



e-ISSN: 2319-8753 | p-ISSN: 2320-6710

IJIRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Issue 3, March 2021

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.512

9940 572 462

6381 907 438

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IOT Agriculture System Based on Lorawan

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ABSTRACT: Agricultural sector requires manual work for sure due to various reasons. Nowadays farmers are facing many problems to grow up the fruits and vegetables for us. This is because it is very difficult to know the conditions of land such as humidity, soil moisture and many more parameters without the physical presence of farmers at the agricultural farm. During the month of April, May; they find it very difficult to perform agricultural activities as the land dries within a certain period of time. So, here we are implementing a project which will give the whole data about the farm cultivation. By the help of these project farmers gets much relief in farm cultivation and the growth of crops will be not affected by these conditions.

KEYWORDS: Agriculture iot, Automated agriculture, Soil temperature sensing, Agricultural data iot

I. INTRODUCTION

Agriculture plays an important role in GDP of country. 60-70 percent of Indian population depend on agriculture for employment. IOT had help farmer to fight the most of problems in agriculture. India is the second largest country in the growth of population so it is necessary to increase the rate of production of agriculture. Every year irrigation requires more amount of water than the annual rainfall falls which has led to a critical phase of water resource for future generation. The preservation of water resource for next generation and for proper water usage, it is necessary to adopt some of the strategies because of which minimal water is used as per requirement. There should be some of the techniques that can be implemented to stop wastage of water. IOT is the technology that enables us to adopt the strategies to monitor the usage of water via connecting the android application. Soil moisture and humidity sensor is placed in the soil with crops because of which we come to know the moisture level of soil.

II. LITERATURE SURVEY

[1] **Title:** Remote sensing and controlling of greenhouse agriculture parameters based on IoT

Author: S. Pallavi; Jayashree D. Mallapur; Kirankumar Y. Bendigeri Published in: 2017 International Conference on Big Data, IoT and Data Science (BIG)

Abstract: The new era in computer communication is Internet of Things (IoT), gaining its importance because of wide variety of application in oriented project developments. The IoT is furnishing people with smart and remote approach, the remote applications such as smart agriculture, smart environment, smart security, and smart cities etc. These are the upcoming technologies now a day, making the things easy. The IoT has essentially, increased the remote distance control and variety of interconnected things or devices, which becomes an interesting aspect. The IoT includes the hardware and internet connection to the real time application. The main components of IoT are sensors, actuators, embedded system, and internet connection. Therefore, we are interested in developing an IoT application for smart agriculture. The paper proposed a remote sensing of agriculture parameters and control system to the greenhouse agriculture. The plan is to control CO₂, soil moisture, temperature, and light, based on the soil moisture the controlling action is accomplished for the greenhouse windows/doors based on crops once a quarter complete round the year. The



objective is to increase the yield and to provide organic farming. The result shows the remote control of CO₂, soil moisture, temperature, and light for the greenhouse.

[2] **Title:** IoT Based Smart Agriculture Management System

Author: G. S. Nagaraja; Avinash B Soppimath; T. Soumya; AAbhinith Published in: 2019 4th International Conference on Computational Systems and Information Technology for Sustainable Solution (CSITSS)

Abstract: India is a land of agriculture. More than 70% of the population is involved directly or indirectly in crop production activities. This sector contributes to the Indian economy a great deal. It contributes over 17% of the total Gross Domestic Product (GDP). With the introduction of newer seed varieties, new methods of agriculture, and the use of efficient fertilizers, crop production has increased. But without using the smarter methods, the agricultural domain still remains in the backlogs. The conventional method involves a lot of human instincts which at times fail. And thus there is a need for a smarter way of crop production using Internet of Things (IoT) and Machine Learning techniques. The proposed system is a smart agriculture management system (SAMS) which is automated to help farmers to increase the crop production. The system also helps in reduction of resource wastage by adopting a technique called precision agriculture. The system uses different sensors for data acquisition to measure various environmental factors which are required for crop production. The data obtained from these sensors is visualized in the form of graphs.

[3] **Title:** Design and implementation of a cloud-based IoT scheme for precision agriculture

Author: Ahmed Khattab; Ahmed Abdelgawad Kumar; Published in: 2016 28th International Conference on Microelectronics (ICM)

Abstract: The Internet of Things (IoT) technology is currently shaping different aspects of human life. Precision agriculture is one of the paradigms which can use the IoT advantages to optimize the production efficiency and uniformity across the agriculture fields, optimize the quality of the crops, and minimize the negative environmental impact. In this paper, we present an IoT architecture customized for precision agriculture applications. The proposed three-layer architecture collects the needed data and relays it to a cloud-based back-end where it is processed and analyzed. Feedback actions based on the analyzed data can be sent back to the front-end nodes. We built a prototype of the proposed architecture to demonstrate its performance advantages.

