Smart Irrigation System

(IoT)

Synopsis

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Acknowledgement

It gives us a great sense of pleasure to present the synopsis of the Mini Project (Smart Irrigation System) undertaken during Btech IIIrd Year, this project itself is going to be acknowledgement to the inspiration, drive and technical assistance will be contribute to it by many individuals.

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Smart Irrigation System
(IoT)

The **Smart irrigation System** has wide scope to automate the complete irrigation system. Here we are building a **IoT** based Irrigation System using **NodeMCU** Module and **DHT11 Sensor**. It will not only automatically irrigate the water based on the moisture level in the soil but also send the data to Server to keep track of the land condition.The system will consist a water pump which will be used to sprinkle water on the land depending upon the land environment condition such as Moisture, Temperature and Humidity.

Most of the farmers use large portions of farming land and it becomes very difficult to reach and track each corner of large lands. Sometimes there is a possibility of uneven water sprinkles. This result in the bad quality crops which further leads to financial losses. In this scenario the Smart Irrigation System using Latest IoT technology is helpful and leads to ease of farming.

About the Project

The Project that we have undertaken is Smart Irrigation System Using Moisture Sensor. In this project we have implemented sensors which detect the humidity in the soil (agriculture field) and supply water to the fields which have water requirements. In the past, irrigation systems used to be dependent on the mills to irrigate the farm by conventional methods without knowing the appropriate quantities of these crops. These old systems are a major cause of the waste of large quantities of water and thus destroy some crops because of the lack of adequate quantities of water. However, with the recent technological developments, there have been innovative systems for irrigation without the farmer interfering in the irrigation process

It is necessary to make effective effort and contribution to achieving the desired objectives of this system. Therefore, the effort should not be limited to individual effort. In addition farmers must be very important to achieve the high efficiency of modern irrigation systems.

2.Objective

Water is one of the essential elements of human existence. It is not always to get water supply from natural sources. Here comes the application of irrigation supply. Irrigationis the man-made means of supplying water. The main objectives of irrigation supply are given below

- Ensure enough moisture essential for plant growth.
- Cool the soil and atmosphere to provide a suitable surrounding
- To develop a smart irrigation system in order to get a significant saving in the consumption of water to irrigate the crops
- To provide sufficient flow capacity to meet the irrigation demand

3.ProblemStatement

Using smart farming through IoT technologies helps farmer to reduce waste generation and increase the productivity. Another important domain for IoT is the agriculture domain where IoT system plays vital role for soil and crop monitoring and provides a proper solution accordingly.

4.Reason

Smart Farming is a farming management concept using modern technology to increase the quantity and quality of agricultural products. Farmers in the 21st century have access to GPS, soil scanning, data management, and Internet of Things technologies. By precisely measuring variations within a field and adapting the strategy accordingly, farmers can greatly increase the effectiveness of pesticides and fertilizers, and use them more selectively. Similarly, using Smart Farming techniques, farmers can better monitor the needs of individual animals and adjust their nutrition correspondingly, thereby preventing disease and enhancing herd health.

5.LiteratureSurvey

- Save water and money. Smart irrigation practices help to limit your water use, which can save you money on your utility bill. ...
- Save your customers money. ...
- Protect the community's water supply for generations. ...
- Minimize needs for infrastructure to store and carry water. ...
- Make maintaining yard easy and convenient.

6.FutureScope

1. GSM can be added for sending SMS to the concerned person in case of anyproblem.
2. Other Parameters such as ambient temperature, light intensity & humidity can bemeasured.
3. Pesticides & fertilizers can also be added automatically in thewater.

7.Methodology

The outmoded irrigation technique has been replaced with automated technique. Many smart irrigation systems have been devised. A smart irrigation system, contrary to a traditional irrigation method, regulates supplied water according to the needs of the fields and crops. The feedback mechanism of a smart irrigation system is a temperature sensor. This temperature sensor is placed at a specific location on the irrigation field. Based on its value the water is being pumped to corresponding area up to a predetermined time. Wireless communication technology will make the communication possible between transmitter section and receiver section. This will avoid the presence of many wires in the field. Otherwise it may create a lot of problems to ploughing, harvesting,etc.

8.Scope

Future work would be focused more on increasing sensors on this stick to fetch more data especially with regard to Pest Control and by also integrating GPS module in this IoT Stick to enhance this Agriculture IoT Technology to full-fledged Agriculture Precision ready product.

9.HardwareUsed

Temperature Sensor

Soil Moisture Sensor

NodeMcU

Relay

Jumper Wires

Breadboard

Motor

Battery

i3 processor-based computer

4GB Ram

5 GB Hard Disk Space

10. Conclusion

The project concludes that automation of irrigation system will become easy and comfortable for farmers to operate the irrigation at remote location i.e. from home. This will save time and avoid problem of continuous vigilance. Not only this, it will also control the consumption of water for the irrigation of the field, thus preventing the water wastage and would help in sustain the productivity, increasing theyield.