

SMART IRRIGATION SYSTEM FOR AGRICULTURAL FIELD

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Abstract

Agriculture is the basic source of livelihood People in India. It plays a major role in the economy of a country. But nowadays due to migration of people from rural to urban there is hindrance in agriculture. In order to increase the yield of crops, environmental monitoring is not the complete solution. There are no variables that minimize efficiency to a large degree. Therefore, to solve these issues, automation must be applied in agriculture. An automated irrigation system that saves farmers time, money and electricity. Manual intervention is required by Conventional Farmland Irrigation Techniques. Human interference can be reduced with automated irrigation technology. Continuous sensing and monitoring of crops by convergence of sensors with Internet of things (IOT) and making farmers aware about crops growth, harvest time periodically and in turn making high productivity of crops and also ensuring correct delivery of products to end consumers at the right place and right time.

KEYWORDS: *Agriculture, Soil, Irrigation, Crop, Monitoring, Farmer, Growth, Cultivation.*

I. INTRODUCTION

The Agriculture Parameters are utilizing an IOT Technology and system availability that draw in these objects to assemble and deal information. In addition to recognizing overhauled power, accuracy and cash interconnected preferred role, the IOT allows items selected recognized or likely forced remotely crosswise over completed the current configuration phase to create open gateways for all the additional apparent merge of the substantial earth into PC-based frameworks. The enhancement changes into an incentive for all the extra-large category of electronic physical structures, which likewise integrates headways, such as clever grids, splendid houses, canny moving and smart urban groups, precisely when IOT is expanded with sensors and actuators. All is especially specific through its introduced figuring configuration anyway can interoperate within the current Internet establishment.

Agriculture is the most important sector for humankind to survive their existence. It enhances a big concern to manage food for people all over the world. Most of the farmers follow very traditional methods to cultivate their crops. They used to be present physically on their farm to monitor crops. Using technology will make this activity simpler and more time-efficient. The Internet of Things (IoT) is a technology that, using the Internet, can send or receive any data to a server. Using this technology, farmers without being present in their field may track the actual condition of the crops. A framework to track the farming sector with the help of IoT technology has been proposed in this paper. This framework enables data to be transmitted over the Internet by different devices and sensors. It allows farmers to use a smartphone or a computer to track their fields remotely from their home.

Almost every field embraces the Internet of things (IoT) revolution. Agriculture has seen many transformations and has adopted many machines to improve the yield. Field (soil and environmental parameters) and crop health monitoring are important factors for the yield to be of better quality. There have been several technological developments in agriculture in recent years that have resulted in an improvement in crop production and immunity. The agricultural sector absorbs about 70 percent of the freshwater available in the world, and we can optimize the irrigation process and water usage with the aid of a soil moisture sensor [1]. The Internet of Things is the technology that plays a main role in this (IoT). Because of the Internet of Things (IoT) penetration in the agricultural sector, conventional agriculture is turning into smart agriculture. For these monitoring and control applications, IoT uses a wireless sensor network (WSN) as the backbone for gathering information. The monitoring system consists of end devices equipped with a range of sensors to track different parameters such as temperature, humidity, pH, soil moisture, etc. and can communicate this information to the other devices. By tracking the growth phases of the crop and estimating the yield, IoT helps farmers by giving otherwise restricted low-power, low-cost devices access to higher processing capabilities via the Internet. Drones have recently been widely used for remote sensing in agriculture [2].

The upcoming generation of sensible Agriculture is often undoubtedly based mostly on Internet of Things (IoT). In recent times, the Internet of Things (IoT) has played a vital role in reworking-Traditional Technology-from homes to farms and workplaces to-Next Generation All Over Computing-Internet of Things[9] is gaining an associated degree of crucial position in studies across the corner and corner of this world, especially in up-to-date wireless communications. The Web of Things process relates, as a structure, to the super identity of objects, matters and their individual digital representations on the web. Internet of Things is used by Kevin Ashton et.al. in chain growth and management. These systems are used for the purpose of IoT industrial readiness in business management, manufacturing, good transportation and also in agriculture. In addition, some or different merchandise every day introduces the devices to agriculture at various stages of sensitivity and cleverness. In addition, the agriculture segment needs sufficient space to establish some food protection globally [3].

