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MAKING IOT BASED SMART AGRICULTURE SYSTEM

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Abstract: The aim to create this project is to avail the features and functions of Internet of things and try to unravel a true world problem employing a combination of those automation technologies into the sector of agriculture, making its work flow more convenient, and user friendly during a detailed manner. Soil moisture, temperature, humidity and sunlight are the important factors for plants growth. The info collected by the sensors supported above parameters are used as information to watch and control plant growth. Thus the system uses soil moisture and temperature sensors which are interfaced with NodeMCU which will allow us to remotely monitor plants for the temperature it can withstand and water it when needed. The info collected by sensors supporting the parameters are used because the information to watch and control plant growth. The system is often controlled by the user with the assistance of the Blynk application in smart phones using Iot. The subsequent paper focuses on role of IoT in agriculture that results in smart farming

Keywords: internet of things, Soil moisture sensor, NodeMCU , Arduino/Raspberry pi

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I INTRODUCTION

Smart Agriculture developing model may be a real time monitoring system. It monitor the soil properties like temperature, humidity soil moisture PH etc. it's possible to manage many operations of the world remotely from anywhere, anytime by IOT. It offers a futuristic way of life during which a personal gets to manage his electronic devices employing a sensible phone, it also offers an efficient use of energy. It applied altogether areas of industry, including smart agriculture, smart parking, smart building environmental monitoring, healthcare transportation and much of more. One of the ideas derived from precision agriculture is that the application of existing technologies to create better and more efficient systems to handle agriculture businesses. Nowadays, we've devices that always have built-in complex sensors which can connect and communicate which one another easily. These devices and systems also allow collecting and processing large amounts of knowledge with fairly small and affordable hardware. Internet of Things (IOT) seeks to require these common technologies and devices that are present in today's world and interconnect everything to accomplish new objectives and applications. The concept of IoT alongside existing technologies opens a good range of opportunities to use within the field of agriculture monitoring. A number of these opportunities are the following: Wireless Sensor Networks (WSNs), full connectivity between the system's nodes, constant monitoring of the environmental status, efficient energy and water use so as to realize an autonomous system, or keeping the economic cost constrained. The projects' target application is little and middle-size agriculture plantations that are currently not automatized and will cash in of a low-cost energy-autonomous sensor network

II LITERATURE SURVEY

Within the existing system of agriculture, the crops are being monitored with the assistance of Arduino boards and GSM technology where Arduino boards act as a microcontroller but not as a server. Hence so as to beat these features Arduino Nano boards or renesas microcontrollers are being included with the Node MCU which a modern version is and also acts both as a microcontroller and also as server. Main feature of this system is its cheap cost for installation and multiple advantages. Here one can also control the agriculture system in laptop, telephone or computer.

III PROBLEM DEFINITION

The proposed paper aims to provide water when the farm is dry without human presence and avoiding water wastage in the irrigation process. Also monitor the soil parameters like temperature, humidity and soil moisture level. It'll even be possible to regulate various operations of the sector remotely from anywhere, anytime by mobile also as web applications. This provides signals to the mobile whether to send water (that is when the farm is dry) to the sector or not.

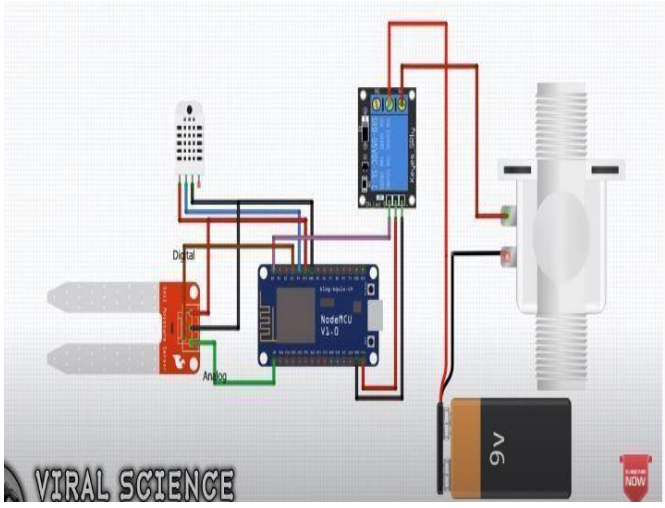

Figure 1 Technical Block Diagram

Hardware Requirements-Arduino , Node MCU , Soil Sensor , Jumper Wire , USB connector , 5V battery , Laptop.

