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Application for Solution to Identify and Solve Disease in Plants/Crops

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Abstract: ***Despite The Indian economy depends heightening on agribusiness proficiency a divide is at stake when a plant is struck with a sickness that causes a essential hardship in era money related incidents and a reducing inside the quality and sum of agrarian things it is significant to recognize plant contaminations in orchestrate to expect the mishap of provincial abandon and sum plant diseases are challenging to screen physically since it requires a mind blowing deal of work skill on plant contaminations and expect planning time this will be fulfilled by utilizing picture planning strategies for plant ailment revelation alter illness figure system can be made utilizing machine learning strategies to absolutely anticipate the occasion of contaminations in crops the system can be arranged to dismember distinctive characteristic and weather-related factors that can impact the prosperity of crops.***

Keywords: Crops, Agriculture, Fertilizers, Diseases, Symptoms.

I. INTRODUCTION

Agriculture is main occupation of India. It contributes about sixteen percent (16%) of total GDP and ten percent (10%) of total exports in India. Either directly or indirectly around 60% of people in India depends agriculture for livelihood. It falls under primary sector of Indian economy. It is main source of food, fodder and fuel. Over 60 % of India's land area is arable making it the second largest country in terms of total arable land. But due to various diseases the quantity and quality of the agricultural product are reducing. Some crop diseases do not have visibility throughout the early stage which results in the damage of whole crop. Nowadays automatic detection of plant diseases is very important analysis topic that detects the diseases from the symptoms that seem on the plant leaves. Plant disease is one of the issues that cause reduction in the quality and amount of plant production. This can lead to starvation of peoples. To increase plant productivity and economic process, detection and classification of plant diseases are necessary tasks. It is necessary to detect disease and spray pesticides properly on crops. When they are infected by diseases, there is a change in shape, size and colour. These symptoms can be checked manually but not in the proper amount. Crop disease prediction based on symptoms is a crucial aspect of agricultural management as it allows early detection and timely intervention to prevent crop losses. The android application can provide a questionnaire or survey to farmers, asking them to input the observed symptoms of their crops. The questionnaire can include questions about the type, severity, and distribution of symptoms, as well as relevant environmental factors such as weather conditions, soil characteristics, and crop management practices. The application can then use symptom-based questionnaire algorithms, such as decision trees or support vector machines, to analyse the collected data and predict the most likely disease based on the responses

II. LITERATURE SURVEY

For literature survey various research have been used. [4] firstly they introduced a brief review of ELM, describing the principle and algorithm of ELM. Then, they have put variants of ELM, especially on incremental ELM, pruning ELM, error minimized ELM, two-stage ELM, online sequential ELM, evolutionary ELM, voting-based ELM, ordinal ELM, fully complex ELM, and symmetric ELM. After that, they have summarized the applications of ELM on classification, regression, function approximation, pattern recognition, forecasting and diagnosis, and so on. At last, they have discussed several open issues of ELM, which may be worthy of exploring in the future [2] in this paper, we propose a classification method of periodontal disease based on CNN. The data to used were the actual periodontal images and non-periodontal images. Data processing techniques such as resize, crop and zero centralizing are used to improve data learning efficiency. The CNN structure proposed in this paper has size image as input data and 4 outputs according to periodontal state. We also use momentum optimization technique for neural network optimization. [5] crop diseases and pests play a key role in reducing crop production and quality. Therefore, the detection is fundamental in precision agriculture task. Manual detection of diseases takes additional time and efforts on the larger area of the farm. Deep learning approach can be used to detect the diseases and pest more accurately on leaves and other parts of the crop.

