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ABSTRACT
The main Purpose of this project is to develop a smart wireless sensor network (WSN) for an agricultural environment. Monitoring agricultural environment for various factors such as temperature, humidity and Light Intensity. Greenhouse is a controlled area used for growing all types of crops in any atmosphere at any season. Most greenhouse systems always used the manual system in monitoring the temperature, humidity, Light Intensity in the greenhouse, a lot of problems can occurs not for servants but also affected production rate because the temperature, Light Intensity and humidity of the greenhouse must be constantly monitor to ensure optimal conditions. Monitoring System is required to be development of agricultural field. A traditional approach to measure these factors in an agricultural environment meant individuals manually taking measurements and checking them at various times. In this system we are using Zigbee trans-receiver, sensors, & LPC2138 microcontroller. The Data sensed by the sensor is digitized by internal ADCs of LPC2138 microcontroller. Kail3 software is used to implement this project. Base station act as a Personnel computer used to interface GUI-G graphical User Interface to monitor various parameters with the day wise database is stored in Visual Basic for back end.

In addition to the proposed system uses zigbee technology for the long distance communication

Keywords

INTRODUCTION
Agriculture needs better technology to improve the efficiency and quality of production and reduce the environmental effect on the crop. Reduce environment effect on crop needs take crop in controlled area means greenhouses. Greenhouses are also help take any crop any season, that’s why automatically helps improve quality of production rate. A recent survey wireless sensor network applications is a wide range applications for these networks and identified agriculture as a potential area of deployment together with a review of the factors influencing the design of sensor networks for this application. WSN is a collection of sensor and actuators nodes linked by a wireless medium to perform distributed sensing and acting tasks. The sensor nodes collect data and communicate over a network environment to a computer system, which is called, a base station. Based on the information collected, the base station takes decisions and then the actuator nodes perform appropriate actions upon the environment. This process allows users to sense and control the environment from anywhere. There are many situations in which the application of the WSN is preferred, for instance, environment monitoring, product quality monitoring, and others where supervision of big areas is necessary. Wireless sensor network (WSN) form a useful part of the
automation system architecture in modern greenhouses. Wireless communication can be used to collect the measurements and to communicate between the centralized control and the actuators located to the different parts of the greenhouse. In advanced WSN solutions, some parts of the control system itself can also be implemented in a distributed manner to the network such that local control loops can be formed. Compared to the cabled systems, the installation of WSN is fast, cheap and easy. The only additional costs occur when the sensor nodes run out of batteries and the batteries need to be charged or replaced, but the lifespan of the battery can be several years if an efficient power saving algorithm is applied. The research on the use of WSN in agriculture is mainly focused primarily on areas such as Proof-of-concept applications to demonstrate the efficiency and efficiency of using sensor networks to monitor and control agriculture management strategies.

Zigbee:

Zigbee is a Technological Standard Created for Monitor and Control Sensor Networks based on the IEEE 802.15.4 specification for wireless personal area network. It is a new wireless technology that has application in various fields. Zigbee also avoids issues are low cost and Range and obstruction. The main features of this IEEE 802.15.4 are network flexibility, low cost, very low power consumption, and low data rate in an ad hoc self-organizing network among inexpensive fixed, portable and moving devices.

SYSTEM DEVELOPMENT:

In this project, we present Agricultural greenhouse Monitoring System with wireless sensor networks, which is deployed at Agricultural site and developed for Agriculture monitoring. Low power sensor network measures Temperature, Humidity and Light Intensity through wireless sensor nodes equipped with different sensors. Measured data by the sensors and the data is send to the base station. The base station will take the appropriate action depending up on the received data. The below figure shows how to monitor parameters at Agriculture side using different sensors and send the slave node data to master node for data logging at base station.

Figure 1.2: Block Diagram of Project.

Block diagram consist of

- Sensor Node
- Base Station

Single Slave Node-

It consists of sensors like as temperature in degree Celsius, Humidity in percentage, Light Intensity in Lux used to measure different parameter along with the processor as LPC 2138, 16x2 LCD display with RF Zigbee device.

Figure 1.3: Single Slave Node
Base Station with Master Node-
Master node consists of processor as LPC 2138, 16x2 LCD display with RF Zigbee device. Base station act as a Personnel computer used to interface GUI-Graphical User Interface to monitor different parameters with the day wise database is stored in Visual Basic for back end.

Figure1.4: Single Master Node

RESULTS:
Reading whole day 5th May 2015. Slave Nodes Placed at two Different open Agriculture Areas & Master node placed Base Station means Users Personal Computer.

User Side:
Reading outside the green house & inside The Green House date on 29th May 2015. One Slave Node Placed inside the Greenhouse another Slave node placed outside the Greenhouse. Master node placed Base Station Means Farmers Home & this node also connected to Users Personal Computer. After observation undusted that Capsicum vegetable is nothing possible open place agriculture are in this summer season only possible for greenhouse area.

Figure1.5: Readings for 5th May Using GUI.
Figure 1.6: Day wise Database in Visual Basics 5th May

CONCLUSION:
Zigbee based agriculture monitoring system as a reliable and efficient system for efficiently monitor the environmental Conditions. Wireless monitoring of field not only reduce the human power, but it also allows user to see accurate changes in it. It is application of low cost, Energy consumes means less power and can control 254 devices at a time, which in turn leads to the development of lots of new technologies like Home Automation, Health Care Automation using zigbee.

REFERENCES:


