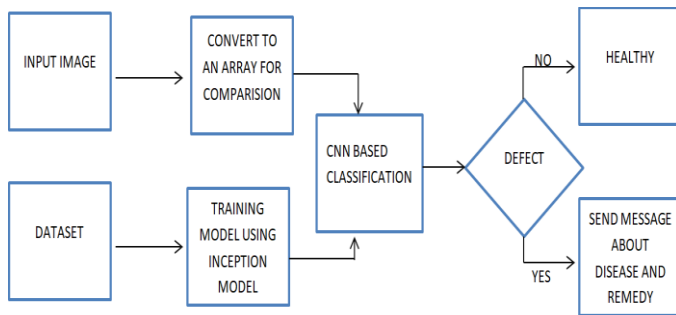
Fig: Architecture of the proposed system

IV. RESULT
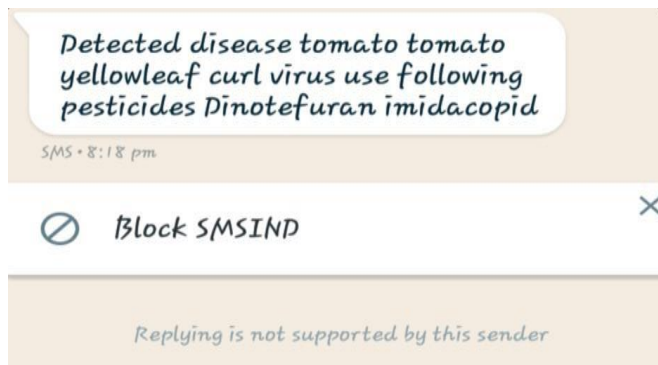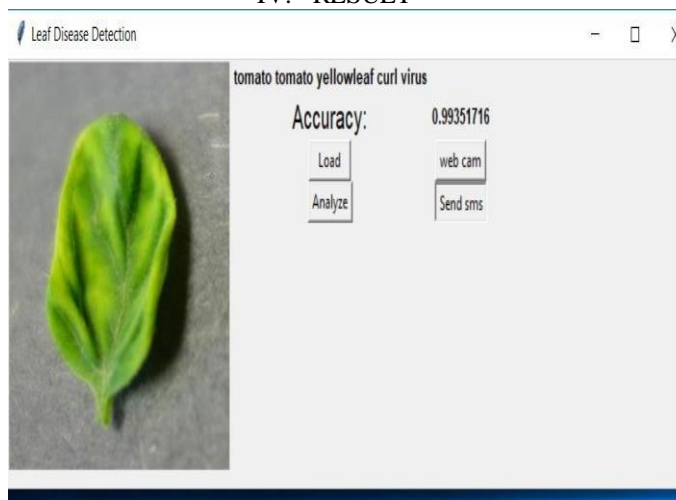
V. CONCLUSION

The accurate detection and classification of the plant disease is very important for the successful cultivation of the crops, this can be done using digital image processing. In this project, the detection as wells the remedy for curing it is achieved. This project utilizes SMS24INDIA so as to send the message to every kind of mobile handset. This project utilizes various image processing techniques which provide accurate results.

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