Monitoring Of Hydroponic Fields With Geographical Data Analysis Using Green Cloud

Dr.M.Rameshkumar [#1] and Ramya.G [*2]

[#] *Associate professor, Department of Computer Science and Engineering, Dhirajlal Gandhi College of Technology, Salem, India.*

[*] *Master of Engineering, Department of Computer science and Engineering, Dhirajlal Gandhi College of Technology, Salem, India.*

Abstract— **In agribusiness field become an important area for food consectary production. Small holdingfarm helps farmers to cultivate crop based on their experience. In future organization pays more attention to store organic agricultural data will be monitoring their performance. The collected hydroponic plant data information are stored in Green cloud database and stakeholders maintain that records helps farmers to increase their productivity.Stakeholders analyses these collected data Using virtual machine Techniqueslike PAM,CLARA,DBSCAN and precision algorithms. This paper focuses on the analysis of hydroponic field data and finding optimal parameters to maximize the crop production. Green cloud environment to help formers make better decision besides this algorithm enables to create real time crop production records.**

Index Terms— **Cloud computing, performance monitoring, Hydroponic fields, Green cloud**

I. INTRODUCTION

Cloud computing is the use of computing resources (hardware and software) that are delivered as a service over a network (typically the Internet). The name comes from the common use of a cloud-shaped symbol as an abstraction for the complex infrastructure it contains in system diagrams. Cloud computing entrusts remote services with a user's data, software and computation. Cloud computing consists of hardware and software resources made available on the Internet as managed third-party services. These services typically provide access to advanced software applications and high-end networks of server computers.

The importance of precision agriculture (PA) because it pursues not only the improvement of agricultural production but also the reduction of environmental pollution. The agriculture industry in many countries has begun to promote the concept of PA. The new service aims to accumulate current and historical data to keep track of plant growth, helping farmers making more informed decisions. Farmers who use the service can benefit from detailed data on factors related to plant growth, such as soil moisture, leaf temperature, leaf width/length, temerature, and humidity. Cloud computing is an appropriate choice because it uses powerful computing servers and distributed resources shared by each measurement site to provide a smart service with useful information. The wireless sensor network (WSN) technology to build up a greenhouse monitoring system deployed in an orchid greenhouse in Chiayi, Taiwan.

Cloud Computing and The Internet of Things are the two hot points in the Internet field. The application of the two new technologies is in hot discussion and research, but quite less on the field of agriculture and forestry. Thus, in this paper, we analyze the study and application of Cloud Computing and The Internet of Things on agriculture and forestry. Then we put forward an idea that making a combination of the two techniques and analyze the feasibility, applications and future prospect of the combination .With the rapid network development, the data volume is increasing at a surprising speed as well. Recently, Cloud Computing and The Internet of things are the hottest topic in the Internet industry. Cloud Computing has its advantages in large scale, low price, virtual and excellent scalability, while The Internet of things' main technique such as RFID, sensor and 3S have already been applied in a certain scale .Many famous IT enterprises like Amazon, Google, Microsoft, IBM and Dell have already successfully built their own cloud and offer cloud service in software development, data storage, information searching, information management and so on. However, people's acquaintance toward Cloud computing and The Internet of Things are not enough in agriculture and forestry industry. Agriculture and forestry are the two basic industries closely related to our national welfare and the people's livelihood, whose standard of informatization is vital to our country. The introduction of the two new techniques would be a great breakthrough in modern agriculture and forestry field .This paper focused on the study on the application of Cloud Computing and The Internet of Things in agriculture and forestry. Because computing clouds has its advantages in large scale, virtualization, high reliability, expansibility, economical and practical and high efficiency, the construction of public cloud in agriculture and forestry can promote resources sharing, cost saving and construct systems with high efficiency. The Internet of Things, as an important support for realizing intensive, high-yield, high-quality, high-efficiency, ecological and safe agricultural, its main techniques such as

RFID, photo acoustic electromagnetic sensors, "3S" technology, laser scanner, etc, can make great breakthrough on agricultural product safety, agriculture information transmission, intelligent detecting, intelligent cultivation control and precise irrigation. IOT also brings great convenience to forestry, especially in the forest identification, wood tracking management and on.

Agriculture provides international coverage of advances in the development and application of computer hardware, software and electronic instrumentation and control systems for solving problems in agriculture and related industries. These include agronomy, horticulture (in both its food and amenity aspects), forestry, aquaculture etc.

India is the third largest economy in Asia afterJapan and China; it is continuing to grow rapidly. About 75% people are living in rural areas and are still dependent on Agriculture. About 43% of India's geographical area is used for agricultural activity. So as a whole in India there is a lot of contribution from the Agriculture Sector, this is our area of Interest here. This paper discusses everything about providing the SMS updates on various agriculture products as per the user requirements on his GSM and/or GPRS mobile phone. The updates may vary from Pricing, Availability, Stocks, and Need of Various Products on the Market. Basically this will be expected to be helpful for Farmers around the state. Also since it works anywhere there's a mobile signal, it does not require Internet. In this paper we glanced over the variation/category of cloud computing named Data-as-a-Service (DaaS), since we are providing Pricing Details to customer against the Database Queries. And also the Deployment Model we consider is Community Cloud. It's mainly concerned about a specific group of Customers which is in our case The Farmers.

