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Data Framework for Small-Scale Farmers

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Abstract:
Our agricultural face: agricultural production is dispersed, agricultural consumption is diversified, and connection and docking are poor between small-scale production and market. We propose the agricultural marketing information recommendation system based on cloud computing in order to provide accurate recommendations for farmers. We propose a system to intimate farmers about the crops to be seeded in the specific season and also make the farmers aware of the current market rate of the product. This type of system is much beneficial for the young generation to adapt to the traditional farming technique.

Keywords: Framework, Bidding

I. INTRODUCTION

With the evolution in the Internet, the ways how businesses, economies, stock markets even how the governments function and operate has also evolved, big time. It has also changed the way people live, for crying out loud. With all of this happening, there has been an observable rise in all the information floating around these days, it's more than ever before. This outburst of data is relatively new. Before the past couple of years most of the data was stored on paper, film or any other analogue media, only one quarter of all the world's stored information was digital. But with the exponential increase in data, the idea of storing it manually just does not hold any appeal. The conventional way in which we can define big data is extremely large data sets that are so complex and unorganized that they defy the common and easy data management methods that were designed and used, up until the extreme rise in data.

Figure.1. Big data

A. CHARACTERISTICS OF BIG DATA:

There are some terms associated with big data that actually help make things even clearer about big data. These are essentially called characteristics of big data and are termed as Volume, velocity and variety giving rise to the popular name 3V's of big data, Which I am sure you must have heard before, but if you haven't, you need not worry, because we are going to discuss them in detail here. As people are understanding more and more about the ever evolving technological term, big data, it shouldn't come as a shock if more characteristics added to the list of the 3V's. These are called veracity and value.

B. Challenges of big data:

It must be pretty clear by now that while talking about big data one can't ignore the fact that there are some obvious challenges associated with it. So moving forward in the blog let's address some of those challenges.

- Quick data growth
- Storage
- Syncing Across Data Sources
- Security
- Unreliable data

II. PROPOSED SYSTEM

We propose the agricultural marketing information recommendation system based on cloud computing in order to provide accurate recommendations for farmers. We propose a system to intimate farmers about the crops to be seeded in the specific season and also make the farmers aware of the current market rate of the product. This type of system is much beneficial for the young generation to adapt to the traditional farming technique. Bidding is a tideous task but our proposed system gives the actual market rate and then it clarifies the user about the current market rate to avoid the farmer bidding or getting cheated by the reatilers.

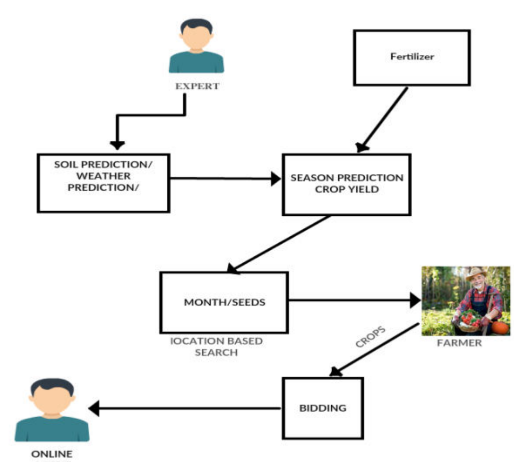

Figure.2. Proposed architecture Diagram

III. SYSTEM IMPLEMENTATION

A. ADMINISTRATOR ENDORSEMENT:

The farmer will register in the website with their own details like username, password, contact details, address details. The admin will verify the details and approved. Then only farmer can sign in and ask for a query with expert. The farmer can also query about the fertilizer and also much related information about the agriculture.

B. MONITOR AND MAINTAIN THE CROPS:

Farmer can now get online information on the amount of fertilizers that they must apply to a particular kind of soil and crop from the expert. This will help them overcome the problem of over use of fertilizer that is eroding soil health. We developed a web based system that calculates the quantum and quality of fertilizers that should be applied to the soil for targeted yield.

C. PREDICT AND DETECT PESTS:

The farmer sometimes unaware of exact price about the crop they sell in the market. The small farmer often sell their produce to local traders, this could be an important bargaining tool. Also, farmers can decide on whether to take produce to the market or delay it based on the information on current price advised by the Expert.

