Smart Agricultural Using IOT

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Abstract:

In olden days the traditional irrigation system which can produce the sprinkle of water that can sense the lack of moisture in land and sprinkle the required amount of water. The traditional system is not effective because the farmer didn't know much about moisture and level of water in the land accurately. In order to overcome this the model technique of agriculture based soil monitoring system in embedded system is introduced which contains the soil moisture sensor and water level sensor to monitor the moisture content in soil and water level in the land. Over 23.7% of water is need for land during agriculture process. The level of water requirement is high in the area of turf with heterogeneous water need . The temperature level of the soil and land is also monitored and if any abnormal condition occurs means it send the message to the owner through GSM. The information will also be updated in the cloud using IOT. This will help the owner to monitor the condition of the land from anywhere in the world. The entry of any humans or animals can also be monitored using PIR sensor. By this technique more operation can be performed automatically and also the flooding of field will be avoided by continuous automatic monitoring system.

Keywords: Soil moisture sensor, Water level sensor, Temperature sensor, GSM, IOT, PIR sensor.

I. Introduction.

Agriculture plays vital role in many countries. Where the farmer used to grow the crop and apply the fertility on their assumption. Dry land is the major problems to the farmers to overcome this few sensors are used. This traditional way of crop growing having many drawbacks like the owner not able to monitor the land properly. The wireless sensor network to monitor the condition of farming in the land and to increase the quantity and quality of crop yielding. Different sensors are used to monitor it [1]. Soil monitoring is plays essential role in agriculture. In olden days the farmers used to see the soil and cultivate the crop without knowing the required parameters and devices used to test it. For the good soil the temperature, humidity and light are tested and cultivated [2]. The modern technique will improve the efficiency of crop cultivation. The proposed system utilizes the wireless sensors for water level measuring and temperature measuring by using the required sensors [3]. One of problem the farmer face is entry on unknown person or any animal which will damage the field crop in order to overcome that the PIR sensors are used [4]. The farmers will get to know the information of the soil accurately by the required sensors and if any parameters gets abnormal means then the farmers get the message through GSM [5]. The IOT is also used to check the information about the soil through cloud from anywhere in the world [6].

II. Block diagram
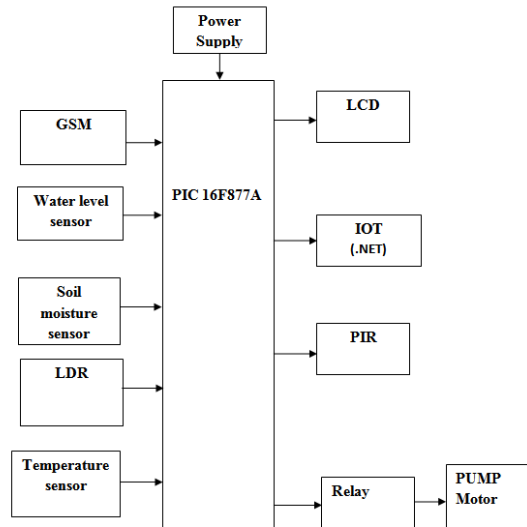
Figure.1.Block diagram of wheel chair mechanism

In the existing system the farmers will monitor the crop manually which need the man power. Then the traditional system of sprinkle node technique is used which will monitor the soil moisture level and then the water level in the field. In this technique the owner can't able to look over the condition of the land and also if any unwanted person enters the land or else any animal enters the field then the owner not able to find it out. Which will be overcome by using more sensors.

In the proposed system the farmer will able to monitor the humidity of soil, water level in land and temperature level of the soil by using the required sensors. If any person enter inside the field means then it can be noticed by using the PIR sensor. All the information about the field is updated in the cloud by using the IOT and also if any abnormal condition occurs means then the owner will receive the message through GSM.

