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Implementation on Smart Data Communication Interface Based Agriculture System Using Multisensors

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***Abstract*—**This system is the implementation of agriculture automation using smart data communication .This embedded system is develop and design low cost basically based on embedded platform for agriculture automation .This system uses multiple sensors to detect temperature water level , IR based movement , gas detection and light intensity in agriculture environment and take a decision based on there values on went to trigger the water relays i.e. water flow relay, ground relay, water outlet relay .The current agriculture system is based on limited sensor technology which make it unusable in real time agriculture environment by using our system inefficiency of existing system is reduced. Here temperature, soil moisture, water level can be monitored on web page through smart data communication.

Keywords-. **Embedded platform, water relay, ground relay, water outlet relay.**

1. INTRODUCTION

In agriculture system to optimize water use for agriculture crops an automated irrigation system was developed . An agriculture is the back bone of any country's economy there is a strong relation between agriculture growth and economic growth. Previously the system has distributed wireless network of soil moisture and temperature sensors .so wireless sensors network (WSNS) are an important technology for large scale monitoring by providing sensors placed in the root zone of the plants. And this sensor information is handled by gateway unit.
This system is feasible and cost effective but it uses limited sensors technology which will not properly used in real time agriculture environment .where decision has to be taken based on all parameters of the system .
For monitoring climate factors including temperature humidity light air quantity environmental sensors are used .

In this paper the development of system based on microcontroller. This system is reduce the inefficiency in the existing system by developing multisensory smart data communication . This system uses multiple sensors to detect temperature water level , IR based movement , gas detection and light intensity in agriculture environment and take a decision based on there values on went to trigger the water relays i.e. water flow relay, ground relay, water outlet relay. This is helpful to decide the irrigation pattern of the system. This new technology helps to improve productivity ,Profitability, sustainability of our system and it give better response than existing system Along with these parameters we can develop the parameters like sunlight temperature soil viscosity and ground level water.

2.RELATED WORK

"Agricultural Automation in the new Millennium "
In this system number of prototype automation systems are developed in 20th century and proceeded to commercialization but some barriers that have deterred this are identified[8]
"Architecture of an automated agricultural tractor-hardware, software and control systems"
Development of the automated mobile platform can be broken down into various components and development for each system includes modifications to hardware and design of appropriate software to derive the system automatically[7]
"Advanced technologies and automation in agriculture
This modern agriculture requires field machinery capable of precise based on mechatronic design process with modern feedback controllers which

can generate significant demands for data processing[6]

"A review of automation and robotics for the bio-industry"

Automation technology will increase its impact on agriculture and use of robotics applications within plant production ,animal husbandry controlled environment as well as field robotics [5]

"new concepts in agricultural automation

In this new concept the technology deals with many smart controllers that allow the scale of treatment to be reduced ferther . It replaces blanket energy over application and hence reducing the cost of input [4]

"Automated Irrigation System Using Wireless Sensor Network and GPRS Module"

The automated irrigation system implemented was found to be feasible and cost effective for optimizing water resoures by using solar power in this irrigation and important for organic[1]

3.PROPOSED MODEL

Proposed model aims at developing a smart communication system that provides an ideal environment for the crops . The different sensors sense the value of soil moisture , temperature, humidity ,light, air quality, wind level, then these values are send to cloud. And relay read the status from cloud according to the status turn On and Off the relay.This reduces human effort to a great extent also ensures the essential environment required for the crops thus it improves the quality of crops.

The value of temperature (t), moisture(m), water level(w),gas(g) and light (l) will be first scan by the system based on there values the system will find

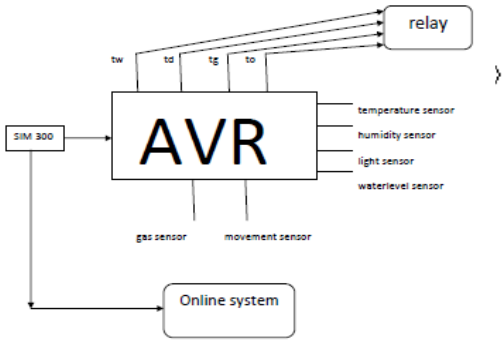
Tw=water flow time

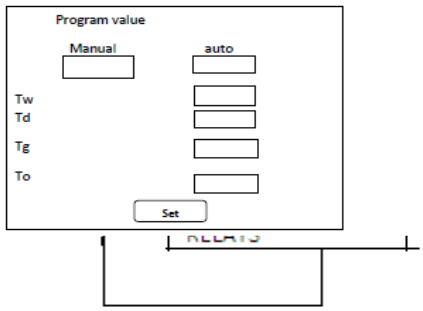
Td=water division time

Tg=water grounding time

To=water outlet time

But if the user does not want to output for automatic operation then on the web site the user can select manual operation and give the values of tw ,td, tg, and to and the system will fetch these value via GPRS and perform the necessary action the





In this system when a field is in the dry condition the sensing logic senses the state of the field and intimates it to the microcontroller . We can know the status of the field by sending a message by smart data communication.

