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Web Server Based Agriculture Automation Using Sensor Network

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Abstract: ***automatic irrigation scheme helps the farmer to irrigate the land in well-organized method can be explained in these thesis. This system helps to reduce water usage in agricultural field. Remote sensor unit gives information to the microcontrollers which are positioned in the roots of the plants. Motor can be controlled by the microcontroller by setting the threshold values in it and compares with information coming from sensors. The same values can be seen in the web server and farmer can decide the action. Camera can be used to check the field.***
Keywords: Raspberry pi, Wireless sensor network, Wi-Fi, Relay, Web server

I. INTRODUCTION

India is a rising nation. Significance improvement of agriculture shows the everyday requirement of food. There are numerous irrigation systems are existed but agriculturists facing trouble to get the data with respect to soil or climatic conditions because the majority of them requires a lot of energy. The profit of growing crops from farming till harvesting taken by the rising a specific crop in a specific area. sustained growth of production using the traditional schemes makes difficult in arrangements, preservation and so on. These drawbacks can be overcome by the remote estimation and control method for natural parameters. One of the major challenges in field exercises is irrigation. Preserving a water is important due to reducing the water source throughout the world by changing universal climate.Periodically farmer visit the fields to verify level of moisture in soil and motor supplies water to the field based on the necessity. Before switching off motor, farmer need to wait for certain time so that sufficient amount of water allowed to flow in the field. This technique takes a major time and effort. Lot of researches in field of farming are done. Remote sensor networks gathers information from various sensors and this information provides various natural factors. Need of flooding in irrigation can be removed by the utilization of remote sensors with minimal cost. Significant role of irrigation field is done by efficient management of water. Field monitoring system is proposed by the IOT and data can be stored online, accessing the data through internet is easy.

II. RELATED WORK

A. *N.usha et.al., [1]*

few existing method working for decreasing water utilization in the field but there is some restrictions in it. So in order to avoid these problem current technology is essential makes better organization of field. This paper contain Raspberry pi uses Linux embedded board contain ARMV 8 microcontroller. Ethernet interface in it and runs on web server. The current work concentrates on automatic water control, using webcam farm can be seen as live streaming on PC using Wi-fi.

B. *Sadolkar nilesh shamrao et.al., [2]*

entire field can be controlled using Raspberry pi and android app. The all sensor values are calculated and displayed on LCD and android app. It is experimental that field can be controlled by android phone which provides homogeneous maintains of ecological conditions are proposed. Android platform applications can be developed using android software improvement kit and programmable application interface. Multiple wishes of human life is served by cell phones. Hence the answer for the field system makes utilization of the GPRS highlights of cell phones.

C. *B. G. Mohan kumar et.al., [3]*

Farmer gets the field atmosphere conditions wherever and universally by using IOT and WSN. This innovative system contains zigbee, ARM7 microcontroller and sensor. Using these field can be controlled by motor. The fundamental goal is to limit the human

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involvement in the field. Consequently increment effectiveness and save wealth, time and power. Sensor provides data to the microcontroller and same data is sended to the graphical user interface using zigbee technology. GUI upload the values to the internet server so that we can monitor wherever in the globe using connection of internet so that we can control the field. This system is less expensive and restricted utilization of water.

III. PROPOSED METHODOLOGY

Transmitter section : - Receiver section:-

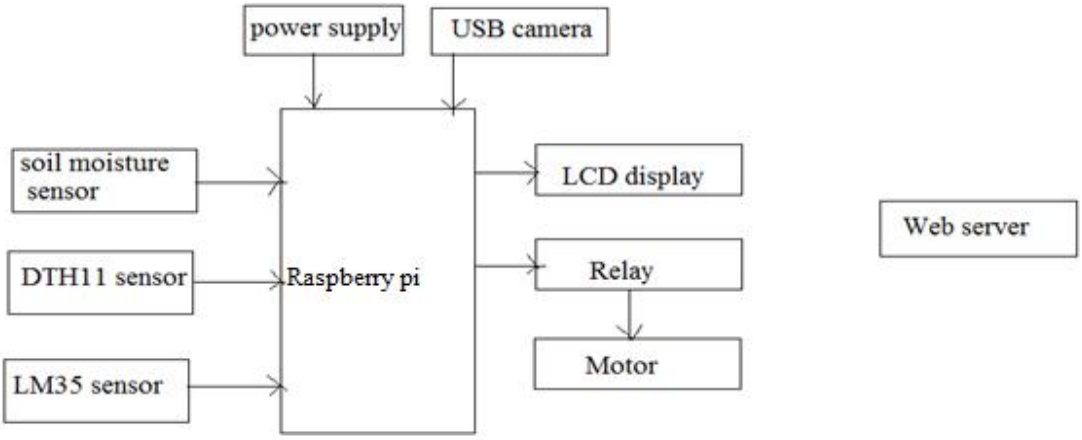

Fig 1.Block diagram of proposed method

One method of automatically controlling irrigation and remotely utilizing web is proposed in this paper .Wireless sensor network gains atmosphere information and these sensors are placed in the field. Changing in the sensor level from threshold level, raspberry pi will automatically turns on the motor and supplying the water to the field can be done until these value reduces to the threshold value.the more profit can be obtained from the present scheme than traditional method.IOT provides values to the web server and based on that start or stop watering can be done.

