International Journal of Scientific Research in Computer Science, Engineering and Information Technology
© 2018 IJSRCSEIT | Volume 3 | Issue 4 | ISSN : 2456-3307

Agriculture Field Monitoring using Wireless Sensor Networks Based on IoT

G. Sundeep Kumar Reddy[1],E. Sreedevi[2]

[1]Department of MCA, Sree Vidyanikethan Institute of Management, Sri Venkateswara University, Tirupati, Andhra Pradesh, India

[2]Assistant Professor, Department of MCA, Sree Vidyanikethan Institute of Management, Tirupati, Andhra Pradesh, India

ABSTRACT

The economy of developing countries like India which are fundamentally reliant on farming division on other hand increment of populace agriculture segment confronting issue to nourish everybody in the nation. What's more, other condition factors additionally in charge of the development of effective amount and nature of food items from agrarian terrains. Because of absence of exact data and correspondence prompts loss of generation. In this proposed framework utilizing Internet of Things (IoT) and Wireless Sensor Network (WSN) innovation a portion of the issues can be limited and can develop the amount and quality nourishment items. In this paper, the proposed framework utilizes equipment like n-Mote, n-Gateway and different sensors which are sense the climatic parameter which are identified with agriculture and gives an alarm to the formers or green house administrator in regards to condition so the amount and nature of the food can expanded. The cloud assumes essential part in this proposed framework.

Keywords : Internet of Things (IoT), Wireless Sensor Network (WSN),n-Mote, n-Gateway, cloud.

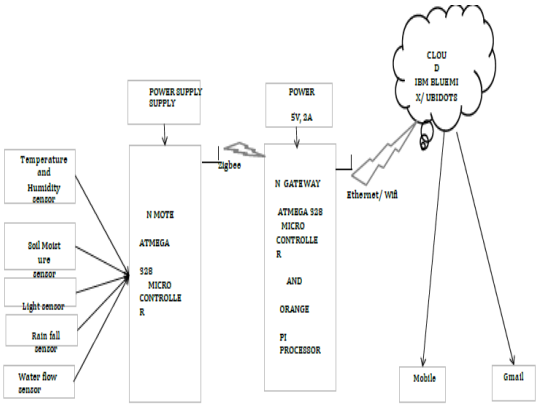
I. INTRODUCTION

Food is the essential need for everybody on this world. As populace development of the world builds the food necessities likewise increments relatively. What's more, agribusiness division must yield huge measure of the productive amount and nature of the food things from the field. To get the tremendous nourishment items farming segment must be enhanced with the new systems and should execute new innovations to the field. As per the world measurements India remains in the 27th position underway of food though still India confronting issue to encourage everybody in the nation. Increment of the amount and quality in the agriculture with help of IoT and WSN is called as shrewd agribusiness or accuracy innovation. The use of present day Information and Communication Technologies (ICT) into the agribusiness prompts third green unrest in the farming area. The proposed framework is to make totally computerized checking framework for the nursery applications which decreases the human endeavours adequately. Contingent on the sensor educating choice can take keeping in mind the end goal to get appropriate condition for the yields.

II. RELATED WORK

Kwang-il Hwang et al. exhibited a paper on the planning and usage of remote detecting component portal for sparing questioning and overseeing through worldwideweb. Here paper has given the design of the detecting component entryway for online administration and its usage points of interest.

Sirisha et al. introduced a paper on remote detecting component based remote controlled agribusiness checking framework utilizing zigbee. The framework comprised of the soi1 observing remote detecting component system and remote data focus. The detecting component hub was produced utilizing JN5121 module and IEEE 802.15.4/ZigBee remote microcontroller. Sonali et al. exhibited a paper on checking remote sensor arrange utilizing android principally based PDA Application. The arranged work of this task is to utilize the advancements of brought together processing and android programming for the improvement of the application. Prof C. H. Chavan et al. proposed a framework on remote checking of soil wetness, temperature and dampness utilizing zigbee in agriculture. The proposed equipment framework incorporates eight piece AVR, Bluetooth module, Temperature, stickiness and soil wetness sensors, LCD. The framework is low cost and low power expending so anyone will bear the cost of it. Prabha et al. displayed a paper on constant atomization of agrarian condition for social modernization of Indian rural gadget utilizing Arm 7. This gadget makes utilization of the incorporation of the both wired and Wi-Fi strategies and ARM controller to have ordinary observing at the natural states of homestead and furthermore bears the essential safety measures to be taken for respect development for contemporary agribusiness. Heavenly attendant C et al. distributed an examination paper on creating smart surroundings in rural water system technique. The paper has some expertise in a route for creating shrewd surroundings to screen the irrigational parameter in the whole field.



Fligure 1. Block Diagram of Smart Agriculture

III. OBJECTIVES

The main objectives of proposed system are given below:-

Increased productivity.

Enhanced safety.

Easier agriculture procedures.

Instant interventions around the clock.

Advanced life style.

IV. PROPOSED SYSTEM

The principle thought process of the accuracy farming is to expand the quality and amount of the harvests. For that IoT and WSN are utilized to make the savvy organize for proficient system. The sensors used to quantify diverse parameters of agriculture framework which are utilized at destinations. These sensors are assistant associated with microcontroller (N Mote) which controls the sensors. A passage is utilized to interconnect two distinct systems which are associated with web through Wi-Fi or Ethernet. The information from sensors is sent to passage, and afterward it is sent to cloud. At the point when certain edges are achieved, the information is sent to separate goal. The proposed framework works in three divisions. In particular n-Mote segment, N-Gateway area and cloud part.