Crops.

4. IMPLEMENTATION

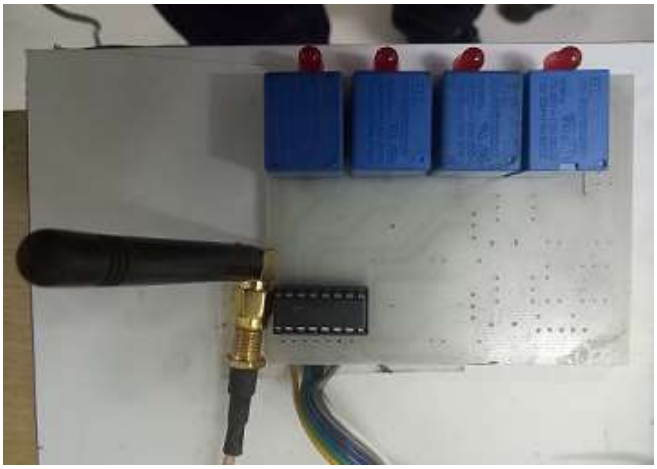
Different sensors i.e. Temperature, Humidity, Light, Air quality means gas sensor, wind level is converted to set up to extract digital values . Initially values from different sensors are read, then these values are send to cloud. The outputs obtained in this process are in the form of 0's and 1's .A zero output indicates that the sensor value is less than the predefined value after which the motor and fan are to be switched on based on the sensor values this function can be performed by sitting any where and any time .With the help of this system it reduces the human effort.

The initial step is placing the sensors for example in case of humidity detection sensor is placed deep inside the soil and sensor nodes are connected to the module which is responsible for communication. The processing unit is also connected to module to display the outputs. There are relays and motors which are connected to the system . Relay status is read from the cloud.

5. WORKING

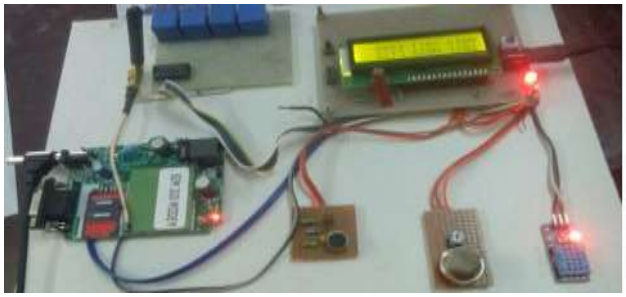
Different sensors senses the value if value reaches below permissible level then notification sent from cloud .The relays help to turn on and off the motor . All the sensors monitors the level in every minute.

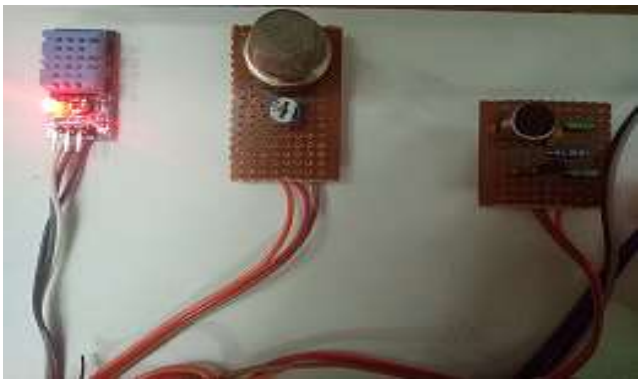
Each time it compares with the required value and accordingly the motor on or off and acknowledgement is sent to the cloud .
Step1:- Start the system
Step2:-Read values from sensors
Step3:-Send values to cloud
Step4:- Read relay status from cloud
Step5:-Turn
ON/OFF Relays



6. RESULT

The sensor data obtained from the sensors are displayed in the user interface in terms of digital values of Temparature,humidity, light,and gas sensors.
Working hardware model





7. ADVANTAGES

1. Increase in food production
2. Modification in soil or climate environment
3. Low risk of catastrophic damage caused by drought
4. Increase income
5. Increase labor employment
6. Increase standard of living
7. Increase value of land National security thus self sufficiency

7. CONCLUSIONS

Multisensory agriculture interface system reduces the inefficiency of existing system It also reduces the human effort .It provides the irrigation as per the requirement .We can monitor the status by multiple sensors such as temperature sensor humidity sensor, light sensor, gas sensor, water level sensor, movement sensor.The data can store in the cloud enabling access anywhere anytime.

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