A. Flow chart

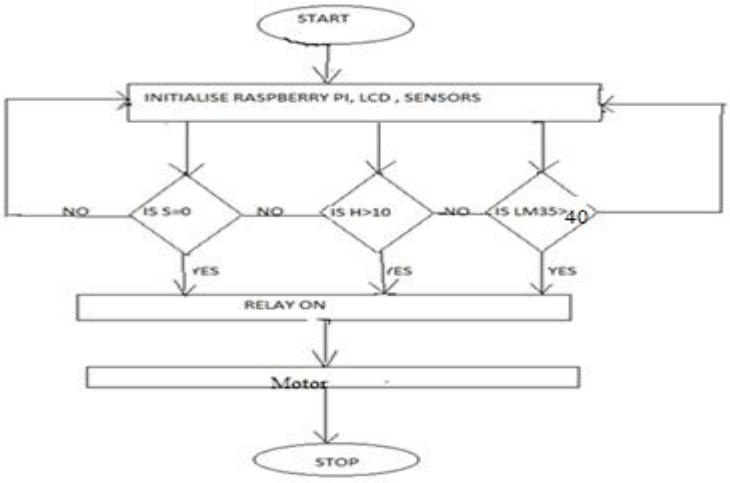

Fig 2 . Flow charts for design methodology

Initialise raspberry pi, LCD, Sensors and check the conditions of the soil moisture , humidity , temperature sensors. If s=0(soil moisture sensor) means no moisture in the soil and check the H>10(humidity sensor) if these condition is no means it check the

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LM35>35(temperature sensor) Condition is not satisfies than again go for the initialization .if all conditions are satisfies than Relay ON and motor ONs..

IV. EXPERIMENTAL RESULTS

Fig 3 When s=0 means no water in the soil motor ONs

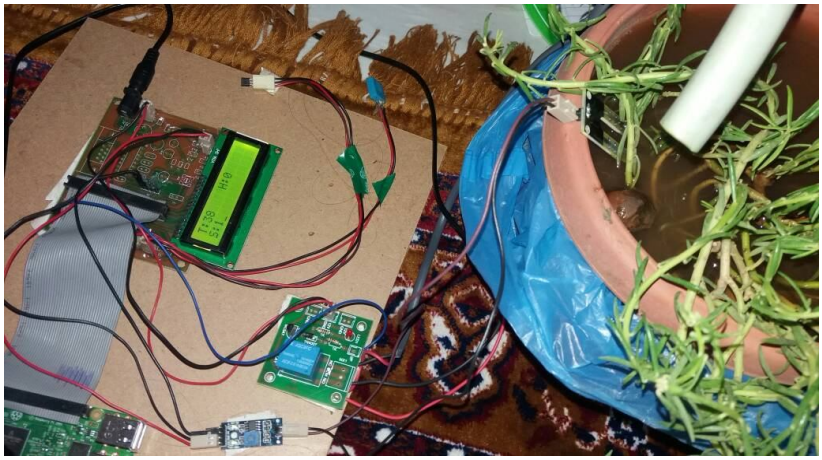

Fig 4 When s=1 moisture in the soil motor OFF

Fig 5 When H>10 humidity is high motor ON

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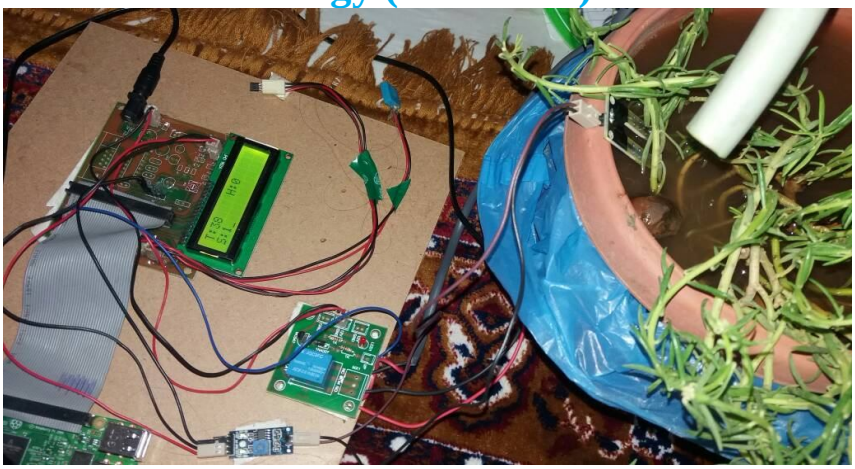

