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Smart Poly-House Surveillance Using IOE

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Abstract - *The required climate condition for the green house can be provided by proposed system. With the machine-controlled of playhouse human intervention will be reduced. Agriculture requires irrigation at the time of drought as well as some plants require a lot of water which is not sufficiently provided by the rain water. Farmer needs to continuously monitor the soil moisture and water level. Sometimes farmer is far away from farm or gets some health problem, the plants may spoil due to less water irrigation.*

Key Words: IOT, Poly-house, WSN, Raspberry pi

1. INTRODUCTION

Embedded Ethernet is used for supervise and moderation of the physical parameters in any domain such as industrial, commercial, home, agricultural etc. we can see there are various problems in monitoring the parameters in the irrigational plant such as moisture of the soil, temperature of the soil. Now a day's various problems are rising in polyhouse superintendence. We required lots of man power for maintenance of polyhouse. We can use Embedded Ethernet for home automation based applications for controlling the various components such as lights, fans, ACs, etc. To deal with these daily and toilful problems, we decided to launch this project which will satisfy the above discussed problems.

By using such type of system we can control and monitor the parameter through your mobile phones or by your personal computers. And also by moderating the home appliance we can spare the energy by knowing the current status of the appliance and in polyhouse surveillance we can check the status of the motor and control it by relays.

The internet of things (IOT) is an important topic in technology industry and engineering circle the large scale implementation of IOT devices promises to transform many aspects of the we live. IOT is expected to offer advanced connectivity devices systems & services that goes beyond machine to machine communication and covers variety of protocols.

In the polyhouse to ease the work of farmer this system used. In this system the soil moisture sensor, light intensity sensor and temperature sensor gives the data to the controller unit on particular defined time in the form of images. The data analysed by controller is send to the server with the help of Wi-Fi module. The android app is designed for this system which is load in smart phone and which takes sensors data time to time. We shows the graphical data of this sensors, so it becomes easy to analyse. Also we can on and OFF the motor according to the soil moisture. We gives some threshold value for the controlling motor based on soil moisture. The relay used for the controlling Light (Bulb), which takes data from LDR sensor and measure light intensity and then control the bulb using relay. The farmer can also control the motor and bulb from his smart phone using android App.

The camera is used to take the photos of fields capture randomly in small period and send it to server at some interval of times. Then farmer checks it at his smart phone.

The LDR (Light Dependent Resistor) sensor is used to sense the intensity of light and according to the light intensity the bulb will ON & OFF.

An Android provides access to the end devices for Farmer uploading web pages as per the client request. In polyhouse too ease the work of farmer this method is used. In this system the soil moisture sensor, light intensity sensor and temperature sensor gives the data to the controller unit in particular defined time. The controller analysed data and send to the server with the help of Wi-Fi module. The android app is designed for this system which is load in smart phone and which takes sensors data time to time. We shows the graphical data of this sensors, so it becomes easy to analyse. Also we can ON and OFF the motor according to the soil moisture. We gives some threshold value for the controlling motor based on soil moisture. The relay used for the controlling Light (Bulb), which takes data from LDR sensor and measure light intensity and then control the bulb using relay. The farmer can also control the motor and bulb from his smart phone using android App.

2. SYSTEM ARCHITECTURE

In our system we use the raspberry pi3 as main processor. It has the high capacity of processing. Camera port is also provided to it. We use different sensors like moisture sensor, temperature sensor. Motor is also attached to it for controlling water for a plants. System architecture provides the overview of the system and components present in the system. Using this sensors we can control and monitor various conditions acquire in poly-house. Surveillance is also possible using these systems.