They are currently in large quantities and are at degrading output in terms of farm duration, age, alternate, government laws, weather, etc. Talking about the Asian nation farmers. No doubt, some problems have been solved by ICT-based methods, but they are not sufficiently used by novice farmers and do not guarantee guaranteed output. Many activities such as soil and plant trailing, environmental trailing of wetting and temperature maintenance, supply chain management, infrastructure management, systems management, observation, and so on are involved in agricultural production. IoT focuses mainly on all agricultural convergences that produce high fees in outstanding phrases, with increased production and decreased burdens. Farmers will be able to boost crop production with continuous GPS and sensor data on the agricultural field and incorporation of smart farming, instrumentality along with enormous knowledge analytics. And also, during the oversized stage, to make powerful use of water and minimize flip wastage of any kind. In this case, agriculture is surrounded by a large number of problems. It seeks substantial demand to have good farming in the lifestyle of today in order to perform good farming in real international IoT bound. All goods should be significantly upgraded and applied at the necessary time and with correct and required data jointly at an occasional value.

A device that uses far-flung sensors to track outstanding environmental conditions such as water level, humidity, temperature, animal activity, soil moisture content, and so on. On the side of GSM defense, the Arduino UNO model is used. The field situation is dispatched to the farmer through mobile text messages. With this machine, sensor node failure and energy saving are managed. A machine is proposed based entirely on the IoT era for sensible agricultural monitoring. The computer conducts shooting, sorting, transmission and receiving functions for statistics. Smart farming system, in which the productivity of the unit is to monitor the region around it and lower the cash and farming fees and save energy as well. In a nutshell, the architecture realizes faraway clever monitoring and environmental conditions control and also replaces the conventional stressed generation with Wi-Fi, also reducing the price of manpower. A device for crop growth is proposed that can be tracked using thermal imaging technique. The irrigation distribution temperature size (ITDM) technique has been set into action here. The captured data containing the captured values provides better irrigation in real time. Arduino is conveyed through conversation with an approach for evaluating using Wi-Fi module networks used in the implementation of the automated farm system and information. The various sensors are incorporated and used for the measurement of temperature, humidity measurement, measurement of moisture and crop tracking obstacles. When the brink values go below, only the sensor provides alarm. In conjunction with the field conditions, the farmer is used to being involved. Field framing is also defined. In addition to irrigation, moderate depth control can also be computerized. Here, both the crop quality forecast and the criteria for water are not that well-structured. Along with air temperature and air humidity, the system can capture environmental parameters. With the use of AT order, this gadget can also realize automatic sending and receiving SMS in short time, environmental situations overrun alarm and insufficient balance alarm. The message can be automatically sent to the user-specific mobile

phone via the device placement, no matter what the location of the customer is. As a standard application of IoT within agriculture, this gadget has some successful effects on the actual activity [4].

To provide an efficient decision support system using wireless sensor networks which handle different activities of the farm and gives 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 is not good for Agriculture. Water level is managed by farmers in both Automatic/Manual using that mobile application. It will make it more comfortable to farmers. Performing agriculture is very much time consuming.

II. CONCLUSION & DISCUSSION

The Smart Farm Monitoring System can be used as destiny factors of agriculture. This would be a relief for farmers since it decreases the load of manual efforts. A gadget to screen moisture levels within the soil changed into construction and the assignment furnishes a possibility to take a look at the prevailing structures, at the side of their features and downsides. The stated gadget may be used to turn on/off the water sprinkler in keeping with soil moisture levels thereby automating the irrigation technique of that is one of the most time ingesting activities in farming. Agriculture is one of the most effort-consuming hobbies. The device makes use of statistics from soil moisture sensors to irrigate soil. Similarly, live knowledge (Temperature, Moisture) of farm readings are experimented. The system helps the farmers to increase the average crop yield ratings, and plant quality through smart farming.

III. REFERENCES

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