

Smart Agro System Using Data Mining

Phand Shon¹, Shaikh Asim², Waghmare Priyanka³, Walzade Komal⁴

^{1, 2, 3, 4} Student, Department of Computer Engineering, SRES Sanjivani College of Engineering, Kopargaon, Savitribai Phule, Pune University, Maharashtra, India

ABSTRACT

For predicting crop productivity data mining technique is a relatively new approach. This paper provide a smart system about agricultural advice which helps the farmer to cultivate the crops for high production and giving awareness about the organic farming and disadvantages of inorganic farming. This smart system contains three sections namely advisory section, training section (informative section) and awareness section for awareness of organic farming. The advisory section is about predicting the crop which is suitable to sow. The training section gives basic needs and information of agriculture. The Awareness section gives awareness to farmers about organic farming and disadvantages of inorganic farming. This system helps to farmer for his query about what crop should he cultivate for better crop yield before cultivation. The basic agricultural informative system provides to farmer and researchers to get online information about the crop. The farmer will get information about fertilizer management, pest management, diseases, and suitable soil concentration for the corresponding crops etc. In addition this system will provide individual information about intercrops management about main crops.

Keyword : - Advisory section, Awareness section, Data mining, Informative section.

1. INTRODUCTION

The proposed smart agro system is a smart System for agriculture. The system is divided into two aspects: Advisory system and Informative system.. In Advisory System, the user will have direct interaction with the smart system like a querying from system; the user has to answer the queries asked by the smart System. Decision tree induction technique is used to develop innovative approaches to predict the best combination for cultivating crops. In Information system, the user can get all the static and basic information about basic needs of crop, management of crop like fertilizer management, water management, pest management, disease management etc. and advantages of organic cultivation and disadvantages of inorganic cultivation in the agriculture. A decision tree is like a flow chart, where each internal node (middle node) denotes a certain test on an attribute, each branch is outcome of the some test, and leaf nodes specify classes or class distributions. The root node is a top most node in a tree. To classify an unknown samples (inputs from the user), the attribute values of the sample are tested against knowledge bases using the decision tree. A path is form from the root node to a leaf node that holds the class prediction for that sample. Decision trees were then coinciding to classification rules using IF-THEN-ELSE.

2. SYSTEM DISCRIPTION

The following fig -1 shows the system architecture of smart agro using data mining.

