



IOT Based Modern Agriculture System Using Raspberry Pi

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Abstract — Although precision agriculture has been adopted in few countries; the agriculture industry in India still needs to be modernized with the involvement of technologies for better production, distribution and cost control. Agriculture plays a vital role in 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 have been always hindering the development of the country. The only solution to this problem is smart agriculture by modernizing the current traditional methods of agriculture. Hence the project aims at making modern agriculture using automation and IoT technologies.

1. INTRODUCTION

India is the largest freshwater user in the world, and the country's total water use is greater than any other continent. Automation makes an efficient use of the electricity and water and reduces much of the wastage. Modern irrigation system makes the efficient use of water. This system presents a modern irrigation system for agriculture farm with the use of devices like Raspberry Pi. Python programming language is used for automation purpose.

2. LITERATURE SURVEY

“ Study on the Construction of Smart Agricultural Demonstration Park ” by

Yichuan Zhang, Kai Zhou and Xinzheng Li School of Horticulture and Landscape Architecture, Henan Institute of Science and Technology, Xinxiang 453003, China, 2014 [1] Proposes the implementation of the land circulation system has brought new opportunities for China's agricultural development, and building the agricultural demonstration park is an important measure to promote the efficient development of modern agriculture. Integrating the concept of smart into the construction of agricultural demonstration park can promote the sustainable development of the park.

“ Smart Agricultural Framework over RCAS in CATV network ” by

Han-Seung KOO, Jae Hong Min, and Juyoung PARK ETRI (Electronics and Telecommunications Research Institute), KOREA, 2015 [2] Proposed the smart agricultural framework over RCAS in CATV network. The proposed framework adopts RCAS, which is a security system which is dedicated to cable television system, as a data protection system, and cable two-way broadband network as a communication channels among smart agricultural service participants.

“ A Smart Farming Alternative for Small Pomegranate Farms of India ” by

Tejas Bhosale, Minakshree Patil and Vijay Wadhwa, 2015 [3] proposed work aims at developing wireless sensor nodes for monitoring soil and atmospheric conditions. The nodes will utilize the ARM-LPC2148 processor, various application specific sensors and a low range communication module CC2550. The software modules will be developed in Embedded C. The recorded parameters will be shared over the internet for database creation and for expert advice.

“ Providing Smart Agricultural Solutions to Farmers for better yielding using IoT ”

by M.K. Gayatri, J. Jayasakthi, Dr. G. S. Anandha Mala Student, Computer Science and Engineering Easwari Engineering College Chennai, India, 2015 [4] They propose an approach combining the advantages of the major characteristics of emerging technologies such as Internet of Things (IoT) and Web Services in order to construct an efficient approach to handle the enormous data involved in agrarian output.

3. BLOCK DIAGRAM

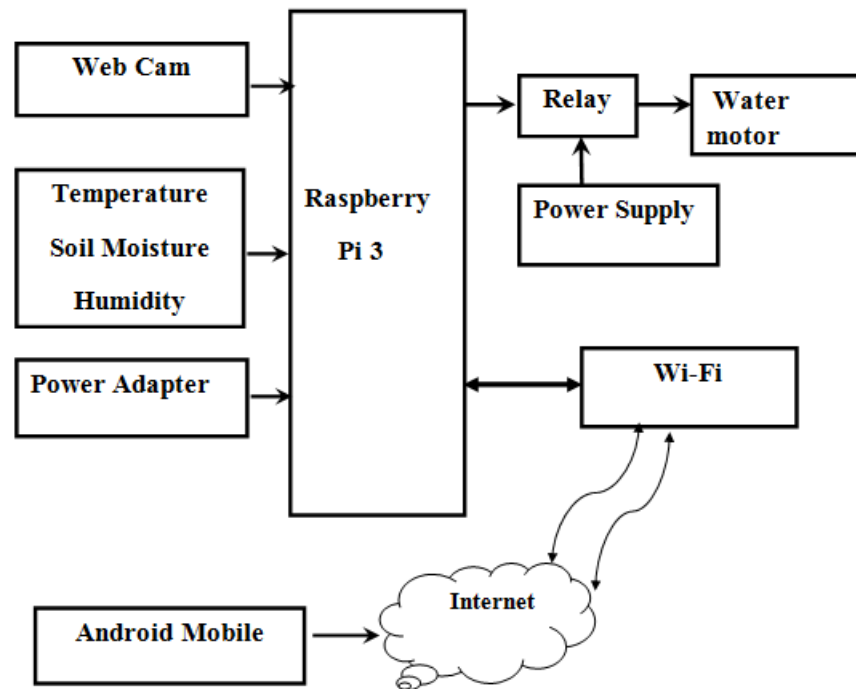


Figure 4.2. Project Block Diagram

3.1 Block Diagram Explanation

Here we are designing a System which will automatically any change in the green house With the help of various sensors such as Temperature, Soil moisture, Float Sensor, Accelerometer And Humidity etc. Also we are designing control section using relay to keep the environmental Climate constant.

