THE SMART AGRICULTURE SYSTEM USING IOT

[1]Sakshi R. Naware,[2]Varsha R. Digarse,[3]Shraddha A. Gujarmale, [4]Dimpal A. Gaur,[5] Prof. V. Surjuse

[1]Student,[2]Student,[3]Student, [4]Student, [5]Assistant Professor

[1,2,3,4,5]Computer Technology,

[1,2,3,4,5]K.D.K. College of Engineering, Nagpur, India

Abstract: Our project titled -A Sensor Network Platform for Smart Agriculture using IOT: is basically for agriculture in keeping the farmers and their condition in mind. A new system can be developed or designed which transform the old traditional farming into smart farming. This system can overcome many problems in the real world. The focal point of this project includes moisture sensing for the smart irrigation with smart control and intelligent decision making based on accurate real-time field data. It also includes smart warehouse management which recognizes the temperature and humidity in the warehouse. Controlling of all these operations will be through any remote smart device connected to the internet and the operations will be performed by interfacing sensors, Wi-Fi, actuators with Node MCU which runs on esp8266.

IndexTerms - Internet of Things, Sensors, Agriculture, Farming.

I. INTRODUCTION

Internet of Things (IoT) is a broad term that describes the interconnection of different daily life objects through the internet. In the concept of IoT, every object is connected with each other through a unique identifier so that it can transfer data over the network without a human to the human interaction. IoT has referred as a network of everyday objects having ubiquitous computing. The ubiquity of the objects has increased by integrating every object with an embedded system for interaction. It connects human and devices through a highly distributed network. IoT is basically the worldwide interconnection of devices. The aim of IoT is to connect every person and every object through the internet. In IoT, every object is assigned a unique identifier, so that every object is accessible through the internet[6]. The main objective of this smart irrigation system is to make it more innovative, user-friendly, time-saving and more efficient than the existing system. Measuring four parameters such as soil moisture, temperature, humidity, and threshold values, and the system also includes intruder detecting system. Due to server updates farmer can know about crop field nature at any time, anywhere. Cultivation in our nation is much reduced due to lack of interest, scarcity of agriculture land and water and some farmers with their own interest they have been doing the cultivation at the present. But that also yields to very less production due to lack of awareness about the land dryness, no timely pesticide usage and suitable crops for the land. Hence smart agriculture plays a vital role in promoting cultivation. It gives the solution by means of placing the sensor in the cultivation land to measure the soil efficiency. In this paper, it describes how the sensed data will be processed and stored in firebase and from firebase the data will be relayed to the registered farm owners through their threshold value or device in user-understandable form. This will be very helpful to the farmers who are away from the land and improves the crop cultivation

II. PROBLEM STATEMENT

In our country, agriculture depends on the monsoon which has an insufficient source of water, so the irrigation is used in agriculture fields. In a traditional irrigation system, access to water is given to the field, which results in less yield or damages the crop. Help high landholding farmers in managing their huge farms using the help of IOT create a connected farming ecosystem and gather data for better farming and maximum yield. Help polyhouses in reaching better efficiency using IOT and make Farming and Farmers Smart.

III. LITERATURE REVIEW

The paper aims at making agriculture smart using automation and IoT technologies. The highlighting features of this paper include smart irrigation with smart control based on real-time field data. Secondly, smart warehouse management which includes; temperature maintenance, humidity maintenance and theft detection in the warehouse [1].

The main idea of the A2S is to reduce the problem for farmers by developing an Android-based automatic Farming system capable of controlling many electrical appliances in an irrigation or field using android platform with a mobile handset, where data transmission is carried wirelessly using ISP [2]. This project aims in designing a system which is capable of tracking the soil resource level and monitoring PH rate, water level, and temperature alerts through SMS to predefined numbers [3].

We propose an expert system based on the Internet of Things (IoT) that will use the input data collected in real time. It will help to take proactive and preventive actions to minimize the losses due to diseases and insects/pests [4].