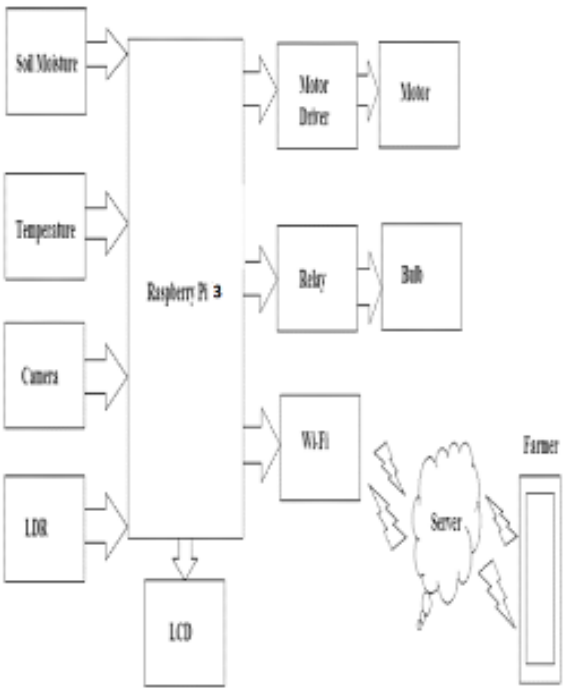

Fig -1: **Proposed System**

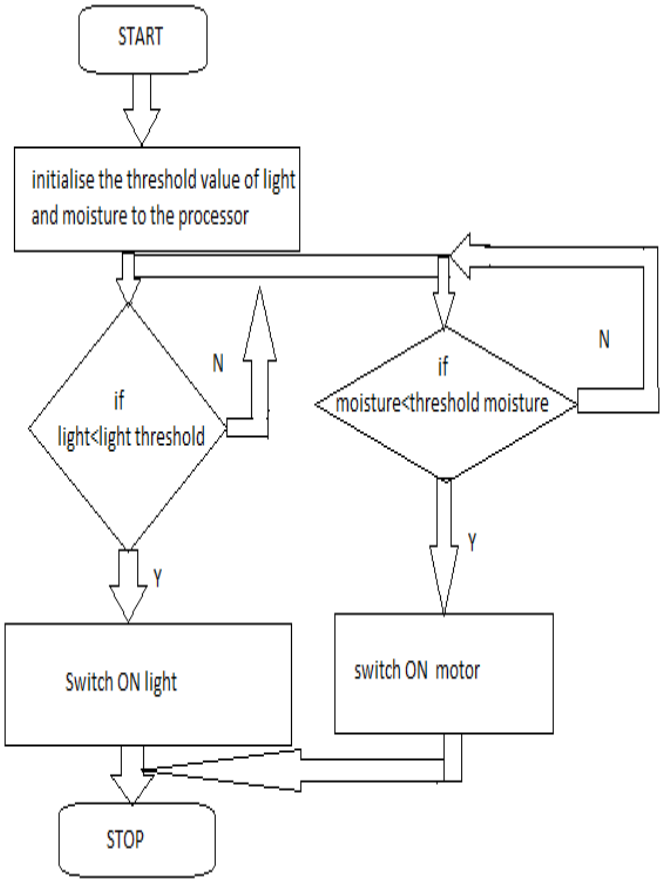

Fig -2: **Flowchart**

1) Raspberry 3

Raspberry pi 3 provides 6 time processing capacity of than raspberry pi 2. It also has a high memory capacity. Also we can expand memory by using external memory card Raspberry pi 3 has separate port to attach camera.

Features:

SoC : Broadcom BCM2837
CPU : 4× ARM Cortex-A53, 1.2GHz
GPU : Broadcom Video Core IV
RAM : 1GB LPDDR2 (900 MHz)
Networking: 10/100 Ethernet, 2.4GHz 802.11n wireless
Bluetooth : Bluetooth 4.1 Classic, Bluetooth Low Energy
Storage : micro SD
GPIO : 40-pin header, populated
Ports : HDMI, 3.5mm analogue audio-video jack

2) Power supply:-

All electronics component required electrical energy for their working. Basically we have to convert main power supply from 230v to 12v & 5v respectively for the raspberry pi, motor drivers & other components

3) Sensors:-

A) Soil Moisture Sensor:-

The moisture sensor uses immersion gold which protect nickel from oxidation. This sensor reads the moisture sensor in a soil and judge a water level .It is two port device.

Features:

1 .Work up to 5v
2 .Working current is less than 20 mA
3 .High sensitivity

B) Temperature sensor:-

It is an integrated circuit which gives linear output in degree.

Features:

1 .Operating voltage 4-30 volt
2 .Current drain 50 micro amp.
3 .Junction temperature 150 degree Celsius

C) Light Dependent Resistor:-

It contains two cadmium sulphide cells. The cell resistance falls with increasing temperature.

Features:-

1 .Power dissipation 100mW
2 .cell resistance 400ohm

4) Motor:-

Relay is used for control a motor. Whenever water level in a soil is decreases below given threshold value motor will be automatically ON by the motor driver circuit. We can also control it by manually.

5) Camera:-

Camera is used for capturing images of a playhouse for certain fixed time duration. These images are send to the farmer.

6) Android application:-

We develop an android application for the farmer. In these application all the data is provided to farmer which can be seen by anywhere. Also farmer can control the soil moisture by using motor if the value of moisture in soil is below threshold value. These application also shows the surveillance images to farmer.

3. CONCLUSIONS

Precision agriculture is a comprehensive system designed to optimize agriculture production. Using the technology human work will be reduced. These agriculture increases production efficiency, improve product quality, improve the efficiency of crop, conserve energy, and protect the environment. In a playhouse environment using IOE our test shows clearly that automatic irrigation is more efficient compared to manual irrigation. Automatic irrigation will control the usage of water and maintain the moisture level and healthiness of the plant. Also the surveillance to the farmer is provided.

REFERENCES

[1] Jackson T, Mansfield K, Saafi M, etal. "Measuring soil temperature and moisture using wireless MEMS sensors", Journal of Measurement, 41(4):381-390, 2007. M. Young, The Technical Writer's Handbook. Mill Valley, CA: University Science, 1989.

[2] Soil moisture monitoring standards [S] SL000-2005. The People's Republic of China Ministry of Water Resources ,2005-00 -00 promulgated, China Water Power Press Publishing ,2007-6-1.

[3] Adams, M.L., Cook, S. & Corner, R. , "Managing Uncertainty in Site-Specific Management: What is the Best Model?" Precision Agriculture. 2, 39-54, 2000

[4] J. Burrell et al. Vineyard computing: sensor networks in agricultural production. IEEE Pervasive Computing, 3(1):38–45, Jan-Mar 2004.

[5] W. Zhang, G. Kantor, and S. Singh Integrated wireless sensor/actuator networks in agricultural applications. In Second ACM International Conference on Embedded Networked Sensor Systems (SenSys), page 317, Baltimore, Maryland, USA, Nov. 2004.

[6] J. Thelen et al. Radio wave propagation in potato fields. In First workshop on Wireless Network Measurements (located with WiOpt 2005), Riva del Garda, Italy, Apr. 2005.

[7] V.I. Adamchuk, J.W. Hummel, M.T. Morgan and S.K. Upadhyaya, "On the-go soil sensors for precision agriculture", Computers and Electronics in Agriculture, 44, 71–91, 2004.