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AUTOMATED PESTICIDE SYSTEM

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Abstrsact— *India is agricultural country lot of problems are faced by farmer. Every year farmer experiences large losses because of pest infestation in crop & this in turn affect his lifestyle. These losses are basically due to discontinuous monitoring of farm, various diseases on crop and improper management of pesticides. Plant disease reduces product of farmer both in quality and quantity. So quick detection and identification of disease plant are of more importance. It also needs continuous monitoring of farm. To overcome above problem it is necessary to develop such system which continuously monitor the farm and detect the disease as quick as possible. we gave brief idea to solve this problem by continuously monitoring crops using smart Robo system and techniques called Image Processing. Image Processing give the good solution to above crisis. Image processing gives fast, automatic and accurate solution to user. We developed an Robo system to monitor crops and for identifications and monitoring of diseases & pesticides. This Robo not only detects disease but also spray pesticides to protect them from disease. The robot helps the farmer to take informed decision locally or allows connecting with other existing services. This Robo find diseases on various infected leafs. This system in detect diseases and spray the pesticides of disease in proper amount when needed.*

Keywords— ***Image processing, Pesticide, Raspberry Pi, Disease prediction, SIFT.***

1.INTRODUCTION

Agriculture is the most important sources of incomes in India. Agriculture alone constitutes about 22% of income in our country. India is a cultivated country and about 70% of the population depends on agriculture. Farmers have extensive scope of assorted variety for choosing different appropriate harvests and finding the reasonable pesticides for plant. Infection on plant prompts the huge decrease in both the quality and amount of agrarian items. A solution to this issue is by spraying pesticides on crops only when need required and eliminate the crops which is affected by diseases.

This required continuous monitoring of farm by farmer but this not possible by farmer due to various reason such as lack of proper guidance by expert at all points of time. This entire problem is solved by using agriculture robot which detect any disease immediately and prevent crops from excessive pesticides & insects. The robot presented here helps the farmer to take decision locally or allows connectinsg with other existing services. Ordinary camera (webcam, mobile camera) is inserted in this system, to reduce the cost of the overall solution. Plant sickness recognizable proof by persistent checking outwardly is exceptionally troublesome undertaking and in the meantime less precise and should be possible just in constrained regions. Though if image processing technique is used for disease detection then it will take minimum efforts, minimum time and is more correctly.

In plants, some broad infections are red and yellowish spots, and other is contagious, viral and bacterial ailments. Picture handling is the system which is utilized for estimating influenced territory of infection, and to decide the

distinction in the shade of the influenced area. Depending on impulsive differential expression, this system developed impulsive model of the disease management. Creating proper plan is the most effective for control pest and minimizing the diseases on crops. We propose smart automated irrigation system for disease detection and sprinkle pesticides. The framework configuration incorporates soil dampness sensors in agribusiness field, the detected information from sensors will be contrasted and pre-decided limit estimations of different soil and explicit harvests. The sent sensors information are nourished to the Raspberry pi.

The data received by the data center is stored to perform data analysis using image processing technique such as SIFT algorithm to detect the possible disease and provide pesticides for that condition. Finally, the analysis results and observed physical parameters are transmitted and displayed on user interface. The user interface in web application allows remote user to control irrigation system by switching, on and off, the robot by the Raspberry based on the commands from the web pages.

The Pest management framework gives an approach to spare water on opportune administration of water assets to farming field dependent on the ongoing information detected by the sensors and discover the maladies of the yields by utilizing leaf wetness sensor. If any disease detected then it will aware us for pest control according to the disease. The concealed Markov show is utilized on recorded information to anticipate the likelihood of infections dependent on edge esteems which are positive for any ailment development in our proposed works. Finally, our system works on two major constraints such as water supply and diseases associated with farming. We use various sensors like temperature sensor, moisture sensor, leaf wetness sensor that takes real time weather parameters as input and provides signals to micro controller. A Raspberry pi based irrigation system that operates automatically via signals provided by soil moisture sensors which is subject to remote control by an android smart phone.

II.LITERATURE REVIEW

To accomplish programmed finding of plant infections and enhance the picture acknowledgment precision of plant ailments, two sorts of grape ailments (grape fleece buildup and grape fine mold) and two sorts of wheat maladies (wheat stripe rust and wheat leaf rust) were chosen as research objects, and the picture acknowledgment of the sicknesses was led dependent on picture preparing and design acknowledgment. After picture preprocessing including picture pressure, picture editing and picture denoising, K implies grouping calculation was utilized to portion the illness pictures, and afterward 21 shading highlights, 4 shape highlights and 25 surface highlights were removed from the pictures. Back proliferation (BP) systems were utilized as the classifiers to distinguish grape sicknesses and wheat infections, individually. The outcomes demonstrated that recognizable proof of the maladies could be successfully accomplished utilizing BP systems. While the elements of the element information were not diminished by utilizing main segment examination (PCA), the ideal acknowledgment results for grape ailments were gotten as the fitting precision and the forecast exactness were both 100 percent, and that for wheat ailments were acquired as the fitting exactness and the expectation precision were both 100 percent. While the elements of the element information were decreased by utilizing PCA, the ideal acknowledgment result for grape infections was acquired as the fitting precision was 100 percent and the expectation exactness was 97.14 percent, and that for wheat illnesses was gotten as the fitting exactness and the forecast exactness were both 100percent has been proposed by Haiguang Wang, Guanlin Li, Zhanhong Ma, Xiaolong Li[1].

Plant ailment distinguishing proof dependent on picture handling could rapidly and precisely give valuable data to the expectation and control of plant sicknesses. In this examination, 21 shading highlights, 4 shape highlights and 25 surface highlights were separated from the pictures of two sorts wheat infections (wheat stripe rust and wheat leaf rust) and two sorts of grape sicknesses (grape wool mold and grape fine buildup), vital segment investigation (PCA) was performed for lessening measurements in highlight information handling, and afterward neural systems including back propagation (BP) systems, spiral premise work (RBF) neural systems, summed up relapse systems (GRNNs) and probabilistic neural systems (PNNs) were utilized as the classifiers to recognize wheat illnesses and grape ailments, individually. The outcomes demonstrated that these neural systems could be utilized for picture acknowledgment of these sicknesses dependent on lessening measurements utilizing PCA and adequate fitting correctnesss and expectation exactness could be gotten. For the two sorts of wheat ailments, the ideal acknowledgment result was gotten when picture acknowledgment was led dependent on PCA and BP systems, and

the fitting precision and the expectation exactness were both 100 percent. For the two sorts of grape illnesses, the ideal acknowledgment results were acquired when GRNNs and PNNs were utilized as the classifiers in the wake of diminishing the components of highlight information with PCA, and the forecast correctness were 94.29 percent with the fitting exactnesses equivalent to 100percent has been proposed by Haiguang Wang, GuanlinLi ,Zhanhong Ma[2].

This is the one reason that ailment recognition in plants assumes a vital job in farming field, as having malady in plants are very common. In the event that appropriate consideration isn't taken around there, it causes genuine impacts on plants and because of which individual item quality, amount or profitability is influenced. For example a sickness named little leaf malady is a risky illness found in pine trees in United States. Detection of plant illness through some programmed method is useful as it lessens a vast work of checking in enormous ranches of yields, and at beginning time itself it distinguishes the side effects of ailments for example when they show up on plant leaves. This paper displays a calculation for picture division method which is utilized for programmed recognition and arrangement of plant leaf illnesses .It likewise covers overview on various infections order systems that can be utilized fsor plant leaf sickness location. Picture division, which is an essential perspective for ailment location in plant leaf sickness, is finished by utilizing hereditary calculation has been proposed by Singha, A.K.Misrab[3].

