IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Smart Agriculture Using IOT And Soil Nutrient Detection

Prof. Suvarna Jondhale[1], Madhuri Bangar[2], Madhuri Gadge[3], Kanchan Wagh[4], Ashwini Padekar[5]

[1](Computer Science, SGOICOE/ Savitribai Phule Pune University, India)
[2](Computer Science, SGOICOE/ Savitribai Phule Pune University, India)
[3](Computer Science, SGOICOE/ Savitribai Phule Pune University, India)
[4](Computer Science, SGOICOE/ Savitribai Phule Pune University, India)
[5](Computer Science, SGOICOE/ Savitribai Phule Pune University, India)

Abstract : - *Agriculture plays vital role within the development of agricultural country. In India about 70% of population depends upon farming and one third of the nation's capital comes from farming. Issues concerning agriculture are always hindering the event of the country. The only solution the present to the present problem is sensible agriculture by modernizing the current traditional methods of agriculture. Hence the project aims at making agriculture smart using automation and IoT technologies. The concept smart-e-farming is developed for the ease in farming .It works on electrical energy. It includes number of sensors to test the soil parameters, they are as follows: Temperature Sensor. Soil moisture, PH level and Light and GSM .The main advantage is it has automatic operated covering which works according to water level and temperature.*

Keywords: - *Sensors, Agriculture, Framing, GSM , IoT*

I. INTRODUCTION

Smart agriculture creating model is a constant checking framework it screen the soil properties like temperature, humidity soil moisture. It is conceivable to control numerous activities of the field distantly from anyplace, whenever by IOT. It offers a cutting edge lifestyle in which an individual will control his electronic gadgets utilizing an advanced mobile phone, it additionally offers a proficient utilization of energy. It applied in every aspect of industry, including smart agriculture, brilliant structure ecological observing, medical services transportation and some more. India is one of the largest freshwater user in the world, and our country uses large amount of fresh water than other country. There is a large amount of water used in agriculture field rather than domestic and industrial sector. 65% of total water is contributes as a groundwater. Today water has become one of the important source on the earth and most of used in the agriculture field. As the soil-moisture sensor and temperature sensor are placed in the root zone of the plants, the system can distributed this information through the wireless network. The raspberry pi is the heart of the system and the webcam is interfaced with Raspberry pi via Wi-Fi Module. Python programming language is used for automation purpose. The system is a network of wireless sensors and a wireless base station which can be used to provide the sensors data to automate the irrigation system. The system can used the sensors such as soil moisture sensor and soil temperature sensor and also PH sensor. The raspberry pi model is programmed such that if the either soil moisture or temperature parameters cross a predefined threshold level, the irrigation system is automated, i.e. the relay connected to the raspberry pi will turn ON or OFF the motor.

II. LITURATURE SURVEY

Sensor innovation and remote organizations combination of IOT innovation has been contemplated and explored dependent on the genuine circumstance of farming framework. A joined methodology with web and remote interchanges, Remote Monitoring System (RMS) is proposed. Significant goal is to gather ongoing information of agribusiness creation climate that gives simple admittance to farming offices, for example, alarms through Short Messaging Service (SMS) and advices on climate design, crops etc.

Proposed a methodology joining the benefits of the significant attributes of arising advances, for example, Internet of Things (IOT) and Web Services to build a proficient way to deal with handle the tremendous information engaged with agrarian yield. The methodology utilizes the mix of IoT and distributed computing that advances the quick improvement of rural modernization and assists with acknowledging keen answer for agribusiness and effectively settle the issues identified with ranchers.

Proposed improvement of a framework which can screen temperature, mugginess, dampness and even the development of animals which may crush the yields in agrarian field through sensors utilizing Arduino board and if there should be an occurrence of any disparity send a SMS warning just as a notice on the application created for the equivalent to the rancher's cell phone utilizing Wi-Fi/3G/4G. The framework has a duplex correspondence connect dependent on a cell Internet interface that takes into consideration information review and water system planning to be modified through an android application. In light of its energy independence and ease, the framework can possibly be helpful in water restricted topographically secluded areas.

This framework gives a canny checking stage system and framework structure for office horticulture environment dependent on IOT. This will be an impetus for the progress from conventional cultivating to present day cultivating. This likewise gives occasion to making new innovation and administration improvement in IOT (web of things) cultivating application.

III. OBJECTIVES OF SYSTEM

The objectives of system are as follows:-

- Continuously monitoring the status of sensors and to provide signals for taking necessary action.
- To observe parameters for better yield.
- To save water and reduce human intervention in agriculture field.

IV. MOTIVATION

As more farmers are committing suicide nowadays as they suffer huge amount of loss due to natural calamities or lack of resources, so to overcome this problem and providing some technology to avoid such problem , this concept is created for relief to farmers.

V. IMPLIMENTATION DETAILS OF MODULE

The proposed system block diagram is as shown in Fig below. The main components of this diagram are Sensors, Raspberry Pi module, water level, LDR, relay, motor, lamp and GSM. Rpi is a main controller from which all other sensors are operated. Water level sensor is used to detect the level of water present in tank/well. We can control the system in 2 modes, manually and by using GSM module. Rpi is been connected to various sensor. Motor is on when the soil moisture is above the mentioned threshold. The motor on/off is controlled though relay. Relay 2 is been used to turn on/off the lamp. LDR is used to automatically turn on the light. The system can also be turned on from anywhere by sending message "Motor On" from sim i.e. GSM module depending on the values of soil, temperature sensor. The values obtained from sensors are stored in MySQL database. The Python IDE is used for system development.