Figure 2 Arduino

Arduino-It is an open source electronics platform based on easy to use hardware and software combination, so this will be utilized in our project to attach and maintain multiple components directly

Figure 3 NodeMCU

Node MCU -This circuit is the major connecting link between all the components because it is responsible for determining connection usingWi-Fi.

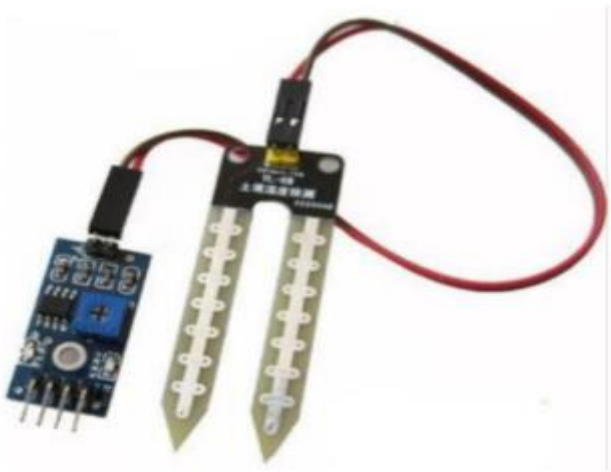

Figure 4 Soil Sensor

Soil Sensor -Another important component which has the function to detect the moisture level within the soil and supply us with the output levels.

Figure 5 Jumper wire

Jumper wire –These are connecting wires used to connect hardware components and complete the circuitdiagram.

5V battery –To supply the power to the pump.

USB connector-the connection between the NodeMCU andlaptop.

V RESULT

During this project, we will control the motor within the field supported humidity, temperature and moisture level. The Moisture level of soil is measured or sensed by the sensors. These values are converted into digital form and applied to Arduino Nano. If the moisture levels of soil are dropped to a particular level the motor is turned on automatically without human interaction. We use a single motor for two different farms. The Solenoid valve controls the flow of water by measuring the moisture levels of their soil. For two farms we use two moisture sensors, those are connected to microcontrollers and sends moisture levels continuously. As shown within the figure we have two modes during this system, automatic and manual. In automatic the motor can control automatically based on sensor data. In manual mode, we can control the motors.

VI DATA FLOW DIAGRAM

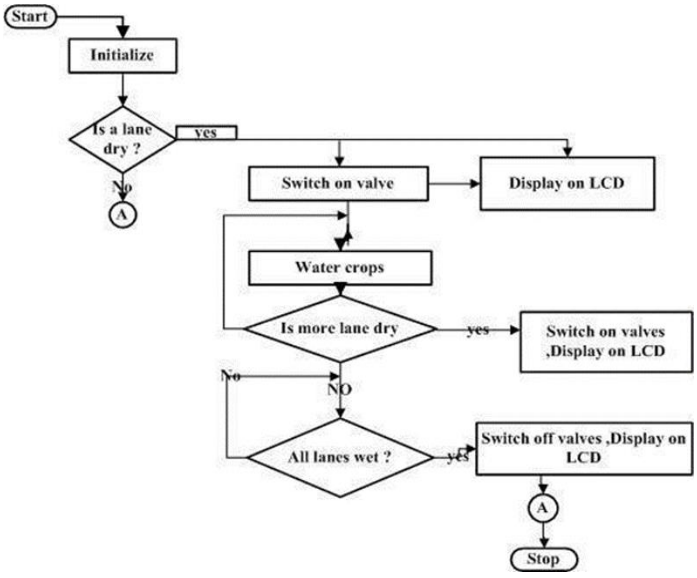

Figure 5 DFD

Figure 6 ***: Prototype of plant monitoring system using NodeMCU***

VII CONCLUSION

The project has been successfully implemented tested and illustrated in sort of small model using plant pot. The system measures moisture in soil and level of water in field. It also minimizes human efforts, simplifies techniques of farming and help to realize smart farming.

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