

Using IOT for Smart Agriculture

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Abstract: *Smart agriculture is an emerging concept, because IOT sensors are capable of providing information about agriculture fields and so touch supported the user input. The feature of this paper includes development of a system which may monitor temperature, level of water, moisture and even themovement if any happens within the field which may destroy the crops in agricultural field through sensors using Arduino UNO board. Smart agriculture is an emerging concept, because IOT sensors are capable of providing information about agriculture fields so act upon supported the user input. The project aims atmaking use of evolving technology i.e. IOT and smart agricultureusing automation. Once hardware has been developed reckoning on the change in requirements and technology the softwareneeds the updating.*

Keywords: Internet of Things (IOT), Smart Agriculture using IOT, Arduino, Soil Moisture Sensor, Water levelSensor

I. INTRODUCTION

Smart Farming could be a farming management concept using modern technology to extend the amount and quality of agricultural products. Farmers within 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 call making web for farm management. Smart farming deems it necessary to handle the problems of increase, temperature change and labor that has gained plenty 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 recent agriculture. Smart cities use Internet of Things (IOT) devices like connected sensors, lights, and meters to gather and analyze data. The cities then use this data to enhance infrastructure, public utilities and services, and more. For Farmers, it's difficult for them to know technical terms and usage of technology, and also it's a value effective affair.

1.1 Problem Statement

To provide efficient decision web using wireless sensor network which handle different activities of farm and provides useful information associated with farm. Information associated with Soil moisture, Temperature and Humidity content. Due to the atmospheric condition, water level increasing Farmers get lot of distractions which isn't good for Agriculture. Water level is managed by farmers in both Automatic/Manual using that mobile application. it'll make easier to farmers. Performing agriculture is incredibly much time consuming.

1.2 Problem Definition

It should utilize minimum resources in terms of hardware and value. This overcomes the manual operations required to observe and maintain the agricultural farms in both automatic and manual modes. It should be able to measure the rise or decrease in level of water yet as moisture within the soil.

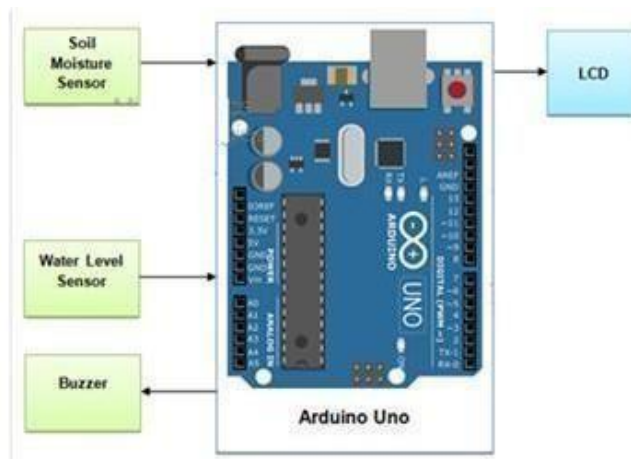
II. LITERATURE SURVEY

Smart Agriculture: IOT based smart sensors agriculture by Anand Nayyar and Er. Vikram Puri, November 2016
This paper describes Internet of Things (IOT) technology has brought revolution to every and each 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 event 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 completely unique Smart IOT based Agriculture assisting farmers in getting Live Data (Temperature, Soil

Moisture) for efficient environment monitoring which can enable them to try to 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 functioning onfields and simple for farmers. one amongst main areas where IOT based research goes on and new products are launching on everyday basis to form the activities smarter and efficient towards better production is “Agriculture”.

Agriculture sector is considered the more crucial sector globally for ensuring food security. Talking of India farmers, which are without delay in huge trouble and are at disadvantageous position in terms of farm size, technology, trade, government policies, climate conditions etc.