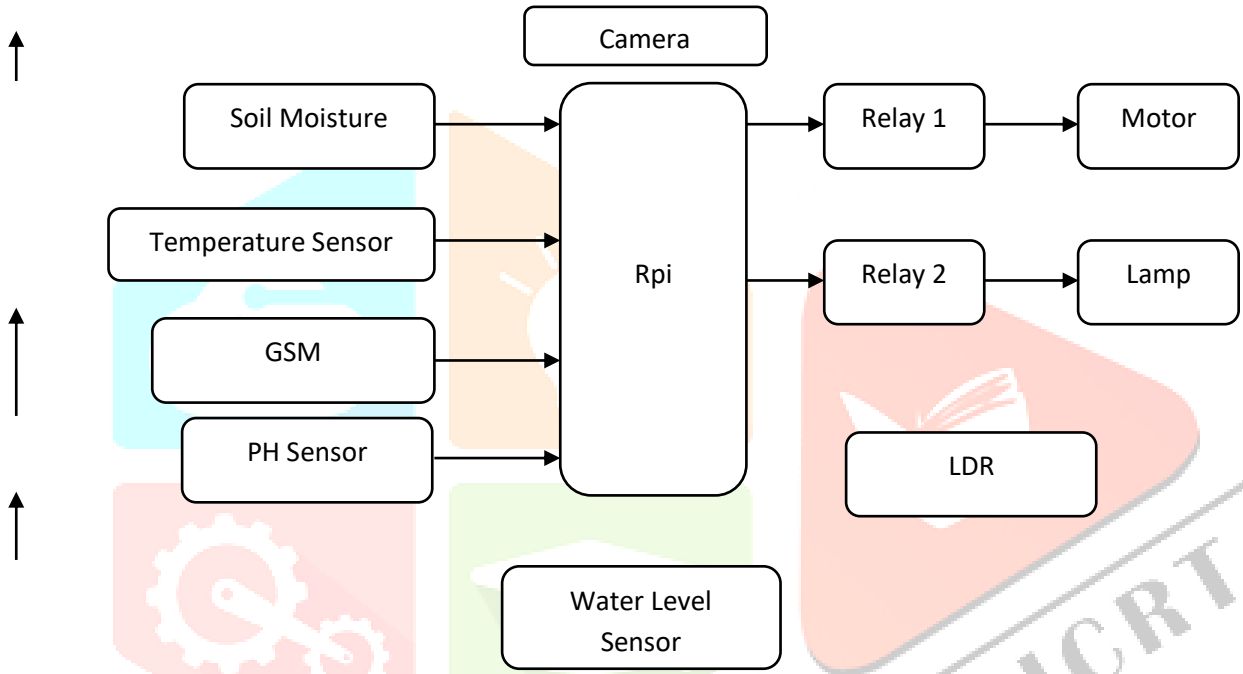

Figure: - Smart Irrigation System Architecture

VI. CONCLUSION

Entire project is about Farming and its techniques. This project will reduce the farmer's suicides and help them with the cost and save them from any more destroyed crops. The initiated project is not too much expensive and the whole cost can be recovered in 3 year period. So it is total cost effective eventually it is jumbo technology in effective price and a great investment.

Acknowlegements

We would like to acknowledge the Department of Computer Engineering for the support extended for the completion of this work. We would like to express our spacial thanks to the guide Prof. Jondhale S. S , Co guide Prof. Shingote S. N as well as H.O.D. of Computer Department Prof. Borhade B. M for their whole hearted co-operation and valuable suggestions, technical guidance throughout the work and his kind official support given and encouragement. We would also like to thank our parents and friends for their encouragement in completing this work.

REFERENCES

[1] Reuben Varghese and Smarita Sharma,“ Affordable Smart Farming Using IoT and Machine Learning ”, IEEE Xplore Compliant,2018

[2] “E-FARMING USING INTERNET OF THINGS (IOT)”, International Journal of Latest Trends in Engineering and Technology,2017

[3] Zhang, L., Dabipi, I. K. And Brown, W. L, “*Internet of Things Applications for Agriculture*". In, Internet of Things A to Z: Technologies and Applications, Q. Hassan (Ed.), 2018.

[4] K.A. Patil and N.R. Kale, "*A Model for Smart Agriculture Using IoT*", International Conference on Global Trends in Signal Processing Information Computing and Communication, 2016

[5] M.K.Gayatri, J.Jayasakthi, Dr.G.S.Anandhamala, "*Giving Smart Agriculture Solutions to Farmers for Better Yielding Using IoT*", IEEE International Conference on Technological Innovations in ICT for Agriculture and Rural

[6] Nikesh gondchawar and R. Complexion. Kawitkar, "*Iot Based Agriculture*", all-embracing almanac consisting of contemporary analysis smart minicomputer additionally conversation planning (ijarcce), vol.5, affair 6, june 2016

[7] Paparao Nalajala, D. Hemanth Kumar, P. Ramesh and Bhavana Godavarthi,, “*Design and Implementation of Modern Automated Real Time Monitoring System for Agriculture using Internet of Things (IoT)”,* Journal of Engineering and Applied Sciences, 2017.

[8] Jaideep Nuvvula, and VenkataSubba Rao Valisetty,“*Environmental smart agriculture monitoring system using internet of things*”, K L University, Department of Computer Science and Engineering, Guntur, Andhra Pradesh, India. International Journal of Pure and Applied Mathematics,2017

[9] K. Jyostsna Vanaja, Aala Suresh and S. Srilatha, “IOT based Agriculture System Using Node MCU” .International Research Journal of Engineering and Technology (IRJET). Volume: 05 Issue: 03 | Mar-2018, e-ISSN: 2395-0056

[10] “Wireless Sensor Based Crop Montoring System for Agriculture Using Wi-Fi Network Dissertation’, IEEE Computer Science, pp.280-285