Advanced Agriculture System using Data Mining Techniques

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Abstract:- In rural areas farmers are facing problems regarding good productive soil (fertilizers), seeding their plants and protecting them from pests issue and diseases. Still they are following traditional agriculture practices which are very far from the modern agriculture system.

Farmers don't have enough information of agriculture market where they get good price and sometimes they could not get market where they could sell their products on time where some products have very short life like vegetables and fruits. Due to un-reliable market information they often depend on middle men who take advantage of their illiteracy or unawareness of market information and thus they cannot get enough income. To overcome the above problems by designing an advanced agriculture system to the farmers by using data mining techniques it provide the proper guidance i.e. from sowing stage to harvesting will provide increase crop productivity automatically they gain profit using classification and clustering algorithms.

Keywords:- Data mining, classification, clustering.

I. INTRODUCTION

Agriculture is the biggest water consumer, approximately 70% of global water consuming. As population is increasing day by day, the demand of food is on gain too. There are certain more factors that affect more crop yield, such as environmental factors like erratic weather conditions leading to crop loss, farmer's ignorance in embracing newer technologies that can be used for enhancement of gross profit from agriculture. In spite of all such problems, agriculture is a cardinal source of employment and plays a key role in socio-economic development of India.

Most of the farmer families, education are still a big luxury. People cannot get educated because of financial problems, and they keep having financial problems because they are not educated, by increasing access to education or literacy, it's an imagine a change in the status quo. Farmers still primarily passing the information from generation to generation verbally, as they have for centuries. Dealing with the modern challenges of agriculture proves to be difficult for many Indian farmers.

➢ *But modern factors*

From evolving agricultural technology to the pressing concerns of climate change and subsequently ever more unpredictable monsoons and irrigation levels it mean that traditional knowledge is no longer enough to prevent crops from failing. So systematic up-to-date, easily accessible information about crops is more vital than ever.

II. PROPOSED METHOD

The main objective is to provide better solution to the farmers for high yield. In AAS system main modules are i.e. required water calculation, Fertilizer, pesticide modules, predict extreme climate changes and market price module and also crop storage module are integrated.

Processing and retrieval of significant data in this abundance of agricultural information is necessary. Utilization of information and communications technology enables automation of extracting significant data in an effort to obtain knowledge and trends, which enables the elimination of manual tasks and easier data extraction directly from electronic sources, transfer to secure electronic system of documentation which will enable production cost reduction, higher yield and higher market price.

Data mining in addition to information about crops enables agricultural enterprises to predict trends about customer's conditions or their behavior, which is achieved by analyzing data from different perspectives and finding connections and relationships in seemingly unrelated data.
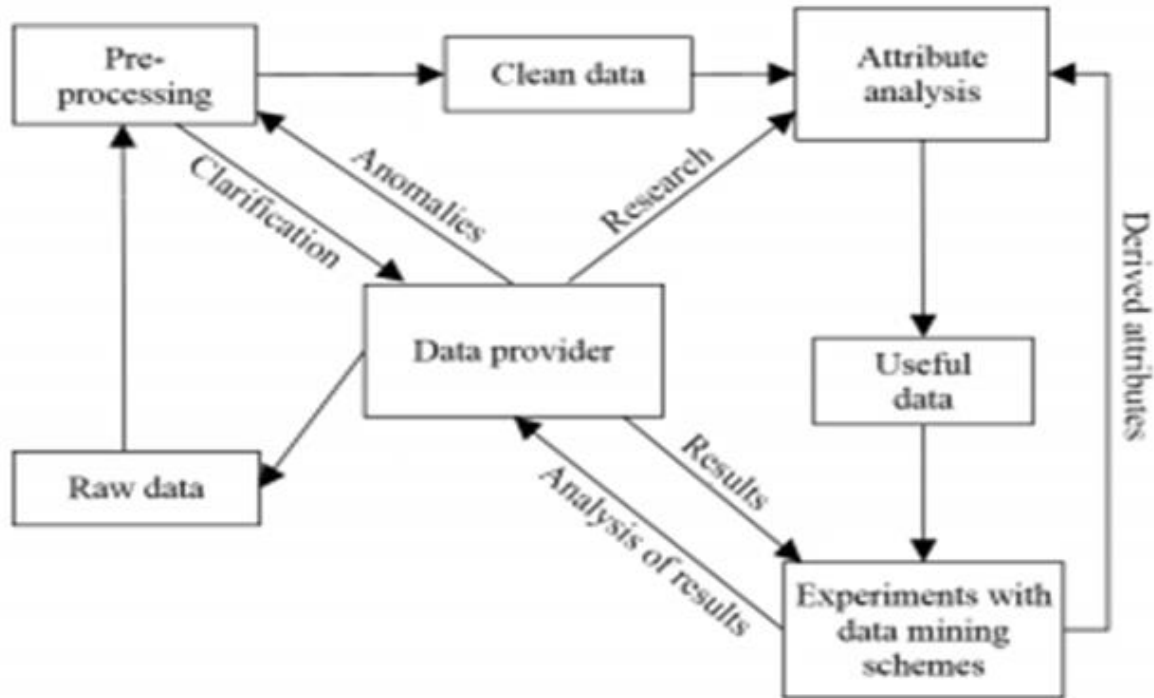
Fig 1:- Process model for a machine learning (data flow diagram)