III. System Overview
A.   Temperature sensor
The temperature used here is LM35.
 which is placed in the field to sense he temperature level of soil in the land. In this process the maximum value of threshold value is fixed in the system. If the value goes above the mentioned value then it automatically send the message to the farmer through GSM then farmer can come directly and look over the field and also it turn on the motor using relay**.**
B.   Soil moisture Sensor
It is used to detect the moisture condition of soil to the owner. If the soil moisture is below then it send the message the farmer**.**

C.   Water level Sensor

The water level sensor is used to monitor the level of water in the field.

 The water level will be measured by low, medium and high. If the water level in the field goes too high or low then it send the message to the farmer through GSM.

D.   PIR Sensor

The PIR sensor is used to detect the animal, people or any other object.

The PIR is used to detect the infrared radiation from person or animal. If the person enter the field then the temperature will be increase then the normal one which is detected by using the PIR sensor

E.   GSM

The GSM is used to send the message to the owner. GSM Modem can accept any GSM network operator SIM and it can act just like a mobile phone with its own unique phone number.

In this process if any abnormal condition occurs in the soil means then it will send the message to the farmer through GSM.

F.   Relay Driver

The Raspberry Pi controller will not be able to drive the heavy motors so that the driver circuit is required to drive the mechanism it will provide the necessary supply to drive the motor**.**
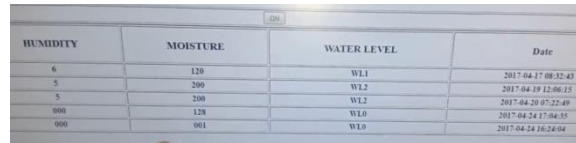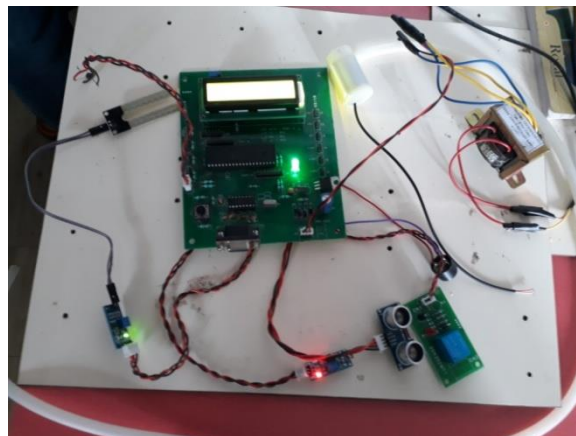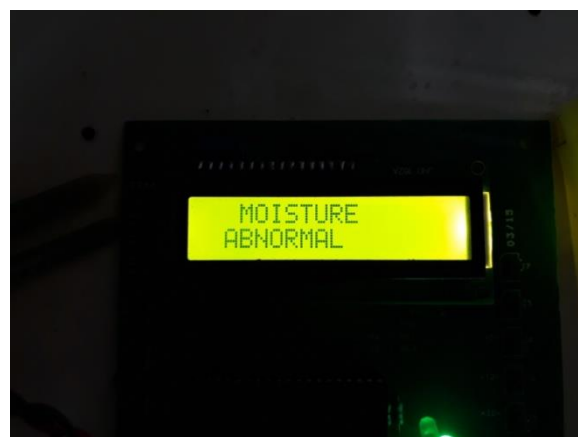

Figure.2 Hardware snapshot

Figure.3 Hardware output snapshot of the temperature level of the soil is displayed on the LCD

Figure.4 Hardware output snapshot of the LCD display the temperature and moisture level of the soil with help of sensors

Figure.5 Hardware output snapshot If the moisture is abnormal then it is displayed on

Figure.6 output snapshot the IOT updating the function of each sensors.

IV. Conclusion.

In this concept the smart agriculture monitoring using IOT is done with help of the temperature, water level and humidity sensors. The detection of humans or animals are prevented by using the PIR sensors. If any abnormal occurs means each information are updated in the IOT and also it send the message to the farmer using GSM. By this process more than one process can be accessed automatically and then flooding will be controlled by continuous monitoring**.**

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