

Automated Farm Management Embedded System using Internet of Things

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Abstract. In this paper, the smart farm project provides easy and convenient environment for growing plants by using temperature sensor, humidity sensor, illuminance sensor and water level sensor. Temperature and humidity are measured by Humidity Sensor Module and displayed on the LCD in real-time. As for the illuminance factor, the most common CDS sensor was used and MCU controls the LED bar with the light intensity data of the sensor. The water level sensor detects the water level of the basket and it is also displayed on the LCD.

Keywords: Temperature sensor, water level sensor, wireless sensor network.

1 Introduction

Recent development in the areas of information and communication detonated the emergence of a new paradigm of ubiquitous and smart environment. A ubiquitous environment is a technology that the computer and communication are to control and monitor all the matters without human's direct involvement in control.

This paper purports to explain about the general installation method and the efficacy and how to use the monitor and control system in the growing environment by using the wireless sensor network technology, and to design and propose the smart farming system with convenience and easiness to use even in the narrow environments.

We experimented and developed the unmanned Smart Farming System which was composed of the wireless sensor network required to assess the temperature and humidity and the water level adjustment, and the sensor node necessary for the optimized cultivation environments, and which enables to collect and analyze such collected data in the sensor node and to store them in the control sever and to alert the emergency situation so as to monitor and adjust the temperature and humidity

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wireless transmitter and receiver, and such data are being received to the remote location. Water level indicator detects total of 4 levels of "Full, More than half, less than half, nearly gone" by using the features of a water conductor when the ground surface touches water. "P" point is connected to a 100 ohm resistor and receives + electrode voltage. "P" point current flows along the point "1". At this moment, water level indicates 1 level and the voltage flows across a 100 ohm resistor (R1) and passes by the water in the water tank and reaches the base of TR1. Then, the LED light of TR1 turns on. If all the points of "1", "2" and "3" are soaked in the water, all 3 LED lights will turn on as the voltage flows from "P" point across R1, R2, and R3 and reaches the bases of TR1, TR2, TR3.[3]

3 Conclusions

We materialized the real time monitoring system that is to collect the smart farming system data periodically in order for the user to monitor the environment status at various platforms, and to improve the quality of produces and to increase the productivity through the accumulated environment factor data, and to defined the risky range of each environment factors, and in excessive of the allowances, to alert the risk audio-visually to the user for his speedy confrontation with such risks through SNS, buzzer etc. The system was studied and developed to configure of the wireless sensor network to assess the temperature, humidity and water level adjustment, and of the sensor node necessary for the optimal farming environment, and of the monitoring management devices to collect and analyze such collected data from sensor node and to store them in the management server and to alert emergency.

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