

Crop Prediction and Disease Detection

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Abstract - Data mining is an emerging field of research in Information Technology as well as in agriculture. Agrarian sector in India is facing rigorous downside to maximize the crop productivity. The present study focuses on the applications of data mining techniques in crop prediction in the face of climatic change to help the farmer in taking decision for farming and achieving the expected economic return. The problem of yield prediction is a major problem that can be solved based on available data. Data Mining techniques are the higher decisions for this purpose. Different data processing techniques are used and evaluated in agriculture for estimating the long run year's crop production. Therefore we propose a brief analysis of crop prediction using Apriori and C4.5 algorithm and Disease detection using image processing algorithm. The patterns of crop production in response to the climatic (rainfall, temperature, relative humidity, evaporation and sunshine) effect across the selected regions are being developed. Thus it will be beneficial if farmers could use the technique to predict the future crop productivity and consequently adopt alternative adaptive measures to maximize yield if the predictions fall below expectations and commercial viability. Along with that we propose the system where the system can identify the disease by analyzing the image of crop and give the solution to cure the disease. The system will also help to take precaution against bad climate or the disease occurs due to weather change.

Key Words: Agricultural vegetation, anisotropic propagation effects, multibaseline (MB) synthetic aperture radar (SAR), phenology, SAR tomography, vegetation water content (VWC).

1. INTRODUCTION

India is an agricultural country with second highest land area of more than 1.6 million square-kilometer under cultivation. Various vital industries in India realize their material from agriculture sector -cotton and jute textile industries, sugar; Vanaspati, etc. are directly dependent on agriculture. There is no such universal system to help farmers in agriculture. India is an agriculture based developing country. In spite of having lot of digital data, they are not able to access real time to the factual information such as the crop yield data in particular soil and crop malady detection techniques, pesticides to be used, weather conditions, pest management etc. So as a solution to improvement in usability tool, this paper explores to develop solution that aims to be scalable, easy to access, community oriented design, efficient that aims to reduce digital gap among rural farmers towards technology. This paper highlights two major crop related parts:

- A. Crop Yield Prediction:
- B. Crop Disease Detection:

Image processing is the analysis and manipulation of a digitized image especially in order to improve its quality and it is form of signal processing for which the input is an image, such as a photograph; the output of image processing may be either an image or a set of characteristics or parameters related to that image. Most image-processing techniques involve treating the image as a two-dimensional signal and applying customary signal-processing techniques to that. Digital image process is that the use of pc algorithms to perform image process on digital pictures. In our work, image processing starts with the digitized a color image of paddy disease leaf and identifies the disease as well as gives the solution to cure the disease.

2. EXISTING SYSTEM

The productivity of agriculture is incredibly low as a result of since past 20 years yields prediction so as to figure agriculture growth of a specific country also as future direction towards investment plans on agricultural fields has been generalized by farmers based on their previous experiences. It results in state of affairs wherever farmers fail to gauge the yield knowledge. In the implementations the developers' uses the single algorithm with the single data set so it gives single output because it find outs the relationships with the single dataset.

2.1 Disadvantages of Existing System:

1. Acquire a more time for processing.

3. PROPOSED SYSTEM

In this system, preparation of soil is the first step before growing a crop. One of the most important tasks in agricultural is to turn the soil and loosen it. This allows the roots to penetrate deep into the soil. The loose soil permits the roots to breathe simply even after they go into the soil. The loosened soil helps in the growth of earthworm and microbes present in the soil. These organisms square measure friends of the farmer since they any flip and loose the soil and add humus thereto. The Propose system incorporates data mining and android application technology to predict on the crop yield rate of a given year by implementing Apriori and C4.5 algorithms and analyzing past days average (min + max) temperature and average rainfall throughout the cropping period of major crops to define a classification model for the data set. Then, the current temperature and rainfall values can be tested against this model to obtain the prediction. The system takes the time period in which the farmer wants to start cultivating a crop as user input. Taking account the farmer’s location, the system then decides on the crops that can be cultivated during that time period and provides a rank of crops that will be profitable based on the yield rate predictions obtained in that particular region at that given time. The application provides an easy sign up and sign in feature which facilitates in storing previously selected crop and the cost of cultivating that crop information for each user. Alongside that, the app provides Disease prevention methods to farmer as per the climate change. By forecasting four to five days weather the application will suggest the farmer, a prevention methods of disease that can be occur to crop due to climate change feature as well as the farmer can click the image of crop and upload to system then system will check what kind of disease is occur to crop, and what are the solution to cure the crop. For this disease detection we are using image processing algorithm which will compare the crop image and show the disease detection and their solution as a result.

1.1 Advantages of Proposed System:

1. Predicting productivity of crop in various climatic conditions can help farmer and other partners in essential basic leadership as far as agronomy and product decision.
2. This model can be used to select the most excellent crops for the region and also its yield thereby improving the values and gain of farming also.
3. The system identifies the crop disease and gives solution to cure.
4. The system will help to provide the precaution tips from crop disease to farmer by analyzing the weather forecast.

4. SYSTEM ARCHITECTURE

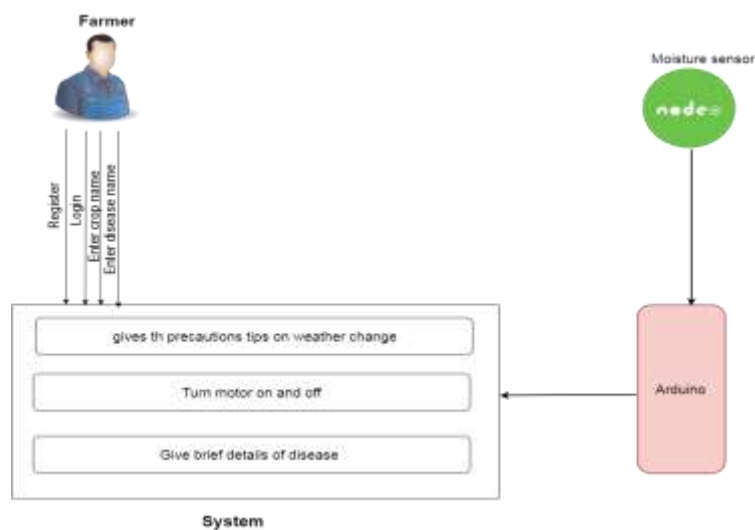


Fig-1: Working of the system

5. LITERATURE SURVEY

1. Agricultural Crop Yield Prediction Using Artificial Neural Network Approach

Author: Raorane A.A., Kulkarni R.V.

Description: It is systems which can predict the more accuracy using meteorological data. Nowadays, there are a lot of yield prediction models, that more of them have been generally classified in two group: a) Statistical Models, b) Crop Simulation Models of Artificial Intelligence (AI),

2. Data Mining: An effective tool for yield estimation in the agricultural sector

Author: Raorane A.A., Kulkarni R.V.

Description: This Recently, application research aimed to assess these new data mining techniques and apply them to the various variables consisting in the database to establish if meaningful relationships can be found..

3. Analysis of crop yield prediction using data mining techniques

Author: D Ramesh 1, B Vishnu Vardhan

Description: This paper presents a brief analysis of crop yield prediction using Multiple Linear Regression (MLR) technique and Density based clustering technique for the selected region i.e. East Godavari district of Andhra Pradesh in India.

4. Crop yield prediction using time series Models

Authors: Askar Choudhury, Illinois State University James Jones, Illinois State University

Description: The results of this study indicate that the ARMA model is preferable over other time series models considered in this paper. The implication of the findings in this study is significant for insurance underwriters responsible for constructing area-based yield insurance that can benefit the Micro insurance market of smallholder farmers and for institutions that rely on those forecasts in providing capital.

5. Crop and Yield Prediction Model

Authors: Shreya Bhanose , Kalyani Bogawar, Aarti Dhotre, Bhagyashree R. Gaidhani

Description: This paper proposes Bee Hive algorithm for predicting crop yield from historical data set. This algorithm handles large data set but it has drawback of having number of tunable parameters and k value.

6. CONCLUSION

Agriculture is that the most significant application space notably within the developing countries like Bharat. Use of knowledge technology in agriculture will modification the state of affairs of higher cognitive process and farmers will yield in higher method. For higher cognitive process on many problems associated with agriculture field; data processing plays an important role. In this paper we've got mentioned regarding the role of knowledge mining in perspective of agriculture field. We have conjointly mentioned many data processing techniques and their connected work by many authors in context to agriculture domain. This paper conjointly focuses on totally different data processing applications in finding the various agricultural issues. This paper integrates the work of varied authors in one place therefore it's helpful for researchers to urge data of current state of affairs of knowledge mining techniques and applications in context to agriculture field.

6.1 FUTURE SCOPE:

1. Our challenge is to find practical solutions to the complex problems faced by society in the control of agriculture and the environment.
2. This system will include the intelligent system which will take the decisions or actions according to the conditions prevailing.
3. So that the farmer's interaction with the system will be minimized which will lead to less human efforts for the monitoring.

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