III. IMPLEMENTATION

3.1 Implementation of IOT in the Field of Smart Agriculture

The worldwide population is predicted to touch 9.6 billion by 2050 – this poses a giant problem for the agriculture industry. Despite combating challenges like extreme atmospheric condition, rising temperature change, and farming’s environmental impact, the demand for more food needs to be met. To satisfy these increasing needs, agriculture has got to intercommunicate new technology. New smart farming applications supported IOT technologies will enable the agriculture industry to scale back waste and enhance productivity. It is that the application of recent ICT (Information and Communication Technologies) into agriculture. In IOT- based smart farming, a system is made for monitoring the crop field with the assistance of sensors (light, humidity, temperature, soil moisture, etc.). The farmers can monitor the sphere conditions from anywhere.

3.2 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 employed for remote sensing in hydrology and agriculture. Portable probe instruments are utilized 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 grasp what's happening within the root zone of a crop.

3.3 Implementation of Water Level Sensor in Smart Agriculture

Water source is critical and a very important think about agricultural and farm production and could be a key of our quality of life further. Monitoring water level of a water source, like tank or bore well etc., plays a key role in agricultural. Monitoring water level of a water source, like cistern or bore well etc., plays a key role in water management. Keeping track of water level during a water source will be accustomed preserve water and to check the water usage. Thus monitoring water level is a very important task in agricultural. during this prototype

IV. CONCLUSION

We have designed automated Smart Agriculture system which reduces the time and resources that's required while performing it manually. this method uses the technology of Internet of Things. The system also use to measure moisture of soil and level of water in fields. this method works well within the ideal conditions and further improvement will be made when the conditions don't seem to be ideal like proper illumination or lightning.

REFERENCES

- [1]. Zhang, X., Davidson, E. A, "Improving Nitrogen and Water Management in Crop Production on a National Scale", American Geophysical Union, December, 2018. How to Feed the World in 2050 by FAO.
- [2]. Abhishek D. et al., "Estimates for World Population and Global Food Availability for Global Health", Book chapter, The Role of Functional Food Security in Global Health, 2019, Pages 3-24. Elder M., Hayashi S., "A Regional Perspective on Biofuels in Asia", in Biofuels and Sustainability, Science for Sustainable Societies, Springer, 2018.
- [3]. Zhang, L., Dabipi, I. K. And Brown, W. L, "Internet of Things Applications for Agriculture". In, Internet of Things A to Z: Technologies and Applications, Q. Hassan (Ed.), 2018.
- [4]. S. Navulur, A.S.C.S. Sastry, M. N. Giri Prasad, "Agricultural Management through Wireless Sensors and Internet of Things" International Journal of Electrical and Computer Engineering (IJECE), 2017; 7(6) :3492-3499.
- [5]. E. Sisinni, A. Saifullah, S. Han, U. Jennehag and M. Gidlund, "Industrial Internet of Things: Challenges, Opportunities, and Directions," in IEEE Transactions on Industrial Informatics, vol. 14, no. 11, pp. 4724-4734, Nov. 2018.
- [6]. M. Ayaz, M. Ammad-uddin, I. Baig and e. M. Aggoune, "Wireless Possibilities: A Review," in IEEE Sensors Journal, vol. 18, no. 1, pp. 4-30, 1 Jan.1, 2018.
- [7]. J. Lin, W. Yu, N. Zhang, X. Yang, H. Zhang and W. Zhao, "A Survey on Internet of Things: Architecture, Enabling Technologies, Security and Privacy, and Applications," in IEEE Internet of Things Journal, vol. 4, no. 5, pp. 1125-1142, Oct. 2017.
- [8]. hi, X.; An, X.; Zhao, Q.; Liu, H.; Xia, L.; Sun, X.; Guo, Y., "State-of-the-Art Internet of Things in Protected Agriculture", Sensors 2019, 19, 1833.
- [9]. O. Elijah, T. A. Rahman, I. Orikumhi, C. Y. Leow and M. N. Hindia, "An Overview of Internet of Things (IOT) and Data Analytics in Agriculture: Benefits and Challenges," in IEEE Internet of Things Journal, vol. 5, no. 5, pp. 3758-3773, Oct. 2018.
- [10]. Thea K., Martin C., Jeffrey M., Gerhard E, Dimitrios Z, Edward M., Jeremy P., Food safety for food security: Relationship between global megatrends and developments in food safety", Trends in Food Science & Technology, Vol 68, 2017, Pages 160-175.