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Efficient Data Mining for Increasing Agriculture Productivity

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Abstract: data mining techniques applied to agricultural and their applications to agricultural related areas. In agriculture problem, yield prediction is a very important. The main component of agriculture productivity is the climate. Given the fundamental role of agriculture in human welfare, concern has been expressed by federal agencies and others regarding the potential effects of climate change on agricultural productivity. In agriculture, a soil testing is used to check soil sample which determine nutrient content, composition and other characteristics such as the acidity or ph level. A soil test can determine fertility, or the expected growth potential of the soil which indicates nutrient deficiencies, potential toxicities from excessive fertility and inhibitions from the presence of the non-essential trace minerals. The sufficient amount of water is also important for the crop in agriculture.

Keywords: data mining techniques, climate data, soil data, algorithm of data mining, water resource, soil and water testing, etc.

I. INTORUDCTION

In our proposed system we are using the hybrid model for the implementation purpose.Hybrid Model (Naive Byes and Support Vector Machine)is a dynamic system that exhibit both continuous and discrete dynamic behavior-a system can both flow (describe by a different equations) and jumps(describe by a state machine or automation).Hybrid model is mentioned as a marriage of naïve byes and support vector machine algorithms. The hybrid model is used to find the relation between two entities. This model is beneficial for increase the classification level, it increase the classification level from 75% up to the 95%.

II. OBJECTIVES AND AIMS

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

It also discusses on different data mining applications in solving the different agricultural problems. It integrates the work of parameters in one place so it is useful for us to get information of current scenario of data mining techniques and applications in context to agriculture field.

A. Diagram
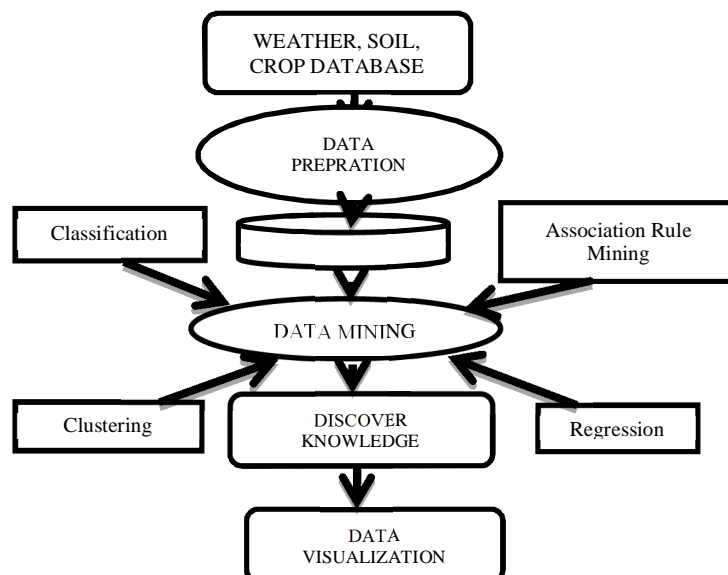
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Fig 1: Data Flow

B. Algorithms

K-means algorithm It is a centroid based technique.The K-mean algorithm takes the input parameter a set of n objects into k cluster so that result in intra-cluster similarity is high but inter-cluster similarity is low.

K-means algorithm work as follows K-means algorithm randomly selects k of the objects each of which initially represents cluster mean or center.

For each of the remaining objects,an object is assign to the cluster to which it is the most similar based on the distance between objects an cluster mean.

It then computes new mean for each cluster.

These process continues until the criterion function converges.

1) *Advantages :*It is easy to understand. It is fast.

2) *Disadvantages:* It can be applied only when cluster is defined. Applicable only when mean is defined.

C. Navies Bayesian Classification

Navies bayes a simple technique for constructing classifiers: model that assign class label to problem instance,represented as vector of feature values. It is not a single algorithm for training such classifier,but a family of algorithms based on a common principles:All navies bayes classifiers assume that the value of particular feature is independent of the value of any other feature. This algorithm is used for classification purposes.

1) *Advantages:* It is fast to classify It can handle real and discrete data.

2) *Disadvantages*: It assumes independence of features.

Support Vector Machine (SVM) is an algorithm in which training data is transformed into higher dimension by using a nonlinear mapping.It is a deterministic algorithm.It is difficult to learn is in a batch mode using quadratic programming technique.It uses kernel which can learn very complex function.

III. EDUCATION ON USE OF WATER RESOURCES

In India 70% of water resources are used for agriculture. Due to many factor like increased urbanization and industrialization and also intensive use of agriculture chemicals and fertilizers, problem of water pollution, ground water depletion, water logging, salinity and decertification is on the rise.

IV. SOIL AND WATER TESTING LABORTARIES

These testing lab spread across the country educate the farmers about various scientific tools for identifying superb soil and water for agriculture purpose. They analyze the soil and water sample form different farms and region and assess the quality of irrigation water by providing appropriate recommendation for using different quality of waters to educate many soil related problem such as alkalinity, salinity, acidity, etc., which surely result in increased agriculture output.

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