Smart Agriculture Using IOT: Review

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Abstract— **Smart agriculture is an emerging concept, because IOT sensors are capable of providing information about agriculture fields and then act upon the user input. Despite the perception people may have regarding the agricultural process, the reality is that today's agriculture industry is data-centered, precise, and smarter than ever. The rapid emergence of the Internet-of-Things (IoT) based technologies redesigned almost every industry including ''smart agriculture'' which moved the industry from statistical to quantitative approaches. Smart agriculture is an emerging concept, because IOT sensors are capable of providing information about agriculture fields and then act upon based on the user input. This article gives lighten about the potential of wireless sensors and IoT in agriculture, as well as the challenges expected to be faced when integrating this technology with the traditional farming practices. Once hardware has been developed depending on the change in requirements and technology the software needs the updating. The updated hardware is called a new version of the software. This new version is required to be tested in order to ensure changes that are made in the old version work correctly and it will not bring bugs in other parts of the software. This is necessary because updating in one part of the hardware may bring some undesirable effects in other parts of the hardware.**

Key words Internet of Things (IOT), Smart Agriculture using IOT, Arduino, Sensor.

I.INTRODUCTION

Nowadays demands of food are increasing very drastically, to complete that demand we need to improve the methods used in agriculture. Developing countries, areas Iot is used in agriculture, through mobile, laptops they operate many things involve in agriculture. Farmers in these regions have the applications installed and configured on their smartphones from where they can collect data and monitor environmental conditions on the farm [1-3]. These applications require to be extended and reconfigured to meet the varying data parameters forvarious crops or farming seasons. Hence, developing mobile software applications is emerging as one of the vital sectors in smart agriculture to promote sustainable food security[4-7].Farmers in the 21st century have access to GPS, soil scanning, data management, and Internet of Things technologies. The goal of smart agriculture research is to ground a decision-making support system for farm management. Smart farming deems it necessary to address the issues of population growth, climate change and labor that has gained a lot of technological attention, from planting and watering of crops to health and harvesting. We need smart agriculture to expand and develop from what it currently is because this practice will substantially decrease the negative environmental externalities of modern agriculture [8-10]. Smart cities use Internet of Things (IOT) devices such as connected sensors, lights, and meters to collect and analyze data. The cities then use this data to improve infrastructure, public utilities and services, and more. For Farmers, it is difficult for them to understand technical terms and usage of technology, and also it is a cost-effective affair. However, programmers face several challenges while developing these applications [11] changing application scenarios and as a consequence application requirement, limited development time, and intermittent network connection issues. This practice will substantially decrease the negative environmental externalities of modern agriculture. Smart cities use Internet of Things (IOT) devices such as connected sensors, lights, and meters to collect and analyze data. The cities then use this data to improve infrastructure, public utilities and services, and more. INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH IN TECHNOLOGY reserves the right to do the final formatting of your paper.

II. PROBLEM STATEMENT

To provide an efficient decision support system using wireless sensor networks which handle different activities of the farm and give useful information related to the farm. Information related to Soil moisture, Temperature and Humidity content. Due to the weather condition, water level increases. Farmers get a lot of distractions which are not good for Agriculture. Water level is managed by farmers in both Automatic/Manual using that mobile application. It will make it more comfortable for farmers. Performing agriculture is very much time consuming.

Problem Definition: It should utilize minimum resources in terms of hardware and cost. This overcomes the manual operations required to monitor and maintain the agricultural farms in both automatic and manual modes. It should be able to measure the increase or decrease in level of water as well as moisture in the soil.

III LITERATURE SURVEY

Smart Agriculture: IOT based smart sensors agriculture by Anand Nayyar and Er. Vikram Puri, November 2016 This paper describes Internet of Things (IOT) technology that has brought revolution to each and every field of common man's life by making everything smart and intelligent. IOT refers to a network of things which make a self-configuring network. The development of Intelligent Smart Farming IOT based devices is day by day turning the face of agriculture production by not only enhancing it but also making it cost-effective and reducing wastage. The aim / objective of this paper is to propose a Novel Smart IOT based Agriculture assisting farmers in getting Live Data (Temperature, Soil Moisture) for efficient environment monitoring which will enable them to do smart farming and increase their overall yield and quality of products. Brief Introduction of Paper: This paper brings insights to construct a framework for robust working on fields and easy for farmers. One of main areas where IOT based research is going on and new products are launching on an everyday basis to make the activities smarter and efficient towards better production is "Agriculture". Agriculture sector is regarded as the most crucial sector globally for ensuring food security

Implementation of IOT- in the field of smart agriculture: The global population is predicted to touch 9.6 billion by 2050 – this poses a big problem for the agriculture industry. Despite combating challenges like extreme weather conditions, rising climate change, and farming's environmental impact, the demand for more food has to be met. To meet these increasing needs, agriculture has to turn to new technology. New smart farming applications based on IOT technologies will enable the agriculture industry to reduce waste and enhance productivity. It is the application of modern ICT (Information and Communication Technologies) into agriculture. In IOT-based smart farming, a system is built for monitoring the crop field with the help of sensors (light, humidity, temperature, soil moisture, etc.). The farmers can monitor the field conditions from anywhere.

Implementation of Soil moisture sensor in smart Agriculture: Soil moisture sensors measure the volumetric water content in soil. Reflected microwave radiation is affected by the soil moisture and is used for remote sensing in hydrology and agriculture. Portable probe instruments can be used by farmers or gardeners. Soil moisture sensors aid good irrigation management. Good irrigation management gives better crops, uses fewer inputs, and increases profitability. Soil moisture sensors help irrigators to understand what is happening in the root zone of a crop.
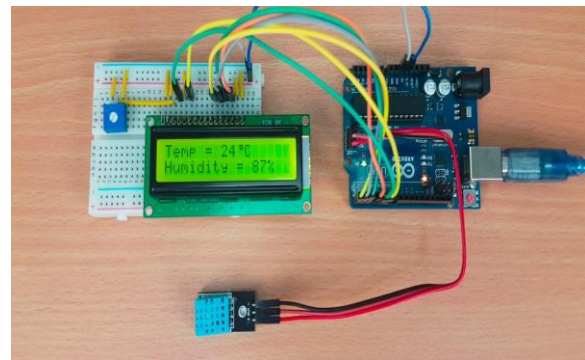
Implementation of Water Level Sensor in smart Agriculture:

Water source is necessary and an important factor in agricultural and farm production and is a key to our quality of life as well. Monitoring water level of a water source, such as water tank or bore well etc., plays a key role in agriculture. Monitoring water level

of a water source, such as a water tank or bore well etc., plays a key role in water management. Keeping track of water level in a water source can be used to preserve water and to study the water age. Thus monitoring water level is an important task in agriculture. In this prototype experiment of the proposed system Arduino UNO board along with Ethernet shield for Internet connectivity is used. A Water level sensor in this prototype is only used for demonstration purposes.

IV.CONCLUSION

We have designed an automated Smart Agriculture system which reduces the time and resources that is required while performing it manually. This system uses the technology of the Internet of Things. The system also measures moisture of soil and level of water in fields. This system works well in the ideal conditions and further improvement can be made when the conditions are not ideal like proper illumination or lightning.

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