Fig 6 When H=0 humidity is low so motor OFF

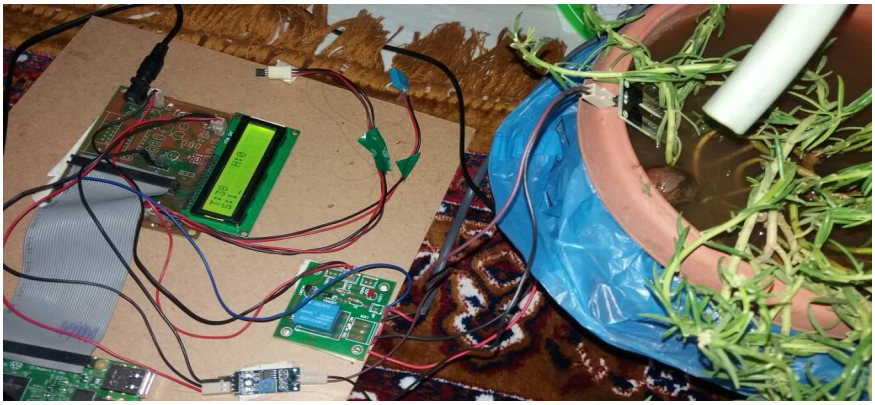

Fig 7 When T< 40 motor OFF

Fig 8 When T>40 motor ON

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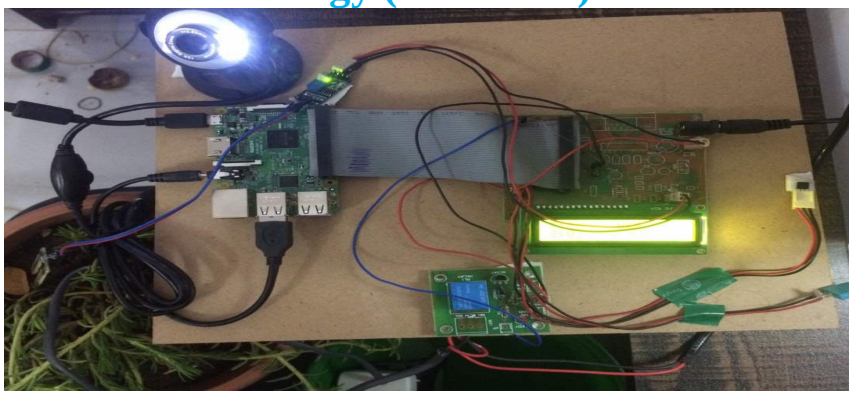