Because of this in ongoing time, atmosphere brilliant strategies called as keen agribusiness is received by numerous Indian agriculturists. Keen agribusiness is a robotized and coordinated data innovation actualized with the IOT (Internet of Things). IOT is growing quickly and generally connected in every single remote condition. The paper proposes an astute farming model in incorporation with ICT. ICT have dependably made a difference in Agriculture area. Town ranchers may have planted a similar product for quite a long time, however over period, climate examples and soil conditions and plagues of bugs and sicknesses changed. By utilizing the proposed methodology, got refreshed data enables the agriculturists to adapt to and even advantage from these changes. It is extremely testing errand that necessities to give such learning as a result of exceptionally limited nature of farming data explicitly unmistakable conditions. The total real time and authentic condition data is relied upon to accomplish proficient administration and usage of assets has been proposed by K. A. Patil; N. R. Kale [4].

Farming area in India is decreasing step by step which influences the generation limit of environment. There is a urgent need to take care of the issue in the space to reestablish dynamic quality and set it back on higher development. The paper proposes an e-Agriculture Application dependent on the structure comprising of KM-Knowledge base and Monitoring modules. To settle on gainful choices, agriculturists require data all through the whole cultivating cycle. The required data is dissipated in different spots which incorporates constant data, for example, advertise costs and current creation level details alongside the accessible essential harvest information. A learning dataflow show is developed associating different dispersed sources to the product structures. The world around is getting computerized supplanting manual methods with the progression of innovation, since it is vitality proficient and engage negligible labor. The paper proposes the benefits of having ICT in Indian rural part, which demonstrates the way for country ranchers to supplant a portion of the traditional procedures. Observing modules are shown utilizing different sensors for which the information sources are encouraged from Knowledge base. A model of the component is done utilizing TI CC3200. Launchpad interconnected sensors modules with other vital electronic gadgets. A near report is made between the created framework and the current frameworks. The framework conquers constraints of customary agrarian methods by using water asset productively and furthermore decreasing work cost has been proposed by I.Mohanraja, Kirthika, Ashokumarb, J.Narenc2[5].

Agriculture is an information intensive industry that is spatial in nature. To be fruitful, agriculturists must be generalists who are not just knowledgeable in the most recent cultivating advancements yet additionally shrewd representative who are innovatively wise. Further, the globalization has exceptionally unfriendly consequences for Indian ranchers, as they need to rival the agriculturists of created nations. To adapt to difficulties presented by the globalization of horticulture, the ranchers need to deliver quality item at standard with world market at sensible costs. In this way, the ranchers should be very much educated and all around prepared in the administration of common assets and generation of horticultural products. E-agribusiness assumes a vital job in tending to these difficulties and inspiring the employment of Indian agriculturists. This paper investigates the potential commitment so far been endeavored under the aegis of e-horticulture or Information and Communication Technology (ICT) to the vocations of cultivating network in India. Further, a general systesm of the present best in class remote ssensors organize is given as a testing innovation for Indian cultivating network to screen their products from a remote place has been proposed by L.Pradhan, B.B. Mohapatra[6].

Agriculture is the most important sector that influences the economy of India. It contributes to 18 percent of Indias Gross Domestic Product (GDP) and gives employment to 50 percent of the population of India. People of India are practicing Agriculture for years but the results are never satisfying due to various factors that affect the crop yield. To fulfill the needs of around 1.2 billion people, it is very important to have a good yield of crops. Due to factors like soil type, precipitation, seed quality, lack of technical facilities etc the crop yield is directly influenced. Hence, new technologies are necessary for satisfying the growing need and farmers must work smartly by opting new technologies rather than going for trivial methods. Here we focuses in implementing crop yield prediction system by using Data Mining techniques by doing analysis on agriculture dataset. Different classifiers are used namely J48, LWL, LAD Tree and IBK for prediction and then the performance of each is compared using WEKA tool. For evaluating performance Accuracy is used as one of the factors. The classifiers are further compared with the values of Root Mean Squared Error (RMSE), Mean Absolute Error (MAE) and Relative Absolute Error (RAE). Lesser the value of error, more accurate so algorithm will work more accurate. The result is based on comparison among the classifiers has been proposed by Shruti Mishra ,PriyankaPaygude ,Snehal Chaudhary ,SonaliIdate[7].