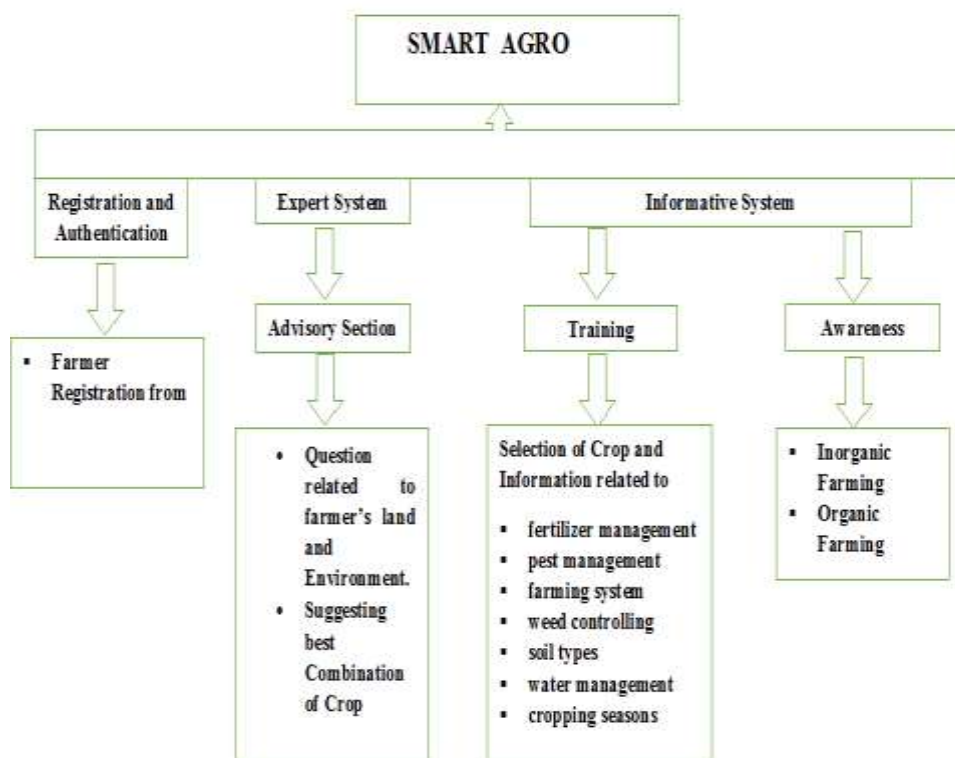


Fig -1 System Architecture

2.1 Advisory Section

This system is used to find a crops for cultivation with the help of smart system getting suggestion about the combinations which will produce high yield and sowing is best or not. The basic algorithm is decision tree induction. It is an insatiable algorithm that constructs decision trees in a top-down repetitive divide-and-conquer manner. System will ask some query to farmer about his farmer's land, weather, rain etc. and after farmer has to give response to system's query. Then this responses will analyses by decision tree and best crop will be displayed to user which will give high yield.

2.2 Training section

In this section the basic needs of agriculture is provided, and the information which require to train the farmer about fertilizer management, pest management, farming system, weed controlling, soil types, irrigation management and cropping seasons are provided

2.3 Awareness section

In this section the users will be provided with awareness about the advantages of organic farming and also the disadvantage of inorganic farming. The organic farming will help to balance the environment i.e. reduce the global warming and eco-friendly agricultural system.

3. OVERVIEW OF SYSTEM

The overview and abstract view of the proposed system is as shown in the below drawn Figure 3.1 and Figure 3.2.

3.1 Use-Case Diagram

The use-case diagram gives overview of our system. Farmer is actor whereas database is supporting actor. There are four use cases included in it:

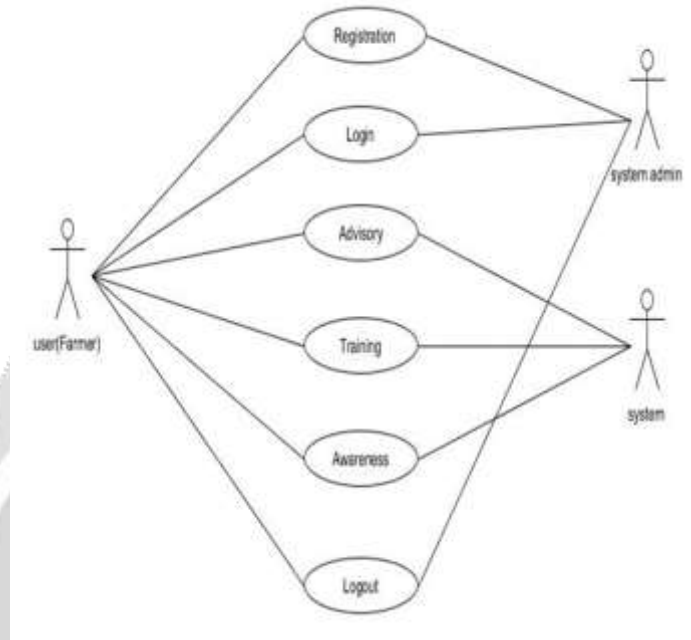


Fig -2: Use Case Diagram

3.2 Control Flow Diagram

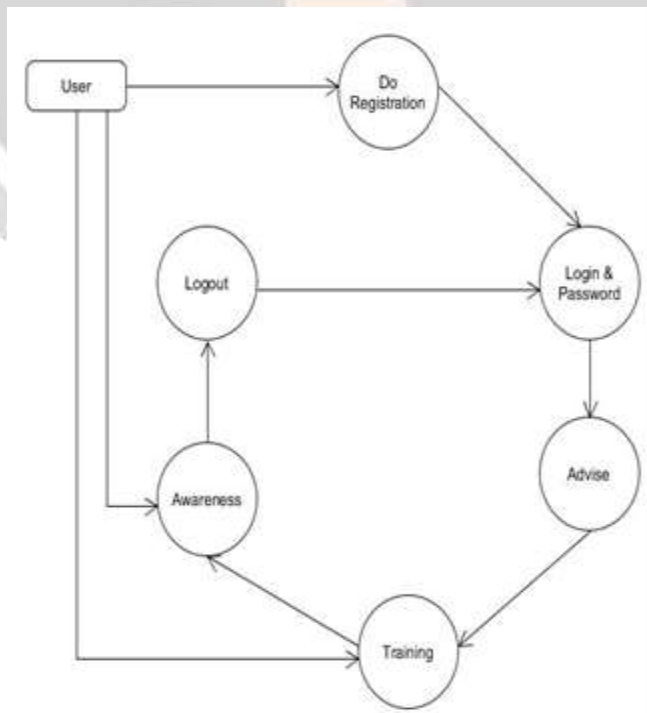


Fig -3: Control Flow Diagram

4. ALGORITHM

Decision Tree Algorithm

Decision Tree learning is one of the most used and practical methods for supervised learning. A decision tree represents a procedure for classifying category of data, based on their attributes. A Decision tree represents a procedure for classifying category of data, based on their attributes. A decision tree is like a flow chart, where each internal node (middle node) denotes a certain test on an attribute, each branch is outcome of the some test, and leaf nodes specify classes or class distributions. The root node is a top most node in a tree. To classify an unknown samples (inputs from the user), the attribute values of the sample are tested against knowledge bases using the decision tree. A path is form from the root node to a leaf node that holds the class prediction for that sample. Decision trees were then coinciding to classification rules using IF-THEN-ELSE. It is also able to process large amount of data efficiently. While construction of decision tree, it does not require any domain knowledge or parameter setting, and therefore appropriate for exploratory knowledge discovery. Their representation of acquired knowledge in tree form is easy to understand for humans.

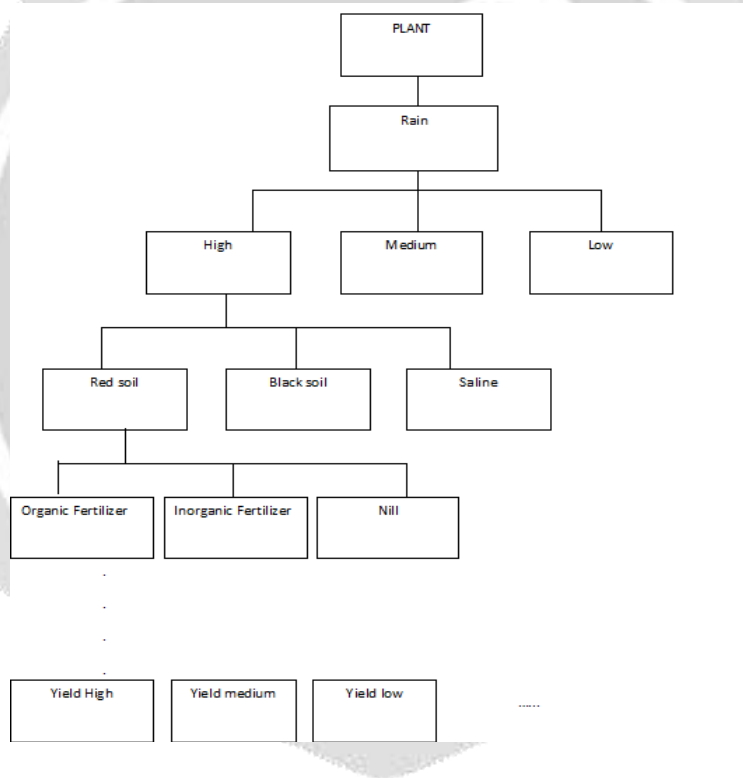


Fig. 4 Decision tree Example

4. CONCLUSIONS

This paper provides a smart system for agriculture. This expert system provides basic information about agriculture for the beginners in farming and also for those who want advice, giving the best suggestions and information for cultivate the crops and creating awareness about the organic farming. This smart system advices and suggestions in the area of crop field by providing facilities like active interaction between expert system and the user without the need of expert at all times. By the interaction with the users and adapting the new functionality, System can be extended further to many more areas in and around the world. A proper understanding of the above section will result in a better agriculture system.

5. ACKNOWLEDGEMENT

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