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The proposed method is helpful in detecting crop diseases as well as pests. In this paper, the deep learning techniques related to diseases and pest detection has been reviewed and the deep learning model for automatic diagnosis of crop diseases and pests is proposed. [1] in this paper we proposed the system which works on, reprocessing, feature extraction of leaf images from plant village dataset followed by convolution neural network for classification of disease and recommending pesticides using tensor flow technology. The main two processes that we use in our system is android application with java web services and deep learning. We have use convolution neural network with different layers five, four & three to train our model and android application as a user interface with jws for interaction between these systems. Our results how that the highest accuracy achieved for 5-layer model with 95.05% for 15 epochs and highest validation accuracy achieved is for 5layer model with 89.67% for 20 epochs using tensor flow.[3] author have used feature selection algorithm to identify best response variable in terms of climatic parameter to identify the incidence of pests on cotton plant. For chosen response variables, clustering are deployed to find the pattern for low and high infestations. Aicrp has conducted an experimental setup to study the incidence of pests related to climatic conditions. Authors have used this pest data along with meteorological data for each sucking pests which is collected for 5 years. The data is analysed by using the analytical tool. Author have proposed a wrapper selection method called recursive feature elimination (rfe) which construct disjoint decision tree to select the best feature. The significant parameters which are identified by the feature selection are clustered by using the clustering algorithm. The correlation, random forest are the feature selection algorithms implemented and k-means clustering is applied to predict at what range of values the pest will start affecting the plant.

III. METHODOLOGY

A. *Data Collection*

Assemble a comprehensive dataset that incorporates data on edit indications natural conditions and infection events. This information can be gotten from agrarian investigate establishing trim malady databases or through field surveys.

B. *Data Pre-processing*

Clean and pre-process the collected information to evacuate any unessential or loud data standardize. The information organize and handle lost values. This may include changing over categorical factors into numerical representations normalizing numerical factors and tending to information inconsistencies.

C. *Feature Selection:*

Distinguish the foremost important highlights or factors that are unequivocally correlated with edit maladies. This will be done utilizing measurable strategies space mastery or include designing strategies. For case important highlights may incorporate climate conditions temperature stickiness rainfall crop development organize soil characteristics and particular side effects watched within the crops.

D. *Model Development*

Prepare a symptom-based survey demonstrate utilizing the pre-processed information and the chosen highlights. Commonly utilized calculations for edit malady expectation without picture preparing, the choice of calculation depends on the particular necessities of the issue the measure of the dataset and the accessible computing resources.

E. *Model Refinement*

Fine-tune the show by altering hyper parameters include choice or demonstrate engineering to progress its prescient exactness. This may include repeating through steps 4 and 5 numerous times until a palatable show execution is achieved.

F. *Model Deployment*

Once the show is prepared and refined, it can be sent in a real-world setting to anticipate trim infections based on indications.
This may be done employing a web-based interface a versatile application or coordinates into an rural choice bolster system.

G. *Continuous Monitoring and Updating*

Trim infections and natural conditions can alter over time, so its vital to persistently screen and upgrade the demonstrate as modern information gets to be accessible. This may include retraining the demonstrate intermittently join in real-time information for more precise predictions.

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H. Expert Consultation

Counsel with rural specialists and consider neighbourhood components such as climate conditions trim assortments and infection predominance within the particular locale to guarantee the precision and unwavering quality of the malady forecast demonstrate. Master information can give profitable experiences and offer assistance refine the model predictions.

The flow chart describes this process in figure.1. It's vital to note that precise trim infection expectation based on indications without picture handling may have restrictions, as visual indications alone may not continuously be adequate for exact malady distinguishing proof. Hence combining symptom-based forecast with other symptomatic procedures such as research facility testing or farther detecting may move forward the exactness and unwavering quality of the expectation model

