AUTOMATIC RECOGNITION OF PLANTS DISEASE USING CONVOLUTION NEURAL NETWORK

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ABSTRACT— Now a days managing information are have some failings in efficiency, scalability, and applicability. A different way of knowledge management, these are provided by Knowledge graph. From the actual features of plant leaf diseases, this paper studied and differentiated the main techniques and methods of knowledge graph technology in the field of crop diseases and pest in present situation. This paper thoroughly explains about the crop diseases and pest knowledge, it has analysed completely in four aspects such as: knowledge depiction, fusion, extraction, and reasoning. Then, the application of crop diseases was introduced. Finally this paper detects the defects of the plant leaves by automatically using deep learning. Leaves from affected plants are captured by camera and taken to fetch different features which are length of leaf, width, perimeter, area of the leaf number of vertices. These are help to find the diseases affected in the leaf by using CNN algorithm.

INDEX TERM: automatic recognition of plant disease, Deep learning and CNN classifier.

I. INTRODUCTION

Computers playing a vital role in various applications like agriculture, medical, defence, engineering etc. It can process multimedia information like captured image. We can retrieve some specific important information from given image, by using some computational method. Images are partitioning into smaller part by using image segmentation. Segmentation will be performed based on common properties like colour, shape, texture etc. For image processing, image segmentation is a pre-processing step. It is classified into two types of methods such as (i) Soft computing method which deals with genetic algorithm and fuzzy logic numeral network (ii) Traditional method which deals with clustering and threshold edge based region based.

Soft computing has been widely used for performing image segmentation and it able to deals with uncertainty. Plants play a major role in human life. Due to environmental pollution, plants are suffering from diseases. It mainly affect the plant's growth and components. The detection of these diseases play an important task to perform.

By using Deep learning method plants diseases are identified automatically. Different plants leaves are collected by capturing the leaves using camera. Some of the features like length, area, width, area, perimeter, colour and number of vertices, are extracted from each leaves. It is fully automated method of identification of plant disease using machine learning technique. The best results were obtained from CNN. CNN is most successful techniques then others such as k-

nearest neighbor, KNN and neural networks, Naive Bayes.

II. ARCHITECTURE DIAGRAM
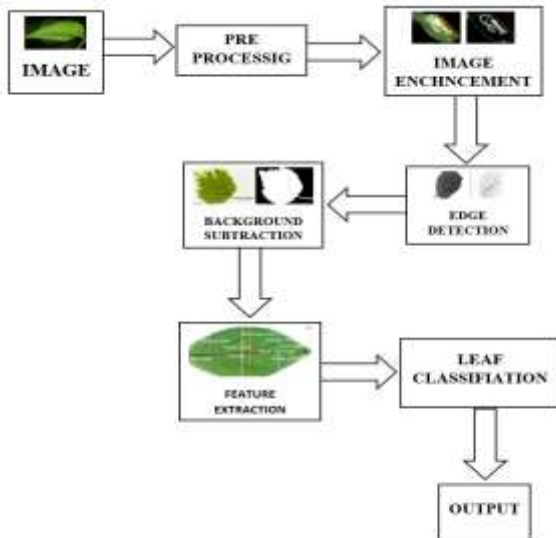
At first expert need to feed the large amount of data set, then user should upload the captured plant leaf image in the jpeg or jpg form. After that the uploaded image will be pre-processing in the pre-processor. The pre-processing aim is to improving image data by suppressing unwanted image data or enhancing some features for further process. Then the image will be enhance in image enhancement it will adjusting digital images for further image analysis. It will simply reduce the noise, sharpen, or brighten an image. Then the image will go for image detection in that it will find the boundaries of objects within images. It works by detecting discontinuities in brightness. Then the image is processed for Background subtraction. This technique is used to separate foreground element form background by generating a foreground mask. Now the image will go to feature extraction process, a type of reducing dimensionality that efficiently represents major parts of an image as a compact feature vector. Then leaf image classification is mainly helps to extract patterns and leaf shape

feature using CNN. After the classification we will get desired output.

III. EXISTING SYSTEM

In existing system it completely using a traditional reasoning based on logical rules that helps to detect the diseases of the plant but it shows defects because there is no sufficient learning capability, utilization of the resources, inaccuracy which do not satisfy the practical needs. When it comes to practical applications it produces inaccurate result. So problems cannot be rectified without increasing the data feed and find the missing data. The result may be inaccurate and they are many triple relationship in knowledge map. There is no sufficient learning capability, utilization of resource and there is tensor dimension are also too high. When there is large number of sparse data and relationship are used then this will not be effective for users.

IV. PROPOSED SYSTEM

In this field the conventional data experience of experts are gathered from statics. Agricultural related data such as production data, diseases and pest research data are very large quantity. Sharing of pest and disease data or knowledge are very useful manner especially in this field. Data or knowledge of the experts are displayed by tables, text and figures, these must be changed to computational resources then it can be processed by computer. Diseases and pest management has emerged, based on the technology called knowledge graph technology. For constructing knowledge graph we need extracting entities like, attributes, unstructured, semi-structured and structured data. By using ontology matching and entity alignment knowledge can be integrated. In plant disease and pest field, knowledge graphs are mainly used to reviewed the methods and techniques used in extraction, fusion, knowledge representation and reasoning. Knowledge graph are used to fetch relationship and entities from huge amount of

structured and unstructured data of plant disease and pest knowledge. Simply by using this method finally we get the more accurate result when compared to traditional method. This has no lack of plant pests and diseases entity such as recognition, relationship extraction, and attribute extraction technology. By the expansion of knowledge and the complexity of relationships, these techniques are not used in the main knowledge representation methods due to limited expressive ability and lack of flexibility.

V. WORK DONE MODULES

•   Initial setup

•   Image Capture

•   Image pre-processes and analyze

•   Crop disease recognition

A. INITIAL SETUP

In this module User need to register by providing required details as a input then in the registration phase the user needs to feed their information. This information is used in login phase to verify the concerned user. Then the user information is passed to the Tomcat server, and once the application is started the information about the user is queried and inserted in the MySQL database server in the user application installed device. The output of this project is successful creation of login.

B. IMAGE CAPTURE:

Uploading image is an input of this project. Then the android system is to capture the image by using the external application and then it gets the image into the proposed application for further processing. The captured image is to be the actual one without any enhancement techniques been applied. We get non enhanced image as an output.

C. IMAGE PROCESSOR AND ANALYZE

We are giving captured image in jpg form as input. Then the system is to process the image by comparing it with the reference image and also it process the image by eliminating the errors and other dis continuities in the image and then it compares for future recognition of disease. We get the Species recognition and image enhancement is the output.

D. CROP DISEASE RECOGNITION

The input is enhanced image. The crop's leaf image is processed and then it is compared with the reference image and then it produces the result of image comparison and based on the result it differentiate the healthy crops from the crops with the pest damages and diseases. Finally it displaying diseases as the output of this module.

VI. CONCLUSION

The plants plays vital role in any living organisms. They are most important part of our environment. Plants do suffer from differing kinds of diseases. Such as affects the growth of the plant, flowers, fruits and etc. So human need to rectify this as much as possible. This project will helps to do that in effective manner by getting more accuracy since CNN are used.

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