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Survey on Data Mining for Increasing Agriculture Productivity

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Abstract-Crop management of certain agriculture region is depends on the climatic conditions of that region because climate can make huge impact on crop productivity. Real time weather data can helps to attain the good crop management. Data mining is the process of discovering of new pattern from large data sets, this technology which is employed in inferring useful knowledge that can be put to use from a vast amount of data, various data mining techniques such as classification, prediction, clustering and outlier analysis can be used for the purpose. Real time weather data can helps to attain good crop management. Weather is one of the meteorological data that is rich by important knowledge. In this paper we include the hybrid model to improve the agriculture productivity by using data mining techniques.
Keywords- Data mining techniques, Existing System, Problem definition, Proposed System, Market Size, etc.

I. INTRODUCTION

Agriculture is the most significant application area particular in the developing countries like India. Use of information technology in agriculture can change the situation of decision making and farmers can yield a better way. Data mining plays the crucial role for decision on server issues related to agriculture field. The role of data mining in perspective of agriculture field and also confers about several data mining technique and their related work by several authors in context to agriculture domain. It also discussed on different data mining application in solving different agriculture problems.

Data mining is a useful technique to find the useful pattern from the huge dataset.So it secured an important place in agriculture because the field agriculturecontain the many data such as soil data,crop data,weather data so on. Real time weather data is difficult to analyzed and manage so the various algorithms in the data mining like k-means,clustering, Apriori algorithm and other statistical methods are used to analyze the agriculture data and provide the useful pattern. Real time weather data can helps to the farmers for planting a particular variety of crop because it gives high yield and also this real time data helps to alert the farmers for protecting their agriculture field from the climatic disaster.

In agriculture, a soil test commonly refers to the analysis of soil sample to determine nutrient contents, composition and other characteristics such as the acidity or PH level. The analysis of data reveals that the cropping pattern in India has under goes significant changes over time.

The stark observation made in the economic survey of 2015-16 that “Indian Agriculture, is in way, a victim of its own past success – especially the green revolution”. The green revolution, which is often characterized by introduction of high-yielding variety of seeds and fertilizers, undoubtedly increase the productivity of land considerably.

In India 70% of water resources are used for agriculture, due to many factor like increase urbanization and Industrialization and also intensive use of agricultural chemicals and fertilizers, problem of water pollution ground water depletion, water logging, salinity and desertification is on the rise. The testing Labs spread across the country educate the farmers about various scientific tools for identifying best soil and water for Agricultural purposes. They analyze the soil and water sample form different farms and regions and assess the quality of irrigation water by providing appropriate recommendation for using different quality of waters to eradicate many soil related problems such as alkalinity, salinity, acidity etc., which surely result in increased agricultural output.

II. EXISTING SYSTEM

The productivity of agriculture is very low because since past two decades yields prediction in order to compute agriculture growth of a particular country as well as future direction towards investment plans on agricultural fields has been generalized by formers based on their previous experiences. It leads to situation where farmers fail to evaluate the yield data. In the implementations the developers uses the single algorithm with the single data set so it gives single outputbecause it find outs the relationships with the single dataset.

III. PROBLEM DEFINITION

In the existing system the yield prediction is done with the single algorithm based classification in which the single algorithm is used with the single dataset by that we can get only the single output with the single dataset. By these process we cannot get the 100% result hence in proposed system we are using the hybrid model for the classification and by the hybrid model we are increasing the accuracy level of the result and 100% guaranteed the accurate output. And the second problem in the existing system is that it acquire a more time for processing because these process is going through the single algorithm based classification i.e the single input and the single output. Data Mining Methods

A. Association Rule Mining

Association rule mining technique is one of the most efficient techniques of data mining to search unseen or desired pattern among the vast amount of data. In this method, the focus is on finding relationships between the different items in a transactional database. Association rules are used to find out elements that co-occur repeatedly within a dataset consisting of many independent selections of elements (such as purchasing transactions), and to discover rules. An application of the association rules mining is the market basket analysis, customer segmentation, store layout, catalog design, and telecommunication alarm prediction. An application of the association rules mining is the market basket analysis, customer segmentation, store layout, catalog design, and telecommunication alarm prediction. The different association rule mining algorithm are AprioriAlgorithm(AA), Partition, Dynamic Hashing and Pruning(DHP), Dynamic Itemset Counting(DIC), FP Growth(FPG), SEAR, Spear, Eclat&Declat, MaxEclat.