[4] **Title:** IOT Based Smart Agriculture System

Author: G. Sushanth; S. Sujatha Published in: 2018 International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET)

Abstract: 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. In this Paper, it is proposed to develop a Smart agriculture System that uses advantages of cutting edge technologies such as 15 Arduino, IOT and Wireless Sensor Network. The paper aims at making use of evolving technology i.e. IOT and smart agriculture using automation. Monitoring environmental conditions is the major factor to improve yield of the efficient crops. The feature of this paper includes development of a system which can monitor temperature, humidity, moisture and even the movement of animals which may destroy the crops in agricultural field through sensors using Arduinoboard and in case of any discrepancy send a SMS notification as well as a notification on the application developed for the same to the farmer's smartphone using Wi-Fi/3G/4G. The system has a duplex communication link based on a cellular-Internet interface that allows for data inspection and irrigation scheduling to be programmed through an android application. Because of its energy autonomy and low cost, the system has the potential to be useful in water limited geographically isolated areas.

[5] **Title:** Research on the agriculture intelligent system based on IOT

Author: FuBing Published in: 2012 International Conference on Image Analysis and Signal Processing

Abstract: According to the need for transition from traditional agriculture to modern agriculture in China and the Spirits of 2012 Central No. 1 Document of the People's Republic of China, the agriculture intelligent system based on IOT is introduced for organic melon and fruit production. A number of new technologies were used in the system, such as RFID, sensors and so on. This system contains three platforms. The expert system service platform set up a mathematical model to capture the data of the growing melons, and then make a decision. The intelligent production management platform could control the plant environment, the supply of water and fertilizer. The Internet trading platform with traceability function is an extended service for fruit growers and 16 consumers. It is significant that the Agriculture Intelligent System was developed to control the crop growth environment, and to optimize fruit planting management, etc. If the system is adopted in a large region, it will provide benefits to fruit growers.

III. PROPOSED METHODOLOGY AND DISCUSSION

EXISTING SYSTEM:

In the time of summer season it is very necessary to maintain the humidity and soil moisture. But sometimes is not understandable by the farmers. So due to this the crops which is growing gets dead or unhealthy. By this case the farmers faces much loss and many farmers suicide due to this loss.

PROPOSED SYSTEM:

In this proposed system we are overcoming the demerits of existing system. Here we are using microcontroller which will acts as main memory of the project. Soil moisture Sensor is directly connected to the microcontroller which will measure the moisture of soil present. If the moisture of soil is less than threshold level, then microcontroller will command the driver circuit to turn ON the pump motor. Humidity sensors are used here for sensing the presence of humidity. Water level sensor detects the level of water present for the farm cultivation. These data's will be transmitted by the LORAWAN protocol which is capable of transmitting data over long distance with low power. The use of LORAWAN is to transfer data on large distance with low power consumption .An LCD is connected to the microcontroller to display the data. The data's are also updated to the cloud using IOT module.

DIAGRAM

TRANSMITTER SECTION:

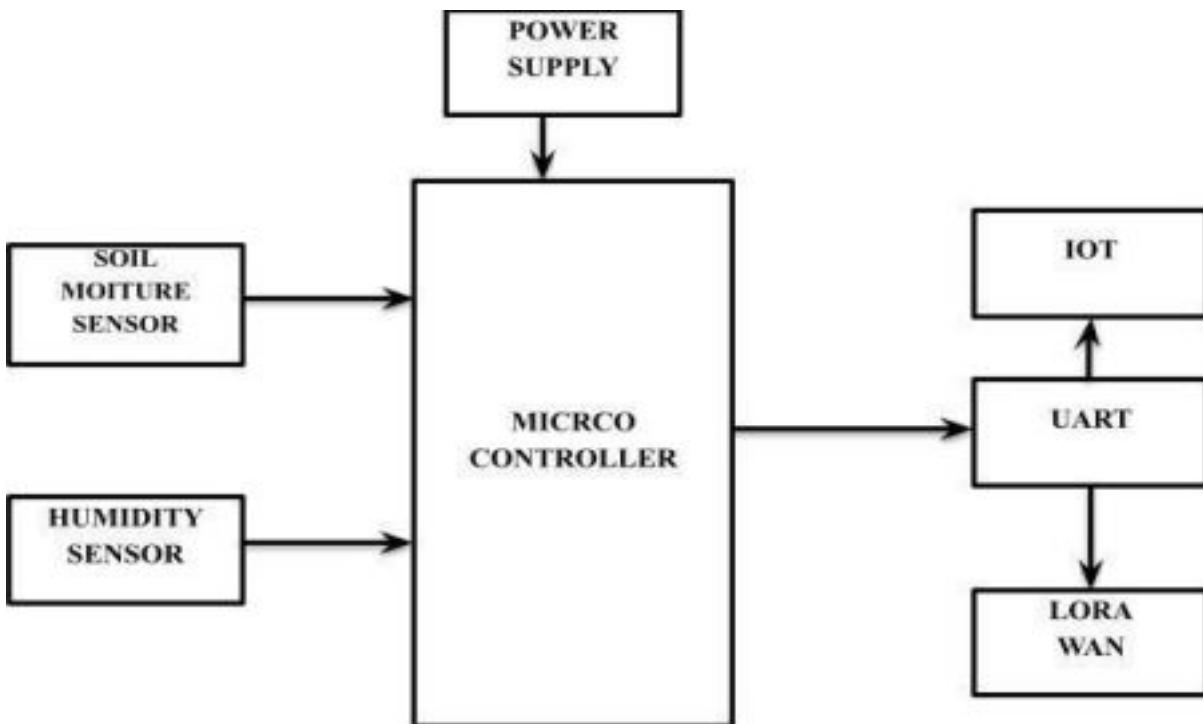


Fig 1.1 Transmitter block diagram

RECEIVERSECTION:

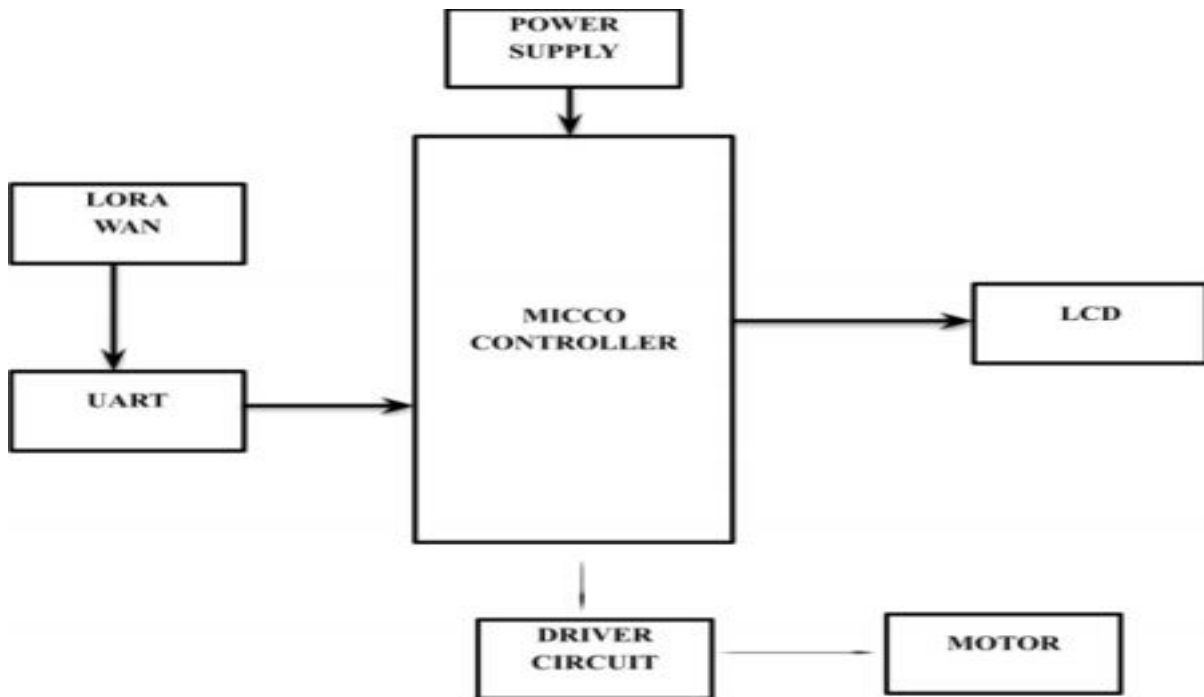


Fig 1.2 Receiver block diagram

V. CONCLUSION

The mechanized water irrigation system framework executed was discovered to be possible and savvy for improving water assets for agriculture creation. The water irrigation system framework permits development in spots with water shortage along these lines improving supportability. The water irrigation system framework helps the rancher by making his work more brilliant. As the interest for water increment alongside the need to secure oceanic natural surroundings, water protection rehearses for irrigation system should be powerful and moderate. As various sensors are utilized water can be given distinctly to the necessary region of land.

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