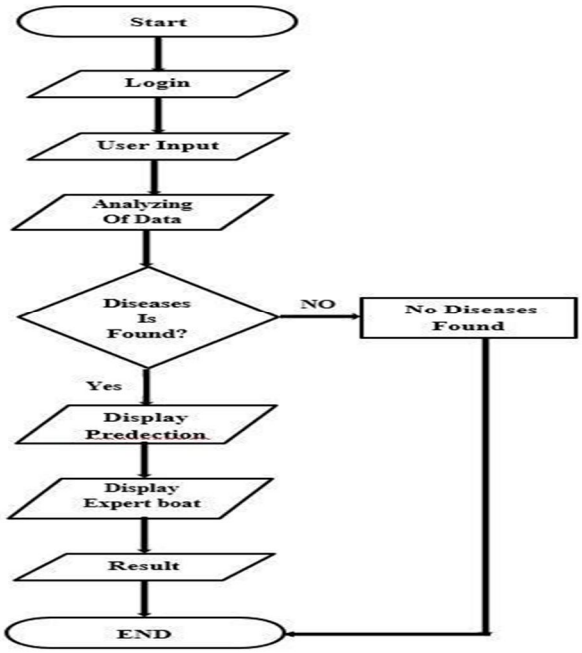


Figure:-1 Flow chart of the process

Analysing deep learning-based plant control systems can be considered as the use of classical communication in agriculture, as the goals achieved are similar to computer vision, a spray of deep learning-based search engines. As shown in figure.2, depending on the network model, the network can be further divided into classification network, detection network and segmentation network. It can be seen from the figure.2, according to the characteristics of each type, this paper is divided into several different methods.

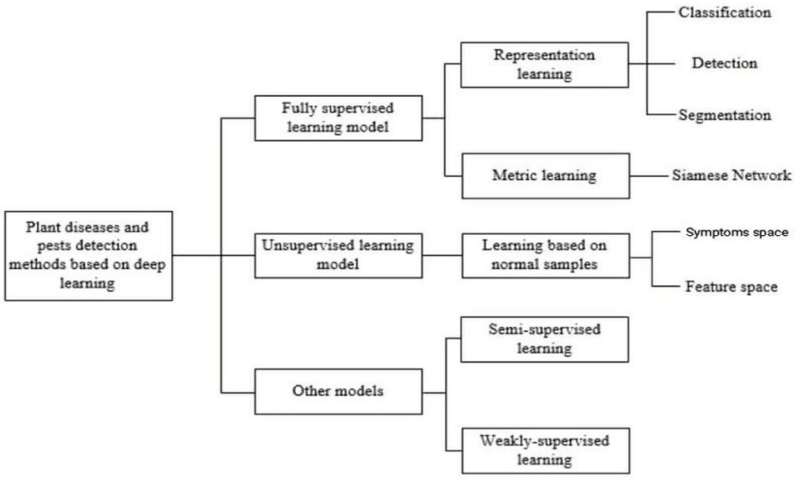


Figure:-2 Framework of plant diseases and pest detection methods based on deep learning

Screenshot.1 is the first interface that appears when our system starts up where a new user can register himself and an existing user can log in to use the system.



Screenshot:-1

After successfully logging in, the user can access the functions after entering the data related to disease prediction, history of past prediction and recommendations related to fertilizers, plant disease symptoms. This function can only be used by the user. As we can see in screenshot.2.



Screenshot:-2

IV. RESULT

The system is computationally efficient to predict the disease as well as to suggest the remedy for the disease. In the interface of screenshot.3, it is available with the prediction view just by clicking on that option the user gets the details of the particular disease and its remedy. Also the user can predict in the crop calendar section when, the crop will be fully prepared and the system will also suggest a good fertilizer according to the disease for better growth of the crop. All data/history related to forecasts, users and crops are stored and handled simultaneously in view user option which can be accessed by admin user.