V. IMPLEMENTATION

Sensor information will be gathered from the sensors which measure the physical parameters from the air in various voltage levels, which again changed over into appropriate organizations for sending the information to the processor. The Sensor information will send to the N-Mote (AtMega 328 Microcontroller). Here five sensors are utilizing in particular Digital Humidity and Temperature (DHT11), Soil dampness, water stream, Rainfall and Light sensor (LDR).The sensors will quantify the physical parameters identified with nature and sends the information to the n-bit. They got information will be handled and nourish to the Xbee (IEEE 802.15.4 convention) to send the information from N-Mote to N-Gateway in light of the fact that AtMega 328 Microcontroller does not bolster Wi-Fi or Ethernet highlights. The information will be sent to the Xbee collector at the N – Gateway end.

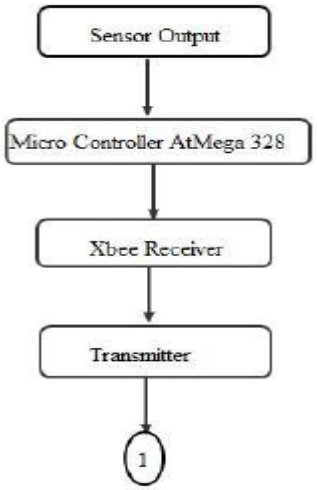


Figure 2. n-Mote section

The sensor information got from the Xbee transmitter from N-Mote will prepared and showed on the workstation or work area associated with the N-Gateway. In another part they got information will be transmitted to Pi processor to send the information to the cloud utilizing python content through Ethernet or Wi-Fi.

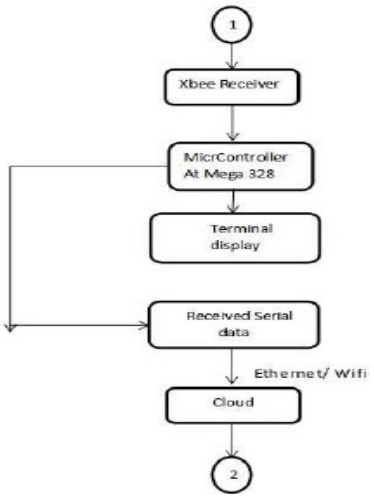


Figure 3. n-Gateway section

The sensor information which got on cloud will put away and database will be made and once the sensor information achieves limit level leftover portion will be sent to the versatile or E-mail.

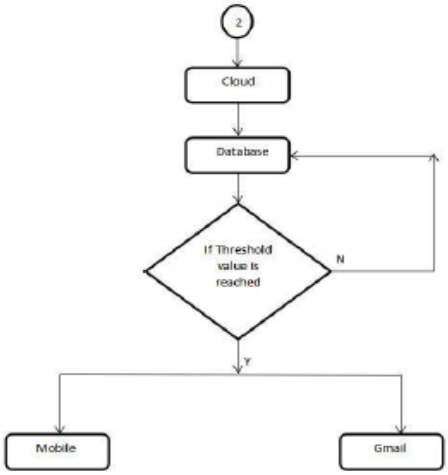


Figure 4. Cloud section

VI. RESULTS

In this segment we examining the outcomes got from the sensor bit which physical parameter estimated by the sensors and sent to the cloud to settle on the choices for the green house application.

Figure 5. Measure of Temperature on cloud

Figure 6. Measure of Humidity on cloud

Figure 7. Measure of Light on cloud

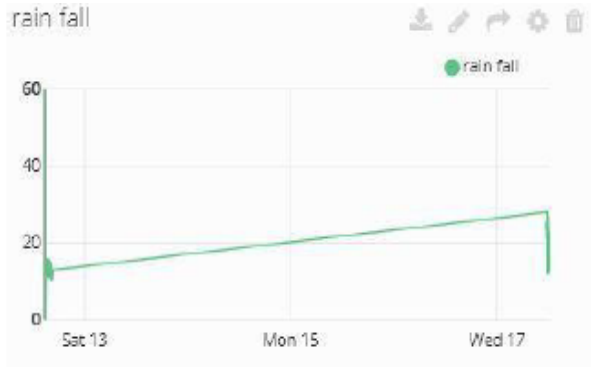


Figure 8. Measure of Rainfall on cloud

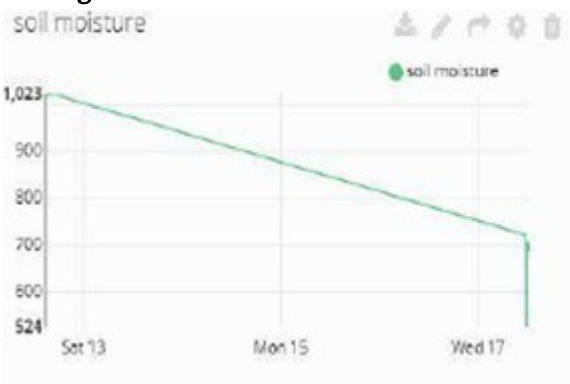


Figure 9. Measure of Temperature on cloud

VII. CONCLUSION AND FUTURE WORK

This examination has built up a reasonable model and framework to plan with the assistance of sensors, bits and portal and correspondence conventions to shape an ongoing application. Also, cloud assumes crucial part in basic leadership and gathering the information and keeping up the information for taking the basic choices in the framework. Additionally investigate is required to make the entire framework to work naturally with no impedance of individual in any conditions.

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ABOUT AUTHORS:

Mr.G. Sundeep Kumar Reddy is currently pursuing his Master of Computer Applications, Sree Vidyanikethan Institute of Management, Tirupati, A.P. He received his Master of Computer Applications from Sri Venkateswara University, Tirupati

Mrs.E.Sreedevi is currently working as an Assistant Professor in Master of Computer Applications Department, Sree Vidyanikethan Institute of Management, Tirupati, A.P