

CONDITIONING OF PLANT LIFE USING IOT AND CLOUD

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Abstract— The art of cultivating the soil, raising livestock and growing crops are termed as agriculture. Agriculture forms the basic entity of a human life, each work of human gets completely dependent on agriculture. The outcomes of agriculture which serve human the basic needs are food, wood, leather, wool, fabrics and etc. Globalization and increase of pollution affects the productivity and lifetime of plants. Improper pesticide, less water content for plants should be monitored consistently in order for effective agriculture which makes more production. The project lays the idea of creating a computerized environment in the field of agriculture. This is purposefully done to ensure easy yet accurate management of crops and plant life minimizing human effort and errors. Our application uses the concept of IOT to connect the user 24*7 with the constant flow of data sent by the water sensing sensor. It improves the yield and growth of the crops or plant life thereby satisfying our purpose. By using IOT and cloud technology this data is continuously transmitted without any losses. It is profitable on the long run and improves the fertility of the soil in demand.

Keywords— Smart Agriculture, IoT, Cloud Computing, sensors.

I. INTRODUCTION

Agriculture is defined as breeding of plants and animals, cultivation of land that provides basic need of human life such as food, medicine, furniture, fuels, vegetables etc. Due to agriculture, Human population grew many times larger than it could be sustained by hunting and gathering. In current world, agriculture is getting diminished day by day. Due to civilization and fast moving world updated with technologies people were influenced by smart devices which let them give less importance towards agriculture. Due to loss of bio-diversity, water scarcity was new problem which popped up in modern era which lead plant to stumble without proper water and plant does not get proper nutrition for their growth. The use of pesticides and global warming led agriculture face a depletion in their level which made the plants infertile. The use of field monitoring techniques can optimize the yield of land, creating more output from the same amount

of input. It optimize the farming smartly, the knowledge of farming professionals are utilized and by using their knowledge to support smart farming decisions. This optimization provides less waste and maximum efficiency. And the use of sensor technology allows for unparalleled insight into the commodities market with real time data. The proposed system mainly aims to solve the issues or drawbacks which are created by the existing system. Bolt chip is more efficient than the arduino chip which gives accurate monitoring of the field continuously. This helps the system to have a track over fertility of the plants. When the fertility of the plant decreases then this proposed system intimates the farmer easily by means of text message and in also their own regional language which lets the farmers easy to access the system even without having depth knowledge of latest technology. The system proposed is cost efficient and also it impacts good production of crops which also satisfy the farmer.

II. EXISTING SYSTEM DRAWBACK

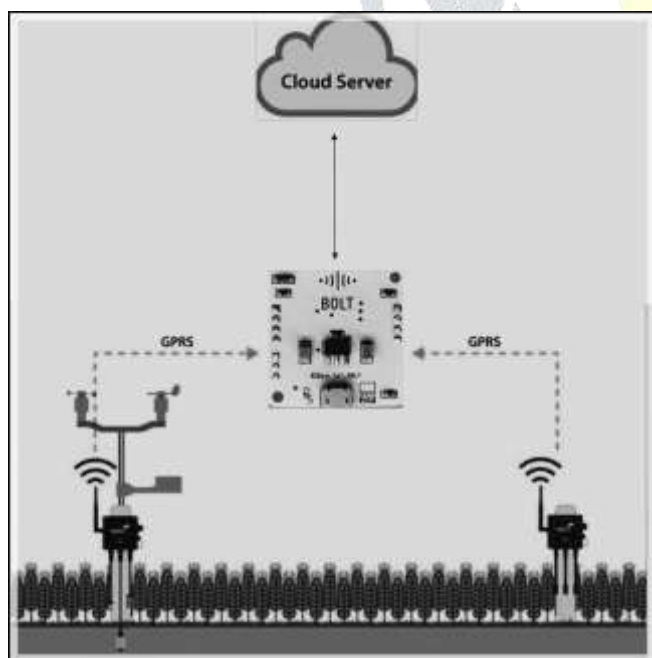
- The farmer must be aware and have knowledge about latest technologies and have better understanding of devices used in advanced system.
- Continuous internet connection is required and this creates a major drawback in rural areas.
- Most of the proposed technology seem to be hard to understand due to updation of the technology day by day.
- Since agricultural field industry have become less marginable the farmers are not convenient to invest in purchasing of expensive devices.
- The need for each soil type is calibrated.
- Excessive use of pest lead the soil to lose its natural fertility which leads to less production.

III. PROPOSED SYSTEM

This paper is based on smart agriculture which aims to solve the drawbacks and thus make productivity of crops more. Our application takes a better edge in the implementation of bolt in the place of arduino based system. This application imparts many considerable advantages where arduino is only officially supported on the Atmel AVR and Atmel SAM series. Numerous applications are developed using IoT such as education, manufacturing, medical, industrial etc. A cloud platform that offers data visualization and analytics for easier analysis and actionable insights. FarmX sensor measure environmental variables, soil, plant and measure water stress. Optical sensors are used to detect the intensity of sun light which is fundamental for their growth.

Complete electronics solution with sensor and actuator integration, power management will make the system effective in solving the drawbacks of the existing applications. The system proposed are effective and cost efficient which also helps to satisfy farmer and make production more without deep knowledge over technologies.

SYSTEM ARCHITECTURE



System architecture

MODULES

This chapter below describes the modules used in the system which provides.

Sensor uplink module

This module is specifically designed for collection of data that are provided by the sensors like humidity sensor, moisture sensor, LDR temperature sensor. These sensors are used to sense temperature, humidity, moisture and light which are produced by the sunlight in order to have a track over fertility of the plant.