B. Classification

Classification is the data mining techniques used to predict group membership for data instances. It has a training set containing data that have been previously categorize. Some classification algorithm requires training data. Classification is supervised learning technique use to assign predefine tag to instances on the basis of feature. The different classification techniques for discovering knowledge are Rule Based Classifiers, Bayesian Networks (BN), Decision Tree (DT), Nearest Neighbours(NN), Artificial Neural Network(ANN), Support Vector Machine (SVM), Rough Sets, Fuzzy Logic, Genetic Algorithms.

C. Clustering

The process of grouping a set of physical or abstract object into classes of similar objects is called clustering. Clustering is unsupervised technique used to group similar instances on the basis of feature. It has no labels required. Clustering does not require training data. Each cluster that is form can be viewed as a class of object, form which rule can be derived The different clustering methods are Hierarchical Methods(HM), Partitioning Methods (PM), Density-based Methods(DBM), Model-based Cluster Methods(MBCM), Grid-based Methods and Soft-computing Methods [fuzzy, neural network based], Squared Error-Based Clustering (Vector Quantization), network data and Clustering graph.

D. Regression

Data can be smoothed by fitting the data to a function with regression. In linear regression we find based line to fit two attribute so that one attribute can be used to predict other in multiple linear regression two attributes are involved and the data are fit to multidimensional surface. Regression tasks are often treated as classification tasks with quantitative class tag. The methods for prediction are Nonlinear Regression (NLR) and Linear Regression (LR).

E. Market Size

India's gross domestic product(GDP) is expected to growth at 7.1 per cent in FY 2016-2017 led by growth in private consumption, while agriculture GDP is expected to grow above Trend at 4.1 per cent to Rs 1.11 trillion(US$1,640 billion), according to Central statistics Office(CSO).

As per the first advance estimates, India's food grain production is expected to be 135.03million tonnes in 2016-17.Production of pulses is estimated at 8.70million tonnes. India, the second largest producer of sugar, accounts for 14percent of the global output. It is the 6th largest exportor of sugar, accounting for 2.76percent of global export.

IV. EDUCATION ON ROLE OF PRIVATE INVESTMENT IN AGRICULTURE

Efforts are being made to create favorable economic condition to promote participation of the private enterprises in the establishment of agro-based industries. Institution such as Exim Bank Ago of India and National Bank for agriculture and Rural

Development and Directorate of Economics and statistics are very much instrumental in channelizing investment from private sector to the agriculture sector.

A. Agri-Price Support

Market intervention scheme involving procurement through a notified agency like commission for agriculture cost and prices, agricultural and proceeds food products export development authority and marketing research and information network etc.,can surely be great help in assuring fair returns to the farmers.

B. Scope

Analysis the agriculture background in the today world.
To collect previous data set to be compressed and then find the better technique for to predict the future.
The purpose is to estimate difference in efficiency and prediction between organic and inorganic forming in agriculture.
To analysis the real estate business land in a specific area.
The accurate prediction of crop yield can help governments and authorities to have strategic decision in policy making.
Our challenge is to find practical solutions to the complex problems faced by society in the control of agriculture and the enviroment.

V. CONCLUSION

Analysis of our parameters like soil, weather, water give impact to the agriculture.
Adaptive strategies can help minimize negative impacts.
These need research, finding and policy support.
Cereal productivity to decreased.
Increased drought and floods are likely to increased production variability.

