WIRELESS SENSORNETWORK BASED AGRICULTURAL MONITORING SYSTEM

Project Reference No.: *45S_BE_4320*

College ***:*** *Sharnbasva University, Kalaburagi*
Branch ***:*** *Department of Computer Science Engineering*
Guide(s) ***:*** *Dr. Jyoti R Maranur*
Student(s) ***:*** *Ms. Sushmita*
Ms. Ashwini Biradar
Ms. Pratiksha
Ms. Rajeshree Pujari

Keywords:
Internet of Things (IOT); Agriculture , smart farming , Arduino, embedded systems.

Introduction:

Agriculture uses 85% of available freshwater resources worldwide, and this percentage will continue to be dominant in water consumption because of population growth and increased food demand. There is an urgent need to create strategies based on science and technology for sustainable use of water, including technical, agronomic, managerial, and institutional improvements

There are many systems to achieve water savings in various crops, from basic ones to more technologically advanced ones. For instance, in one system plant water status was monitored and Agriculture scheduled based on canopy temperature distribution of the plant, which was acquired with thermal imaging. In addition, other systems have been developed to schedule Agriculture of crops and optimize water use by means of a crop water stress index (CWSI) . The empirical CWSI was first defined over 30 years ago.

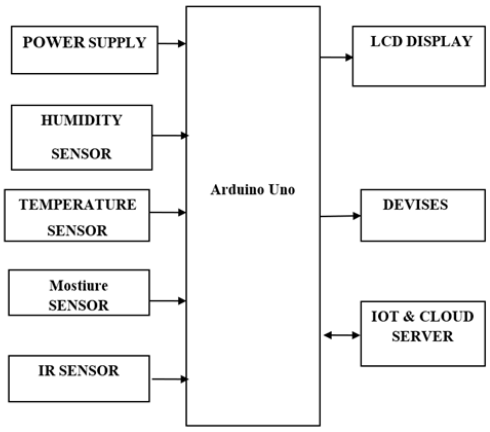
The Internet of Things (IoT) is the network of physical objects—devices, vehicles, houses and other items which are equipped with electronics, software, sensors, and network connectivity—that enables these objects to collect and exchange data. With the help of it, we can not only sensed the object but also controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based systems, and resulting in improved efficiency, accuracy and economic benefit; when IoT is augmented with sensors and actuators, the technology becomes an instance of the more general class of cyber-physical systems, which also encompasses technologies such as smart grids, smart homes, intelligent transportation and smart cities.

Objectives:

The main objective of this paper is to provide an automatic Agriculture system thereby saving time, money & power of the farmer. The traditional farm-land Agriculture techniques

require manual intervention. With the automated technology of Agriculture the human intervention can be minimized. Whenever there is a change in temperature and humidity of the surroundings these sensors senses the change in temperature and humidity and gives an interrupt signal to the micro-controller.

Methodology:



IOT and Arduino Based Industrial fault detection system sends the signal from different sensors, i.e. Humidity, Air Pressure, Temperature and LPG gas sensor to the micro-controller – Arduino. The micro-controller then sends this data to the IOT module (ESP8266). ESP8266 is a chip used for connecting micro-controllers to Wi-Fi network and make TCP/IP connections and send data.

In case a fire takes place, the temperature sensor and the humidity sensor would detect the humidity and the temperature changes and send the information to the Arduino. The micro-controller is connected to the IOT module, buzzer and BLYNK IOT app Display. Arduino is programmed to turn ON the buzzer when the temperature sensor detects temperature greater than a threshold value. This value can be programmed as needed. When the threshold value is reached, the buzzer would be turned ON. At the same time, the BLYNK IOT App would display informative messages. As soon as the buzzer is turned ON, the data from the micro-controller is sent to the IOT module. BMP sensor will detect the air pressure. Since the data is available LIVE on a website, immediate action can be taken. LPG sensor is used for LPG gas leakage detection. In case there is a leakage of gas, the sensor would detect it and send the signal to the Arduino, which would turn ON the buzzer and at the same time, send the same information over IOT

The Pre-requisite for this project is that the Wi-Fi module should be connected to a Wi-Fi zone or a hotspot. This project is also implemented without the IOT module. Refer <>. In place of the IOT module, we have used the GSM module, by which an SMS is triggered.

Result and conclusion:

Internet of Things will help to enhance smart farming. Using IoT we can predict the soil moisture level and humidity. Irrigation system can be monitored and controlled by IoT technology. The crop damage using predators is reduced. IoT works in different domains of farming to improve time efficiency, water management, crop monitoring, soil management, control of insecticides and pesticides. It also minimizes human efforts, simplifies techniques of farming and helps to gain smart farming. Along with these features smart farming can help to grow the market for farmer with single touch and minimum effort.

Scope for future work:

This project based on IoT can be further expanded by providing additional facility to the industry person with the help of Android app for achieving better control and monitoring of industry. Further, smoke and gas sensors can be interfaced with the system to ensure security of industry workers and goods in case of fire or toxic gas leakage.