1. Read the analog sensor data. Perform Signal conditioning on the signal.
2. Store the data in Raspberry Pi internal memory (RAM).
3. And send to the android phone through Wi-Fi.
4. Turn ON/OFF the relay i.e. water motor according to the user through android app i.e. Control from android
5. For Soil moisture turn on/off the water valve with relay

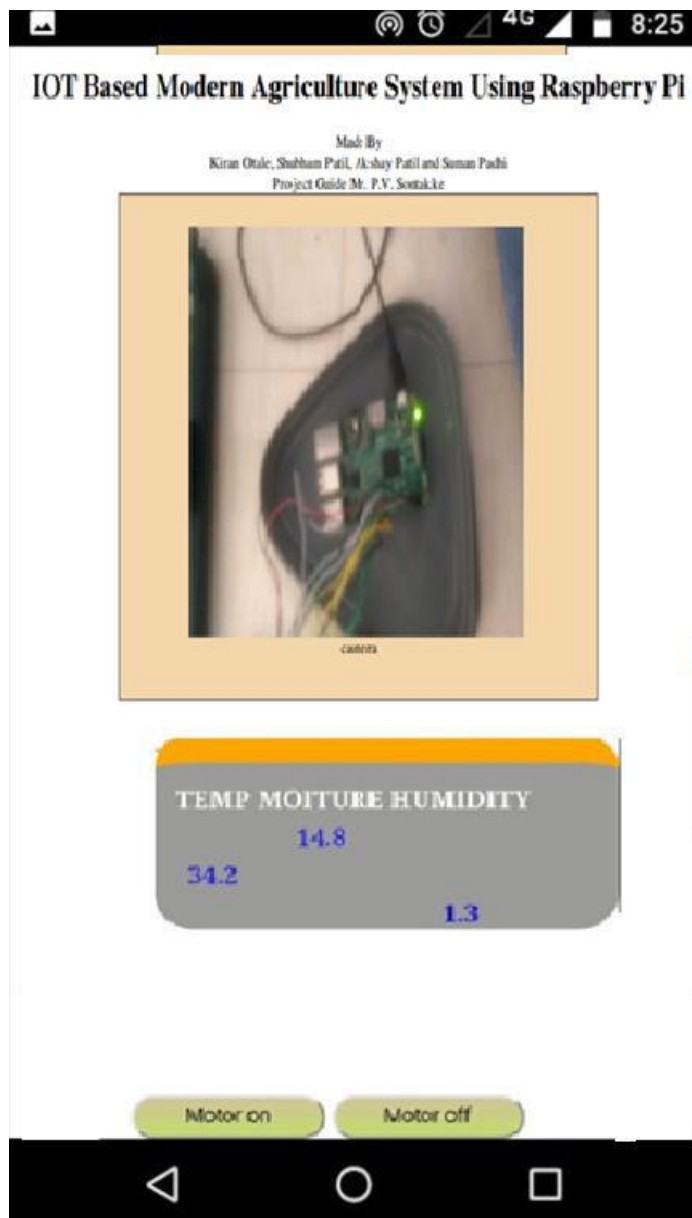
4. HARDWARE SPECIFICATION

4.1. Raspberry Pi

- The recommended input voltage is 5V, and the recommended input current is 2A. At ModMyPi, Our standard power supply for the Raspberry Pi is 5.25V @ 2A.
- Broadcom BCM2837 64bit ARMv7 Quad Core Processor powered Single Board Computer Running at 1.2GHz
- 1GB RAM.
- BCM43143 Wi-Fi on board.
- Bluetooth Low Energy (BLE) on board.
- 40pin extended GPIO.

- 4 x USB 2 ports.
- 4 pole Stereo output and Composite video port.
- Full size HDMI.
- CSI camera port for connecting the Raspberry Pi camera.
- DSI display port for connecting the Raspberry Pi touch screen display.
- Micro SD port for loading your operating system and storing data.
- Upgraded switched Micro USB power source (now supports up to 2.4 Amps).
- Expected to have the same form factor has the Pi 2 Model B, however the LEDs will change Position.

5. OUTLOOK



6. CONCLUSION

In this system we have presented the new innovative irrigation system. This system comprises the live streaming of crops using android phones and automatic water motor on/off system; these two systems make the irrigation fully automatic. The automatic irrigation scheme that determination remain applied would remain possible and price actual aimed at enhancing aquatic capitals aimed at farming manufacture. The scheme would deliver response regulator scheme which determination screen and regulator altogether the actions of drop irrigation scheme professionally. The whole scheme is checked and skillful by the control filled praise postcard sized micro called Raspberry Pi.

7. REFERENCES

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