This project includes various features like GPS based remote controlled monitoring, moisture & temperature sensing, intruders scaring, security, leaf wetness, and proper irrigation facilities. It makes use of wireless sensor networks for noting the soil properties and environmental factors continuously [5].

It focuses on developing devices and tools to manage, display and alert the users using the advantages of a wireless sensor network system [6].

IV. ARCHITECTURE
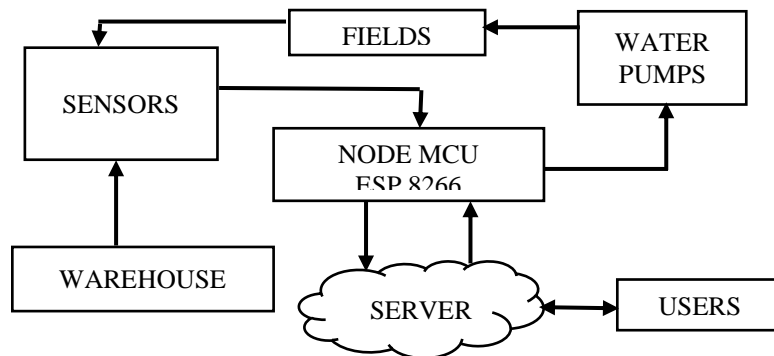
The architecture consists of NODE MCU-ESP8266which are in integration with different sensors and devices and they are interconnected to one central server via a wireless communication module. The server sense and receive information from user end using internet connectivity.

V. DESIGN IMPLEMENTATION
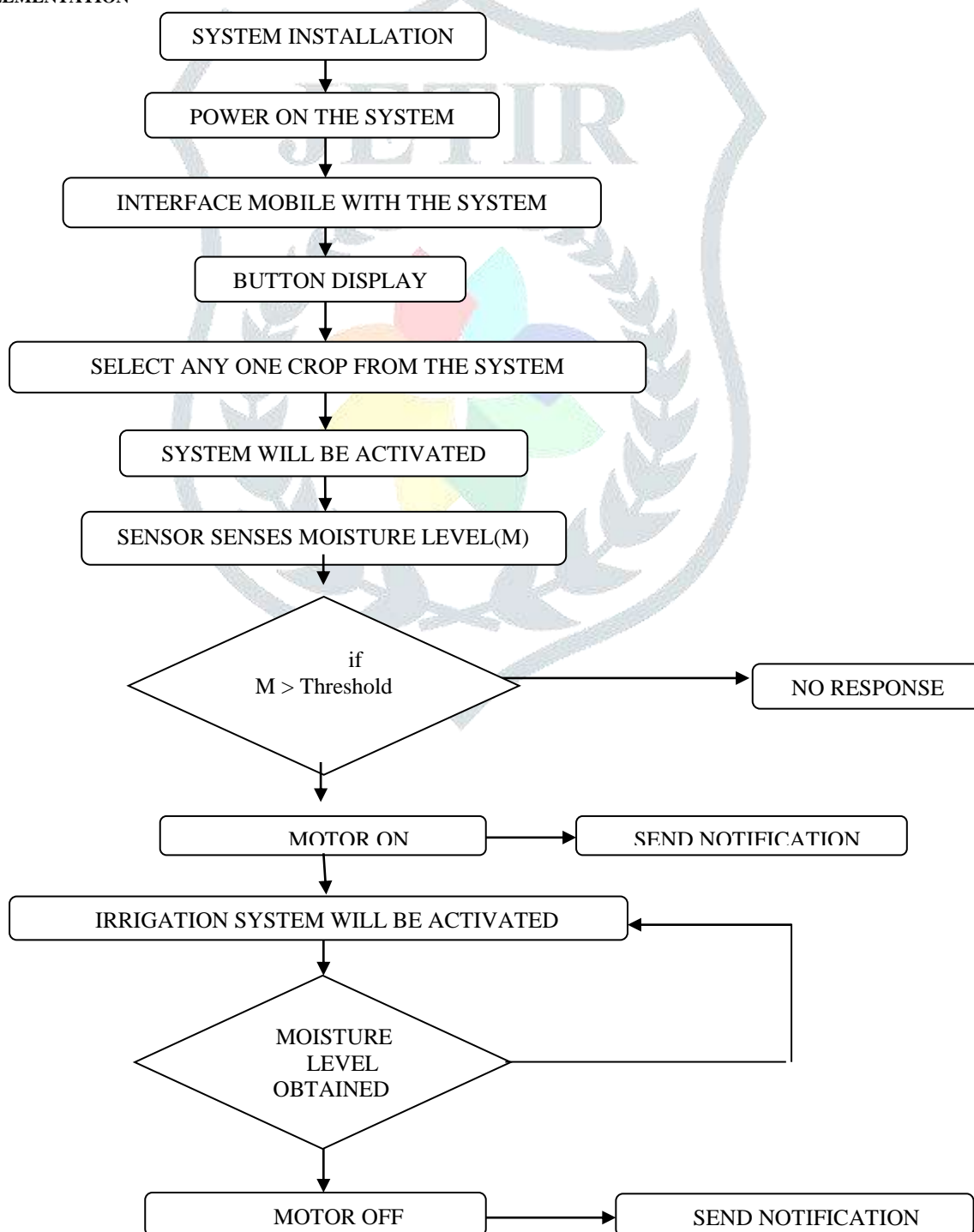
The above flowchart describes the working of our project: **The smart agriculture system using IoT.** There are two modes of operation of the system: auto mode and manual mode. In auto, mode system takes its own decision and controlled the installed devices whereas in manual mode user can control the operations of the system using an android app or PC commands. The field irrigation features the smart control of water pump based on real-time field data i.e automatically turning on /off remotely via mobile or computer and continuous monitoring of soil moisture. In automatic mode, when it senses the moisture below the threshold then the water pump starts for irrigation and simultaneously sends notification to the users. The second feature of this system is warehouse safety management. It consists of humidity sensor, Temperature sensor and gas sensor. Temperature sensor and humidity sensor senses the temperature and humidity respectively and if the value crosses the threshold then notification will be sent to the user that crops are at risk. similarly, if the smoke is detected then it directly calls to the fire station and the user will be done and simultaneously the water will start showering from the roof pipes as first action is to minimize the damage caused by the fire. In this way our product works.
T