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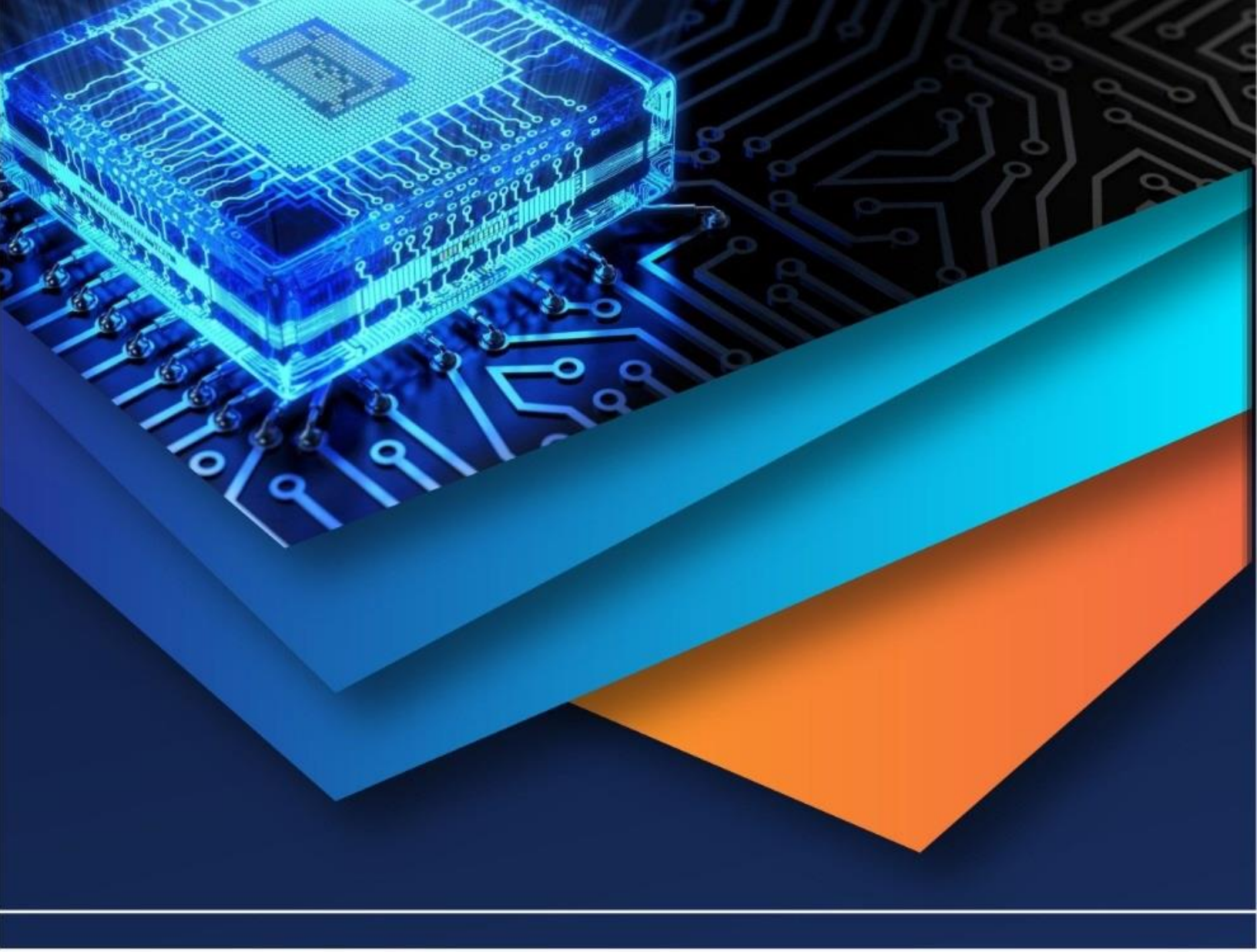
[5] YETHIRAJ N G, dec 201 APPLYING DATA MINING TECHNIQUES IN THE FIELD OF AGRICULTURE AND ALLIED SCIENCE b Assistant Professor, Department of Computer Science Maharani’s Science College for Women, Bangalore, India
[6] Sally Jo Cunningham and Geoffrey Holmes ,Department of Computer Science University of Waikato Hamilton New ZealandDeveloping innovative applications in agriculture using data mining



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