Fig 9 Complete circuit module in transmitter section

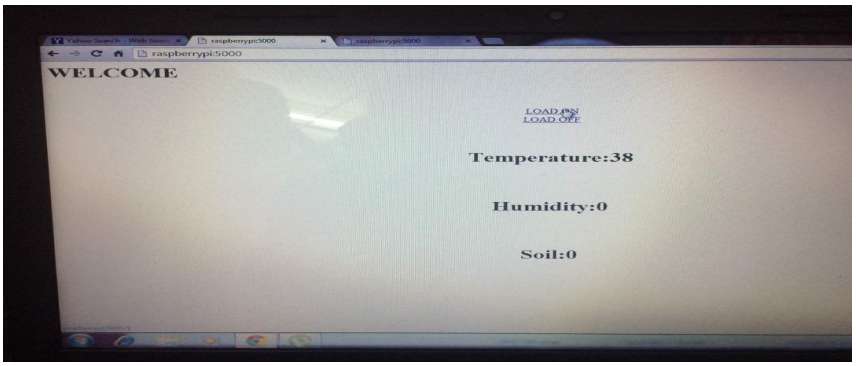

Fig 10 Monitoring values in web server

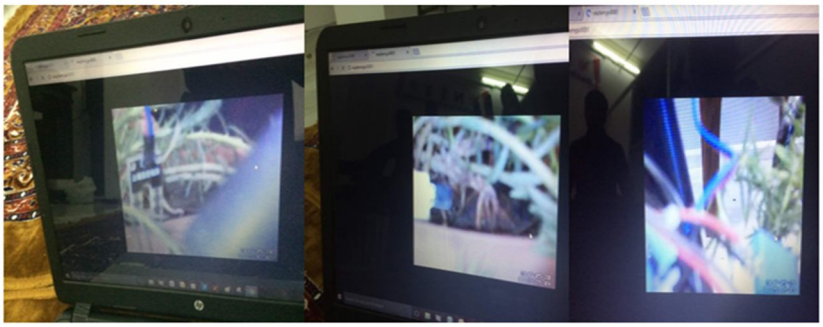

Fig 11 Monitoring camera in web server

V. CONCLUSIONS

The proposed scheme is advantages for farmers and water wastage can be avoided as well as no need of human involvement and system is very rapid. Continuous monitoring of the labor is not required because it is automatic and good organization of water supplied to the land. These system requires low power, price efficient sensor operated in various conditions. These method provides acceptable results and operates in real time. Irrigation system can be easily operated by web application.

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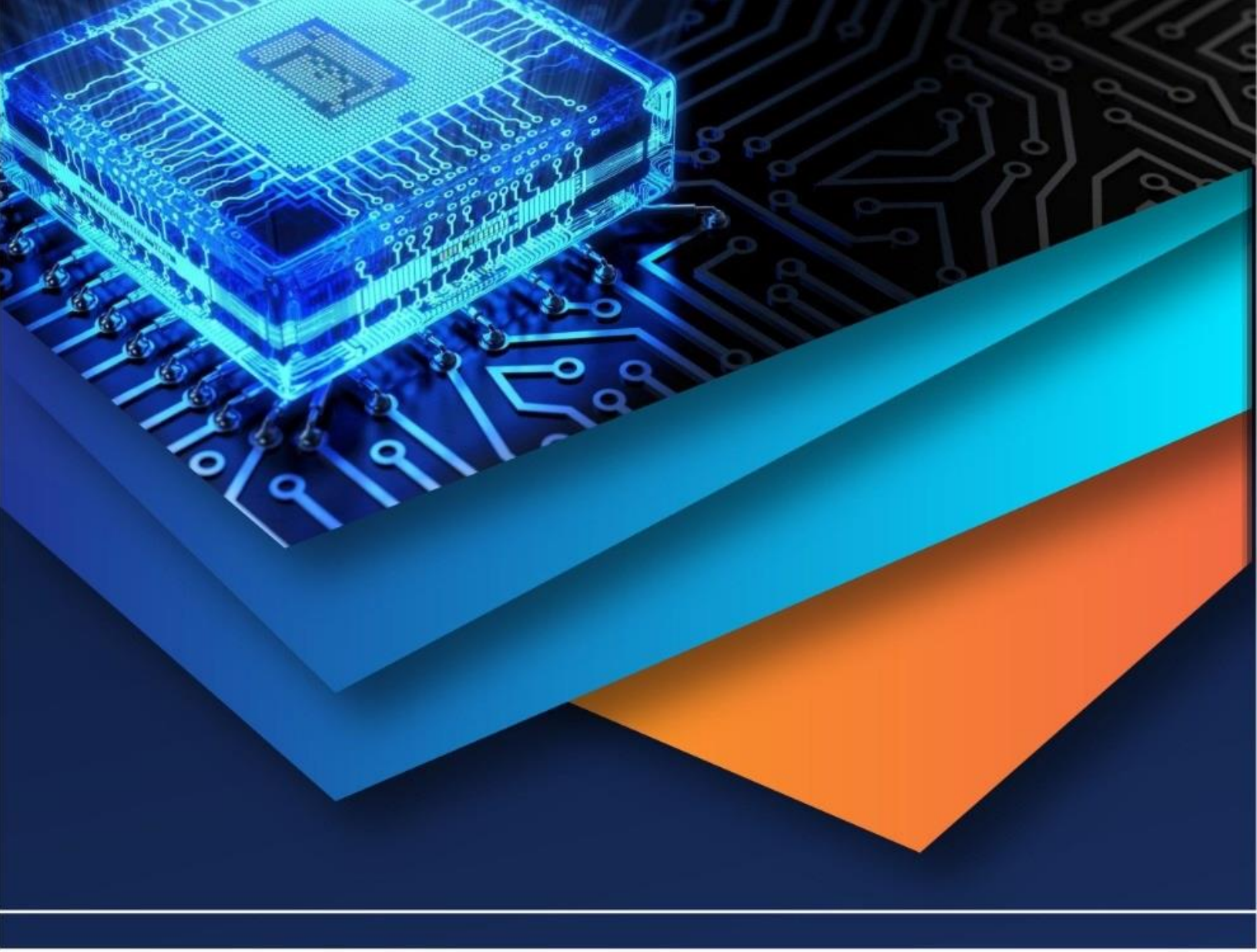

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