In AAS huge amount of dataset available in backend. Data Mining is the process of the practice of examining large pre-existing databases in order to generate new information. format for some advance use. Here Data mining clustering techniques are proposing to solve agricultural problems that are K-means and K-medoids are used.
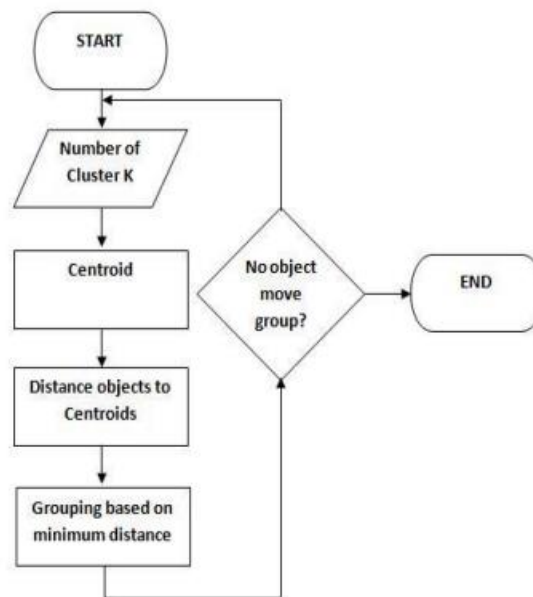
K-Means Algorithm:

Fig 2:- Flowchart of K-means algorithm

The system focuses on some major areas of agriculture

- Suitable crop selection
- Water required for Crop
- Fertilizer to be used at particular stage according to the micro-nutrient as present in soil
- Pesticides to be used depend on various environmental factors
- AAS predict that if there will be more extreme weather conditions, with more droughts, heavy rainfall and storms in agricultural production regions.
- Timely accurate market price and crop storage information.

By implementing proposed system Preprocess the data is nothing but removing unwanted data or adding required information to make data mining easier the pre-processed data is used as input for further implementation and apply the classification algorithm on train and test file to predict result, and clustering algorithms are used to retrieve required data. Above methodology is useful for providing the information to educated farmers and also for rural area farmers are illiterates Whatever the output generated from the AAS resource converts it into his/her communication language (text/voice) send it to framers.

III. CONCLUSION

The clustering algorithms used for computing in this system are the logics written for pattern matching which elegantly returns the perfect outputs as per the input parameters passed, by using the data mining. Because of autonomous in nature, time-to-time handling or changing of the data. It will precisely focus on the growth & cultivating of crops and will increase the productivity by applying its tactics. Advanced agricultural system will also send alert the message to the farmers about critical weather conditions which will again make every possible anomaly to be sustained and the system giving crop wise marketing functions its storage details are provided. Water is limited resource and its conservation is the biggest crisis nowadays, but using this system will aid into proper utilization of water & no wastage or under-over supply.

REFERENCES

[1]. Zhouqiao Ren, Xiaonan Lu, "Design of Fertilization Recommendation Knowledge Base and Appllication", project of Cultivated Land Fertility Evaluation and Fertilization Recommendation in Zhejiang Province.

[2]. Impact of Climate Change in Agriculture with Data Mining Concepts-International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395 - 0056 Volume:03 Issue: 03 | Mar-2016 www.irjet.net p-ISSN: 2395-0072 © 2016, IRJET | Impact Factor value: 4.45 | ISO 9001:2008 Certified Journal .

[3]. MilosBrajovic, Stefan Vujovic, Slobodan Dukanovic, "AnOverview of Smart IrrigationSoftware",4thMediterraneanConfer ence on Embedded Computing,MECO – 2015.