Pesticides is a synthetic substance which is used to control pests and unwanted weeds. The objective of this work is to develop a data warehouse for various crop and pesticides used. To achieve these goals, we require an application to manipulate pest throughout numerous plants, which in turn would require use of chemical controls some instances. The use of pesticides in agriculture stays important to obtain ok manipulate of pests.Yet, there is an essential social weight towards the advancement of measures for limiting the effect of pesticides on the earth and diminishing and controlling the dangers related with their application. The software should have the feature where the dosages of these artificial materials are used for safety of agricultural commodities and livestock production. There has been a flow in the use of pesticides, fungicides, insecticides on crop damage and improve the productivity. But people using pesticides should know the information about the crops and pesticides they use. The agriculture data processing is a growing want for farmers and decision makers. To update the data warehouse for agricultural purpose is a key challenge for researches. In this paper, the architecture of warehouse data and a comparison of the schemas used are also discussed has been proposed by Ahalya C S, Abin Krishna O[8].

The Major Occupation in India is the Agriculture; the people involved in the Agriculture belong to the poor class and category. The general population of the cultivating network are uninformed of the new systems and Agro machines, which would guide the world to more prominent statures in the field of farming. Despite the fact that the agriculturists work hard, they are cheated by agents in today's market. This serves as a opportunity to solve all the problems that farmers face in the current world. The eAgro edit showcasing will fill in as a superior route for the ranchers to move their items inside the nation with some average information about utilizing the site. This would give data to the agriculturists about current market rate of agro-items, their deal history and benefits earned in a deal. This site will likewise assist the ranchers with knowing about the market data and to see horticultural plans of the Government gave to agriculturists. This paper encourages the agriculturists to find out about market data; will go about as particular interface of plans and pay. Through this they will dependably be associated with data of new strategy and patterns of cultivating. Be that as it may, to some degree, new client may feel some sort of worry about its utilization. All in all, the framework is speedier, protected and less demanding to work with has been proposed by D.Vinoth1, K.Nisharth and K.Shanmugapriya[9].

Agriculture inquire about is quickly developing, because of progression of advances and up and coming difficulties. It has been turned out to be driving job in enhancing the general development rate of any nation. Particularly in Pakistan, there is a desperate need to improve efficiency in horticulture. To enhance the development rate of farming, analysts of this space utilized distinctive information mining strategies to take care of agribusiness related issues. Information mining methodologies, for example, order predicts the harvests ailments, generation and misfortune. It bolsters rancher while taking right choices. This paper centers around expectation of misfortune because of grass grub creepy crawly.In this paper, author did extensive analysis of different data mining classifiers on different feature sets to predict the grass grub damages. The classifiers we used are: DT, RF, NN GNB, SVM and KNN. RF GNB performed better than other classifiers for binary data, and NN and RF performed better than other classifiers for original dataset. They designed ensemble models by combining different classifiers to improve accuracy of weak classifiers. Combination of DT, RF and SVM has proven as best combination out of all tested combinations. Contribution of feature selection and scaling is significant in achieving good results. Results can be further improved by applying some hybrid approaches of data mining and evolutionary algorithms. The evolutionary algorithms help to achieve global optima without grtteing sutuck in local omptima Researchers are trying to solve

many real life problems by deep learning. Deep Learning techniques and hybrid approaches (evolutionary data mining) can solve the crops related problem which is future research direction has been proposed by UmairAyub, Syed AtifMoqurrab[10].