D.ONLINE COMPUTERIZED AGRI-AUCTION PORTAL:

Make farmers get the best price for their products. Farmers get to know the demand in the market of the products they are selling. This will help them to concentrate on the crops which is in high demand. The Online Bidding Application helps the farmers meet the customers directly. Farmers can choose their customers who quote more i.e. they can choose whom to sell their products on the basis of the price the customers are ready to pay.

E. FERTILIZER EXPERT SYSTEM:

A more practical option is to make better use of the land currently devoted to agriculture, although this also faces some challenges. There will be sub-sector development for agriculture such as seed production, organic fertilizer production, aggregation of produce and primary processing, poultry production, etc. All these information will be contributed to the farmer to energize the local economy for multiplier effect out of the agriculture land and crop details.

IV. LITERATURE SURVEY

For better agricultural productivity and food management, there is an urgent need for precision agriculture monitoring at larger scales. In recent years, drones have been employed for precision agriculture monitoring at smaller scales, and for past few decades, satellite data are being used for land cover classification and agriculture monitoring at larger scales. The monitoring of agriculture precisely over a large scale is a challenging task. In this paper, an approach has been proposed for precision agriculture monitoring, i.e., the classification of sparse and dense fields, which is carried out using freely available satellite data (Landsat 8) along with drone data. Repeated usage of drone has to be minimized and hence an adaptive classification approach is developed, which works with image statistics of the selected region. The proposed approach is successfully tested and validated on different spatial and temporal Landsat 8 data. Cutting processes are among the most important crushing procedures in harvesting technology. Common practice attempts to identify the time for regrinding crop cutting blades do not often lead to the desired results. Continuous monitoring of the cutter bars in harvesting machines could provide the optimal regrinding time to maintain cutting performance and to achieve preferably long maintenance intervals. In this study a method for the real-time acoustic monitoring of the sharpness of crop cutting blades is shown based on an analytical simulation, acoustic measurements and statistical analysis these measurements were performed with piezoelectric accelerometers and signals were recorded at a sampling rate of 51 kHz. Structure-borne sound was measured on the counter blade, knife drum, and on the cabin of a self-propelled field chopper during harvesting. A good interrelation was found between the condition of the blades and the structure-borne sound. The statistical classification analysis with support vector machine (svm) method allows an attribution of the blade sharpness (described by means of executed grinding cycles) with a accuracy of 0.76. Further development steps and the optimization potential of the design of system components are also discussed. Continuous crop monitoring is an important aspect of precision agriculture and requires the registration of sensor data over longer periods of time. Often, fields are monitored using cameras mounted on unmanned aerial vehicles (UAVs) but strong changes in the visual appearance of the growing crops and the field itself poses serious challenges to conventional image registration methods. In this paper, we present a method for registering images of agricultural fields taken by an UAV over the crop season and present a complete pipeline for computing temporally aligned 3D point clouds of the field. Our approach exploits the inherent geometry of the crop arrangement in the field, which remains mostly static over time. This allows us to register the images even in the presence of strong visual changes. To this end, we propose a scale-invariant, geometric feature descriptor that encodes the local plant arrangement geometry. The experiments suggest that we are able to register images taken over the crop season, including situations where matching with an off-the-shelf visual descriptor fails. We evaluate the accuracy of our matching system with respect to manually labeled ground truth. We furthermore illustrate that the reconstructed 3D models are qualitatively correct and the registration results allow for monitoring growth parameters at a per plant level. In the present article, it is presented the modeling and identification of an autonomous vehicle that has been designed for agricultural tasks. With the purpose of defining the best model structure, different models have been presented. Particularly, it is assumed that the lateral and longitudinal dynamics are decoupled dynamics, and based on this assumption these are modeled and identified in an isolated way. Particular emphasis was made in lateral and rotational dynamics. The vehicle under study is a quadric cycle (ATV) that has been modified and adapted to work in an autonomous way. It has been presented simulation proofs and experimentation with the real vehicle that allows guaranteeing the performance of the developed models. In the present article, it is presented the modeling and identification of an autonomous vehicle that has been designed for agricultural tasks. With the purpose of defining the best model structure, different models have been presented. 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V. EXPERIMENTAL RESULTS

Expert is the person who can predict the previous system and gives the prediction of the farmer process. Expert also needs the permission access from the Admin.