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Screenshot:-3

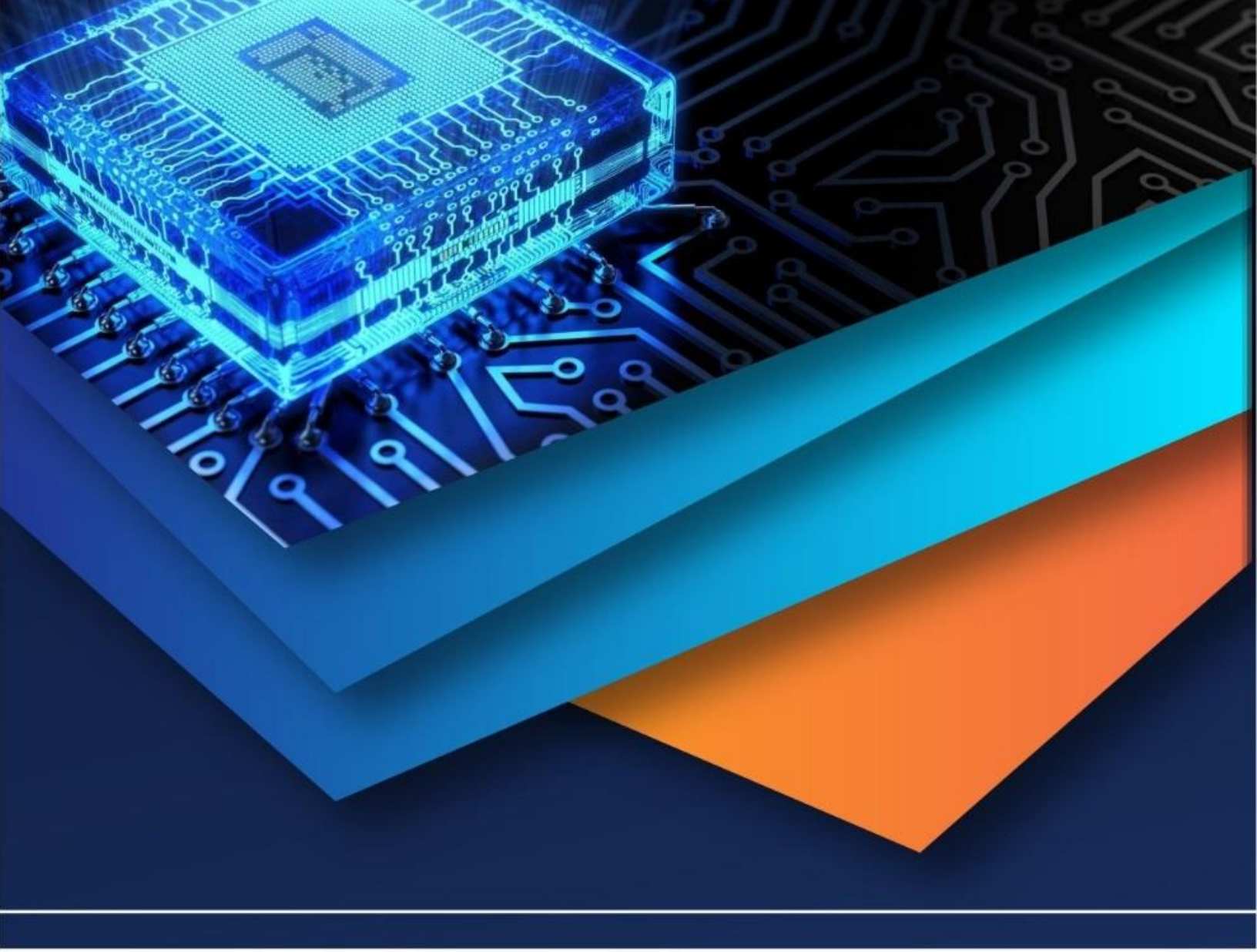
V. CONCLUSION

In conclusion creating a trim illness expectation framework based on side effects for android can be a important instrument for ranchers and rural specialists by leveraging rural ability such a framework can give convenient and precise expectations of edit illnesses making a difference agriculturists take proactive measures to avoid or moderate trim losses the key steps in creating a edit malady expectation framework for android incorporate collecting and pre-processing significant information selecting suitable highlights preparing and assessing symptom-based survey models refining the demonstrate for ideal execution and sending the framework in a user-friendly android application however its vital to consider nearby components such as edit assortments natural conditions and infection predominance within the particular locale to guarantee the exactness and pertinence of the expectations persistent observing and updating of the model with modern information is additionally fundamental to preserve its exactness over time overall a well-designed edit illness forecast framework for android can enable ranchers with important data to create educated choices and successfully oversee trim infections eventually contributing to progressed edit surrender and agrarian sustainability

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