VI. CONCLUSION

The main objective of this smart irrigation system is to make it more innovative, user-friendly, time-saving and more efficient than the existing system. Measuring four parameters such as soil moisture, temperature, humidity, and threshold values, and the system also includes intruder detecting system. Due to server updates farmer can know about crop field nature at any time, anywhere.

REFERENCES

[1]A V L N Sujith, K Chandra Sekhar." *Automated Agriculture as a Service Using IoT* "International Journal of Advanced Research in Computer Science and Software Engineering, Volume 7, Issue 5, May 2017[2].

[2] E. Sowmiya1, S. Sivaranjani2, "*smart system monitoring on soil using internet of things "*international research journal of engineering and technology (irjet) volume: 04 issue: 02 | Feb -2017

[3] Nikesh Gondchawar, Prof. Dr. R. S. Kawitkar, "*IoT based Smart Agriculture*", International Journal of Advanced Research in Computer and Communication Engineering Vol. 5, Issue 6, June 2016.

[4] Muhammad Tausif, "*Internet of Things based Expert System for Smart Agriculture"(IJACSA*) International Journal of Advanced Computer Science and Applications, Vol. 7, No. 9, 2016

[5] M.K.Gayatri, J.Jayasakthi, Dr.G.S. Anandhamala, "*Providing Smart Agriculture Solutions to Farmers for Better Yielding Using IoT*", IEEE International Conference on Technological Innovations in ICT for Agriculture and Rural Development (TIAR 2015)

[6] Dr. N. Suma, Sandra Rhea Samson, S. Saranya, G. Shanmugapriya, R. Subhashri, "*IOT Based Smart Agriculture Monitoring System* "International Journal on Recent and Innovation Trends in Computing and Communication, volume: 5 issue:2.