AGRI IOT SOIL MOISTURING SYSTEM

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ABSTRACT:

India is a land of multifaceted soils and divergent weather conditions. Due to sudden rain and without meticulous weather forecast, Indian farmers face issues such as detriment of already grown crops in their field. And even the Indian Farmers does not have an insight about their soil.

Due to difference in the framework of soil, farmers are not well conscious of which crop will be favorable to be sprout up in the soil. These are some of the complications that farmers face.Iot device is used for unfolding such consequence for Indian countrymen. This paper is the sketch to emerge a or give rise to an self activating irrigation system which controls the pump motor on sensing the moisture content of the soil. In the field of agriculture, utilization of genuine technique of irrigation system is predominant. The benefit of using this practice is to lessen or decrease human intercession and assure through going irrigation. The plan of action uses a series of micro controller which is organized to receive the input signal of different moisture condition of soil through the sensing disposition.

Keywords: Wireless Sensor Network (WSN), moisture sensor, micro -controller, motor pump,IoT

INTRODUCTION:

Farming industry is one that utilizes plenty of water throughout the world.

This resource should be handled in a systematic way without influencing the manufacture. The hurdles in estimating and tracking water utilization and effective irrigation systems due to human control are the main columnists to this situation. The farmers are acquainted with water scarcity or excess watering may damage the yield. They need to comprehend when and the quantity of water required for specific crops.

Wireless Mesh Sensor Network (WMSN) and Active Radio Frequency Identification (RFID) are applied for agriculture supervision. In this study, we proposed an automated irrigation system with well distant tracking and handling the system in the field. The system substitutes human to human (h2h) and human to machine(h2m) to machine to machine(m2m) structure, which is integrated with active radio frequency identification .WMSN composed of cost efficient, battery powered sensor modules and embedded networking intelligence. The evolution of WMSN application for agriculture gives it a possibility to increase effectiveness, productivity and profitability.

Wireless Mesh Sensor Network (WMSN) :

It remits to the technology to interact and connect to the internet without cable between computers and other electronic devices. Sensor network has a pitch in to different applications and attention splurge to indulge into agricultural environment.

WSN is one of the most powerful automation machinery in the 21 century. WSN is composed of a low power, low cost, multi-purpose sensor nodes interacting wireless through small distance. This technology permits for distant measurements such as temperature, soil moisture etc.

This arrangement provides full network reportage in huge, substantial farms. WSN helps to congregate and assemble data from the sensor nodes that can detect and interact with physical environment. WSN can be used to recognize soil moisture to acknowledge the irrigation system and identify when and where to irrigate.

MOISTURE SENSOR:

Computing the ground wetness is the main principle to help the farmhand to supervision their irrigation system fruitfully, for this cause, farmhand are having the power to utilize little water to irrigate the plan as it is able to increase its size and quality. The moisture sensor can study the total wetness in the ground and encompasses it properly. In this moisture system sensor node and sprinkler will be attached together. The sensor senses accordingly to the ground wetness because it mainly wets the soil depending on the moisture content. This is shown in the table:

Plant condition	**Sensor sensing and watering accordingly**
Plant in dry ground	**Need high water to grow**
Plant in sultry ground	**Need medium water to grow**
Plant in water	**Need very less water to grow**
Plant in more water	**No water required to grow**

METHODOLOGY:

The process has subsequent steps:

Step 1: Activate the process**.**

Step 2: At first the power is transmitted to microcontroller through transformer.

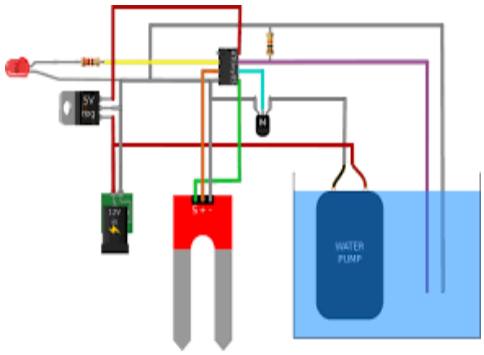
Step 3: Check the sensor moisture level.

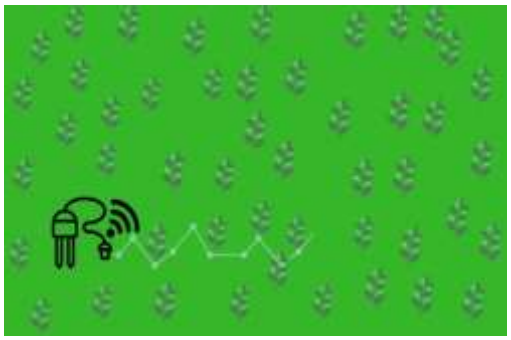
Step 4: If soil moisture value is more than the fixed one, then there is no need of inundation (irrigation).