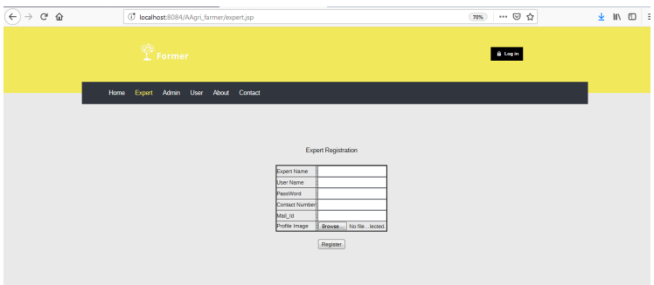

Figure.3. Expert login

Admin can access the whole system and they should give approve and rejection in the expert and farmers login.

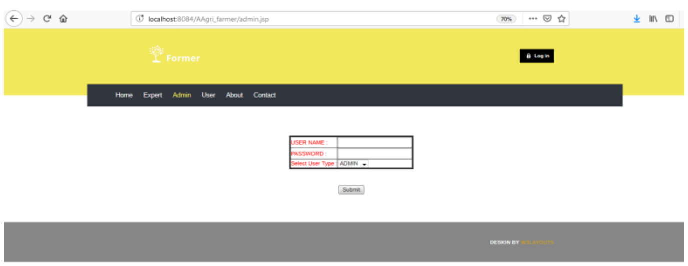

Figure.6.2 Admin login

Every farmer will be issued separate login credentials. Farmer use their login to upload their data to the expert system. Once in the Farmers' Portal, a farmer will be able to get all relevant information on specific subjects around his village/block /district or state. These levels can be easily reached through the Map of India placed on the Home page.

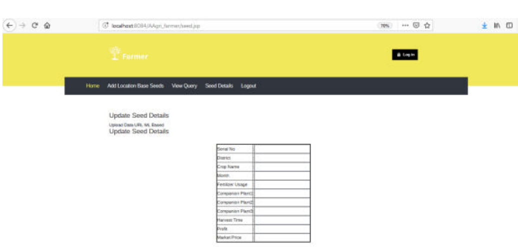

Figure.6.3 Farmer login

In computing, User Location Service was a standards-based protocol for directory services and presence information. Client software supporting ULS included early versions of Netmeeting, Intel Video Phone and Free Web Fone. Net meeting had depreciated ULS in favour of Internet Locator Service and FreeWebFone no longer exists.

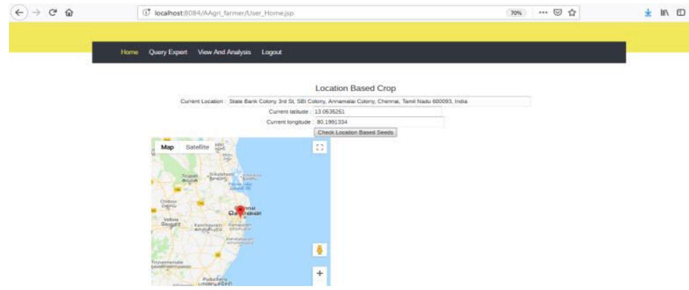

Figure.6.4 Location fetching

Farmer ask a question from their location then they get a replay from the expert whom hey going to ask from the expert.

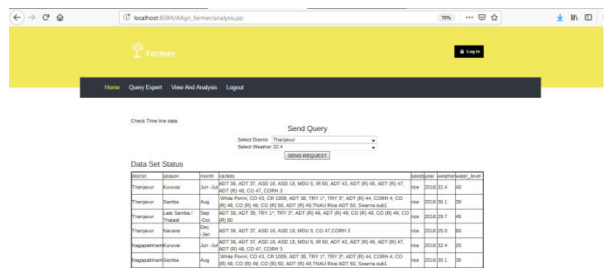

Figure.6.5 query expert

VI. CONCLUSION

Technology advances in agriculture is leveling the playing fields for small scale farmers in rural areas. The number of users who adopt such technology, however, is still relatively low. Understanding the factors promoting or limiting the acceptance and adoption of new information system is a key challenge

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