BOLT IDE module

This module is specifically designed to perform actions over the data collected from the sensor uplink module. This module is responsible for automation of the farming. Alerting about the fertility to farmer also takes place here. When the farm is found to be less in its fertility then it is intimated to this module which performs action and provides the necessary pH level to keep the plants fertilized.

BOLT cloud module

Cloud technology is used to store large amount of data. It is connected with bolt chip. There exists a interaction between bolt IoT chip and cloud server. The cloud here maintains information about each type of plant and pH level of each plan which makes them keep fertilized. These information are retrieved from cloud by BOLT IDE module which performs action to make them fertilized.

Reaction response database

The commands are stored in this database. This module passes the command to bolt chip which is used to perform operation over the data and make the farm with exact pH level thereby make it be fertilized and raise production of the farm.

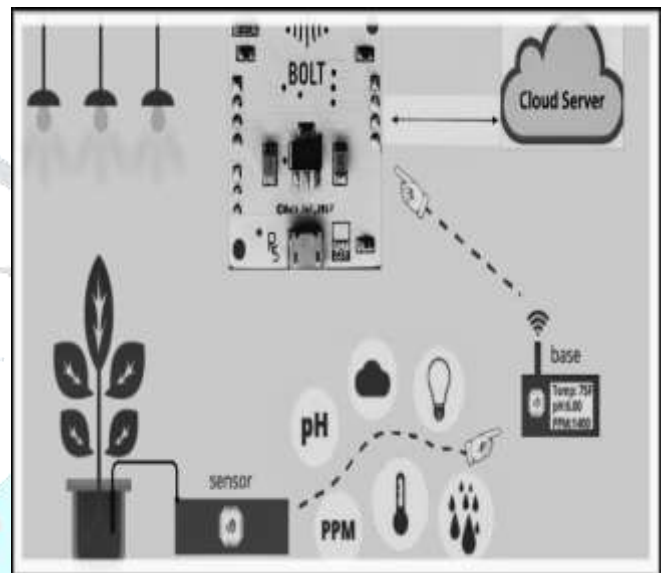
IV. METHODOLOGY

This paper mainly aims and focusses on automating plant crops and also perform smart gardening using IOT with the help of BOLT IOT platform. The manual work of people is reduced and thus comfort is provided to people by the term called automation. This improves the overall performance of any system without the user interaction. The important parameters for the quality and productivity of plant growth and to maintain its fertility are soil, air

temperature, humidity, sunlight, soil moisture and pH. Information to the user about the plant health, its fertility, and growth are provided by continuously monitoring and recording these garden parameters. It provides a better understanding of how each parameter have an effect on the growth of plants. The sensors like Temperature, moisture, humidity, LDR and pH content of the plant are interfaced with the Raspberry Pi controller. First the sensors located at the field inside or on the soil sends continuous sequential feed to our BOLT IDE chip. This unique chip helps to collect the given data separately and uploads the raw data to the cloud. On passing this data to the cloud we can use the raw data to provide critical data which helps us to sort the condition of the field continuously. This helps the user to understand the condition and productivity of the soil. This data also acts as a source to support the type of soil and effective production of different crops on them. Now, this data is allowed to run on the algorithm generated by our team. Our algorithm effectively decides and formats the condition on analyzing the raw data as they are provided or generated over a specific period of time. On analysis we can judge the current problems faced by the crops, ranging from insufficient percentage of water ratio to being infested by organism. This makes the farmer to quickly act on the current condition and thereby solve the problem quickly. By collecting such data over a period of time may give an idea about the features and properties of the soil. This helps the farmer to decide which plant to plant in the soil.

Temperature, humidity, moisture, light intensity are controlled with the help of sensors like humidity sensor, moisture sensor, LDR, temperature sensor is interfaced with the IOT board. Our application takes a better edge in bringing user friendly environment and touching the lives of many sectors effectively. Thus, by installation of this application on the owner's smart phone the user can forget about watering the plants on a regular basis. This proposed system takes care of this hectic job. Soil moisture sensor measures the water current in the soil volumetrically. Soil moisture sensor measures the water content indirectly by using some other property of the soil, such as electrical resistance, dielectric constant, or interaction with neutrons, for the content of moisture. Helps to save water, the utility bills, the thirst of the plant is also fulfilled by the proposed system. The application can also be used to control the water valve manually by the user. A very low implementation cost is enough for

this system and assures to be successful compared to other projects in which there is an issue of high cost and complications. All the platforms used in this project are of open source and easily usable. The primary aim of the project is to reduce the implementation cost compared to another system. This helps farmers and the agriculture field prosper and provide basic requirements to human life naturally and making all human attain a healthy life.



Methodology flowchart

V. CONCLUSION

The current working System is least effective and there is no usage of commonly used technologies like automation. Hence it can be surely concluded that the proposed system solves the drawbacks of the existing systems and helps the farmer get benefited in production. The chip and sensors used in the system are cost efficient that helps farmer overcome problems which faced in existing system. Automation of crop helps the farmer easy and tense free about crops since it makes the work perfect according to instruction given. When the fertility or water content of the plant is reduced then it may lead plant to lose its production quality. So when plant faces this condition the system intimates the farmer and till farmer reaches out to field or when the farmer is out of station then automation protects the field from being decayed and provides the exact solution which is needed by the field to sustain the stability. Thus the proposed system helps farmer more beneficially with both production and less cost system and finds it to be better than the existing system.

VI. REFERENCE

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