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SMART FARMING USING DATA ANALYSIS

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Abstract -The purpose of software is to give proper notifications to the user for better harvesting. The user should give details of the crops as input and date of sowing. The system will generate appropriate solution for the farmers. The notifications include when to harvest when to use pesticides and fertilizers and cultivation methods for respective plants. Data mining algorithms used here is K – Means data mining algorithm

I. Introduction

Agriculture is the science and art of cultivating plants and livestock. Agriculture was the key development in the rise of sedentary human civilization, whereby farming of domesticated species created food surpluses that enabled people to live in cities. The history of agriculture began thousands of years ago. After gathering wild grains beginning at least 105,000 years ago, nascent farmers began to plant them around 11,500 years ago. Pigs, sheep and cattle were domesticated over 10,000 years ago. Plants were independently cultivated in at least 11 regions of the world. Industrial agriculture based on large-scale monoculture in the twentieth century came to dominate agricultural output, though about 2 billion people still depended on subsistence agriculture into the twenty-first.Modern agronomy, plant breeding, agrochemicals such as pesticides and fertilizers, and technological developments have sharply increased yields, while causing widespread ecological and environmental damage. Selective breeding and modern practices in animal husbandry have similarly increased the output of meat, but have raised concerns about animal welfare and environmental damage. Environmental issues include contributions to global warming, depletion of aquifers, deforestation, antibiotic resistance, and growth hormones in industrial meat production. Genetically modified organisms are widely used, although they are banned in some countries.The major agricultural products can be broadly grouped into foods, fibers, fuels and raw materials (such as rubber). Food crop classes include cereals (grains), vegetables, fruits, oils, meat, milk, fungi and eggs. Over one-third of the world's workers are employed in agriculture, second only to the service sector, although the number of agricultural workers in developed countries has decreased significantly over the centuries.

Data analysis is a process of inspecting, cleansing, transforming, and modeling data with the goal of discovering useful information, informing conclusions, and supporting decision-making.

Data analysis has multiple facets and approaches, encompassing diverse techniques under a variety of names, while being used in different business, science, and social science domains. In today's business, data analysis is playing a role in making decisions more scientific and helping the business achieve effective operation.

Data mining is a particular data analysis technique that focuses on modeling and knowledge discovery for predictive rather than purely descriptive purposes, while business intelligence covers data analysis that relies heavily on aggregation, focusing mainly on business information. In statistical applications, data analysis can be divided into descriptive statistics, exploratory data analysis (EDA), and confirmatory data analysis (CDA). EDA focuses on discovering new features in

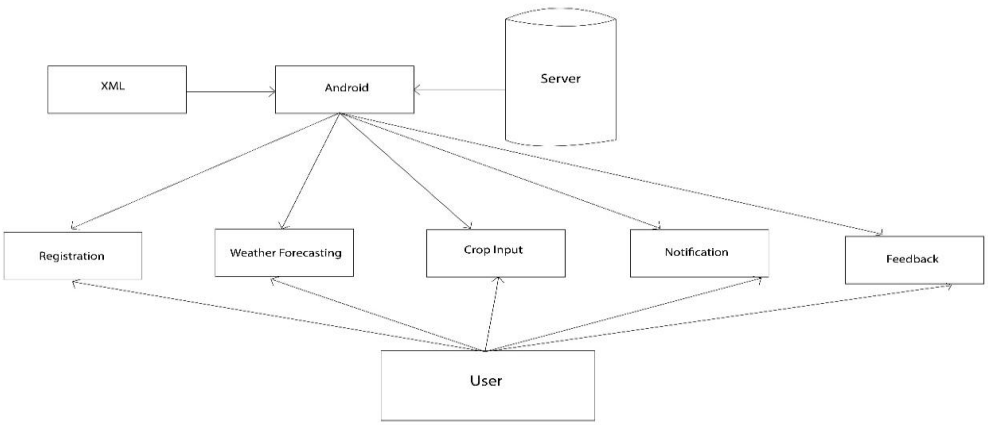
the data while CDA focuses on confirming or falsifying existing hypotheses. Predictive analytics focuses on application of statistical models for predictive forecasting or classification, while text analytics applies statistical, linguistic, and structural techniques to extract and classify information from textual sources, a species of unstructured data. All of the above are varieties of data analysis.
Analysis refers to breaking a whole into its separate components for individual examination. Data analysis is a process for obtaining raw data and converting it into information useful for decision-making by users. Data are collected and analyzed to answer questions, test hypotheses or disprove theories.

II. Literature Survey

Yield prediction[1] is very popular among farmers these days, which particularly contributes to the properselection of crops for sowing. This makes the problem of predicting the yielding of crops an interesting challenge.Earlier yield prediction was performed by considering the farmer's experience on a particular field and crop. The problem of predicting the crop yield is formalized as aclassification rule, where Naive Bayes and K-Nearest Neighbour methods are used.The soil testing program starts with the collection of a soil sample from afield. The first basic principle of soil testing is that a field can be sampled in such a way that chemical analysis of the soilsample will accurately reflect the field's true nutrient status. The purpose of soil testing in high-yield farming is to determinethe relative ability of a soil to supply crop nutrients during a particular growing season, to determine the needs, and fordiagnosing problems such as excessive salinity or alkalinity.As there is an existing system which predicts production of crops based on yield prediction and soil analysis but this project also includes prediction based on Weather and climate changes which gives more accuracy on prediction.

Smart Farming[2] is a development that emphasizes the use of information and communication technology in thecyber-physical farm management cycle. New technologies such as the Internet of Things and Cloud Computingare expected to leverage this development and introduce more robots and artificial intelligence in farming.This is encompassed by the phenomenon of Big Data, massive volumes of data with a wide variety that can becaptured, analysed and used for decision-making.Rapid developments in the Internet of Things and Cloud Computing are propelling the phenomenon of what is called Smart Farming. While Precision Agriculture is just taking in-field variability into account, Smart Farming goes beyond that by basing management tasks not only on location but also on data, enhanced by context- and situation awareness, triggered by real-time events.This project also suggests proper cultivation methods, suggesting pesticides and fertilizers which is a drawback in other systems.

III. Proposed System



This app helps in touch with their farms by giving notifications. The notifications include suggesting pesticide, fertilizer and new cultivation methods.It gives entire detail of every crops for the new upcoming farmers. The farmer should give the date of sowing seeds for finding the approximate date of cultivation. Exceptions are included in case of bad weather conditions such as heavy rainfall will be predicted and this helps the farmers to take any necessary actions.Based on analysis using K-means algorithm at the background the farmers gets notification at real time.

The Feedback provided by the farmers will also help us for better analysis.Interaction with the user (collecting Input).Analysis of possible outcome from the given inputs. giving notifications based on real time.Feedback Module.

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