III.PROPOSED SYSTEM

Our proposed work, as shown in below figure the sensors such as soil moisture sensors agriculture field, the sensed data from sensors will be compared with pre-determined threshold values of various soil and specific crops. The deployed sensors data are fed to the raspberry pi and generate alert related pesticides. Finally, Image processing technique based approach is proposed and for crop disease detection. Recognizing the disease is mainly the purpose of the proposed approach that can recognize the leaf diseases with little computational effort. This proposed approach consists of 4 phases. Accuracy is improved by the use of different image processing techniques such as image analysis, pre-processing, feature extraction and classification. Speed and accuracy are the two main characteristics of plant disease detection using image processing methods that must be achieved.

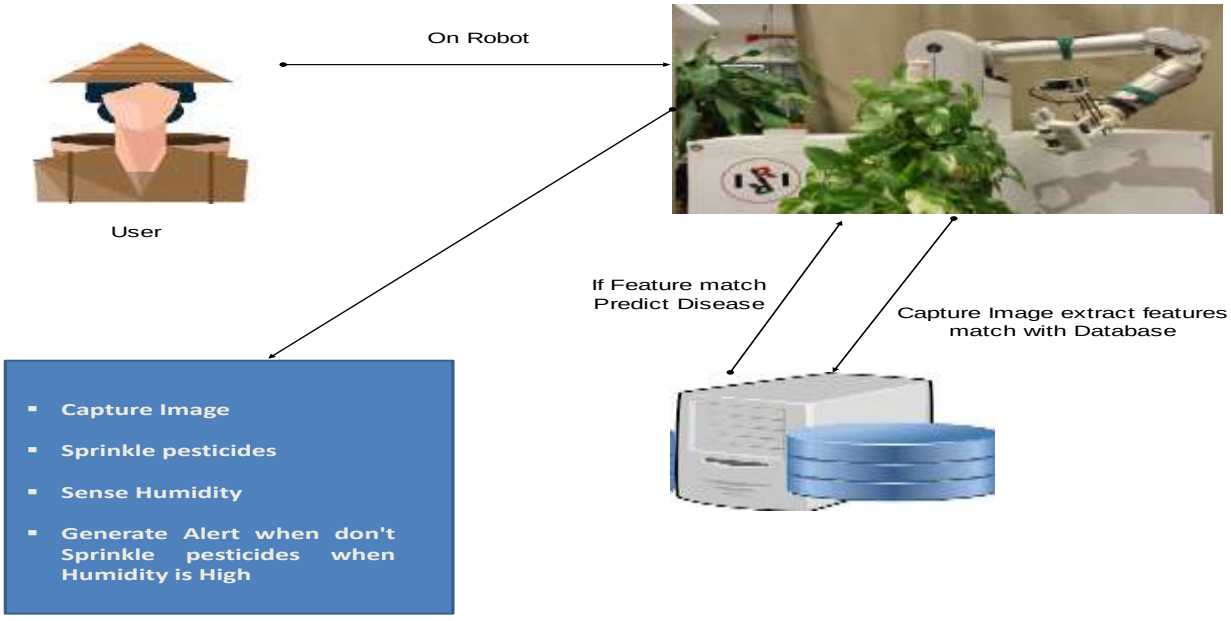

Fig. System Architecture

IV.CONCLUSION

We propose smart automated irrigation system for disease detection and sprinkle pesticides The system design includes soil moisture sensors in agriculture field, the sensed data from sensors will be compared with pre-determined threshold values of various soil and specific crops. The deployed sensors data are fed to the Raspberry pi. The data received by the data center is stored to perform data analysis using image processing technique such as SIFT algorithm to detect the possible disease and provide pesticides for that condition. Finally, the analysis results and observed physical parameters are transmitted and displayed on user interface. The user interface in web application allows remote user to control irrigation system by switching, on and off, the robot by the Raspberry based on the commands from the web page.

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