II. SURVEY ANALYSIS

Arnab kumar et al proposed an approach for performance monitoring the agriculture field. They used SVMTechniques to classify and analyse the agricultural data and uploaded in cloud. They collect odour data from sensors to find optimal solution. It helps to yield better quantity of production and reduce time. [1]

Peng Zhang et al have stressed four layer techniques consist of field monitoring module, crop water demand data module, water monitoring module and the total control module. The field monitoring module means monitoring and collecting information of the soil, hydrological and meteorological which affect crop growth and then transmitting the information to the target database. The monitoring module of water supply is to collect and monitor the quantity of water in the water supply pipe. The total control module according to the quantity of water that calculated by crop water requirement big data module and the date of water quantity collected by water supply piping system, automatically controls the opening and closing of valve, at the same time, it shows the working condition of each water pump in water head site, automatically controls start-stop of pumps, and

responses system fault real-timely.[2]

Mahammad Shareef Mekala have suggest how to reduce difficulties faced by farmers in india and they using Internet of Things Technology via smart solutions. This helps to farmers making intelligent decision through any smart devices or computer connected to internet got accurate yield data. The yield data will be stored using Task Scheduling method. farmers are follows traditional methods to increase their field productivity. In this paper they follows M2M can play vital role in behavior and control [3]

Yangateeswarudu A et al have proposed a techniques to avoid farmers commit suicide introduces an application using MVC-model directly connect to the government. This helps to farmers get loss amount from the government cause of no rainfall, less rainfall sometimes flood may occur. four selected water outlet of the project area has been installed with flow-meters and the electromagnetic valves used for monitoring and controlling the on and off of the water outlet valve. [4]

III. CONCLUSION

The agricultural cloud offered different kinds of data analysis, such as showing environmental and cultivation variation and cultivation image processing. Environmental variation provided changes in environmental parameters, including temperature, humidity and illumination. Cultivation variation made a quality comparison between the targeted greenhouse cultivation and a cultivation model. Cultivation image processing used an image processing technology to evaluate the growth of crops.

The collected sensing data, thus, might not be able to truly represent the environmental parameters in those greenhouses

REFERENCES

[1] Arnab Kumar Saha1, Jayeeta Saha2, Radhika Ray3,et .al " IoT Based Drone for improvement of crop Quality in Agriculture field". International Conference on Computer and Computing Technologies in Agriculture. 2018 pp 612-615.

[2] Peng Zhang, Qian Zhang, Fusheng Liu, Changqing Song "The Construction of the Integration of Water and Fertilizer Smart Water Saving Irrigation System Based on Big Data" IEEE International Conference on Computational Science and Engineering (CSE) and IEEE International Conference on Embedded and Ubiquitous Computing (EUC),2017.

[3] Mahammad Shareef Mekala ,"A Novel Technology for Smart Agriculture BasedonIoTwithCloud Computing" International conference on I-SMAC (IoTinSocial,Mobile,Analyticsand Cloud) 2017 pp 75-80

[4] Yangateeswarudu, Vishnu Vardhan,"Software application to prevent suicides of farmers with asp.net MVC." 7th international conference on cloud computing-data science and Engineering .2017 pp-543-546

[5] Marthinus Reinecke, Tania Prinsloo, "The influence of drone monitoring on crop health and harvest size.",1st International Conference on Next Generation Computing Applications (NextComp), 2017.

[6] Floriano De Rango, Nunzia Palmieri, Amilcare Francesco Santamaria, Giuseppe Potrino, "A simulator for UAVs management in agriculture domain.", International Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS), 2017

[7] D. Yallappa, M. Veerangouda, DevanandMaski, Vijayakumar Palled, M. Bheemanna, "Development and evaluation of drone-mounted

sprayer for pesticide applications to crops.", IEEE Global Humanitarian Technology Conference (GHTC), 2017.

[8] Pamidi Srinivasulu , R Venkat, M. Sarath Babu, K Rajesh "Cloud Service Oriented Architecture (CSoA) for Agriculture through Internet of Things (IoT) and Big Data" international conference on Electrical, Instrumentation and Communication Engineering (ICEICE) 2017.

[9] Janssen S J C, Porter C H, Moore A D, et al, "Towards a new generation of agricultural system data, models and knowledge products: Information and communication technology," Agricultural Systems, 2016, pp. 1-13.

[10] Rodriguez-Ortega W M, Martinez V, Rivero R M, et al, "Use of a smart irrigation system to study the effects of irrigation management on the agronomic and physiological responses of tomato plants grown under different temperatures regimes," Agricultural Water Management, 2016, pp. 160-168.