Step 5: If soil moisture value is less than the fixed one, then start inundation (irrigation).

Step 6: When soil gets the required water, the sensor stimulates and stops the inundation.

Step 7: Countrymen can operate it through some applications.





CONCLUSION AND RESULT:

In Indian financial system agriculture is one of the vital part , for the development of the crop generation, adaptability and countrymen life ,INTERNET OF THINGS plays an supreme role. This builds up SMART- AGRICULTURE in mere future. To the adept and prominent outcomes for farmers, enlightenment with visional admonition is necessary; to increase the yield, IOT device detects the characteristics of the soil, fertilizers and water level that are needed for the field. Here in this work an Irrigation system is established on the soil moisture. So that Sensors are set in the Farm- Microcontrollers, sensors are pre-owned to encapsulate the moisture content in soil, based on the moisture levels of the soil the irrigation system automatically switching the water pumping to the fields.

References:

[1]. Joaqui Gutierrez, Juan Francisco Villa-Medina, “Automatic Irrigation System using Embedded System and GSM Technology “Volume 3, Issue VI, June 2015(IJRASET).

[2]. X. Wang, W. Yang, A. Wheaton, N. Cooley, and B. Moran,” Water-Saving Irrigation System Based on Automatic Control by Using GSM Technology” Middle-East Journal of Scientific Research 12 (12): 2012
[3]. AjiHanggoro, Rizki Reynaldo. "What the Internet of Things (IOT) needs to become a reality." To control indoor humidity White Paper, Freescale and ARM (2013).

[4]. Amardeo C, Sarma J G, et al. “An Electronic Information Desk System for Information Dissemination in Educational Institutions”.

[5]. Yunseop (James) Kim, “Web Based Service To Monitor Automatic Irrigation System For The Agriculture Field Using Sensors,” Advances In Electrical Engineering (ICAEE), 2014 International Conference On Vol., No., Pp.1, 5, 9-11 Jan 2014.

[6]. Laxmi Shabadi, Nandini Patil, Nikita. M, Shruti. J, Smitha. P&Swati. C, “Irrigation Control System Using Android and GSM for Efficient Use of Water and Power”, International Journal of Advanced Research in Computer Science and Software Engineering, Volume 4, Issue 7, July 2014.

[7]. S. Harishankar, R. Sathish Kumar, Sudharsan K.P, U. Vignesh and T.Viveknath, “IOT based Smart Irrigation System”, Advance in Electronic and Electric Engineering, Volume 4, Number 4 (2014), pp. 341-346 .

[8]. Venkata Naga RohitGunturi, “Micro Controller Based Automatic Plant Irrigation System”, International Journal of Advancements in Research & Technology, Volume 2, Issue4, April-2013.

[9]. J. Kim, S. Hong, J. Lee, B.Moon and K.Kim, "High sensitivity capacitive humidity sensor with a novel polyimide design fabricated by MEMS technology," 4th IEEE Int'l Conference on Nano/Micro Engineered and Molecular Systems, 2009.

[10]. G.Feng, Y.Yang, X.Guo and G. Wang, "Optimal design of infrared motion sensing system using divide-and-conquer based genetic algorithm," IEEE 20l3.

[11]. J. Hui and D. Culler, "Extending ip to low power, wireless personal area networks," IEEE Internet Computing, 2008.

[12]. Fan TongKe, "Smart Agriculture Based on Cloud Computing and IOT", Journal of Convergence Information Technology (JCIT), 2013.

[13]. Aline Genu, Jose Melo Dematte, "Prediction of soil chemical attributes using optical remote sensing", Acta Scientiarum Agronomy, Maringa, 2011.

[14]. "Methods Manual Soil Testing in India", Department of Agriculture & Cooperation Ministry of Agriculture, Government of India.

[15]. Hak-Jin Kim, Kenneth, John W. Hummel, "Soil macronutrient sensing for precision agriculture", Journal of Environment Monitoring, 2009.

[16]. Abhishek Mankar, Mayur S., "Data Mining – An Evolutionary View of Agriculture", International Journal of Application or Innovation in Engineering and Management (IJAIEM), 2014