Smart Agriculture by Using IoT

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Abstract: In olden Days Farmers used to figure the ripeness of soil and influenced suspicions to develop which to kind of yield. They didn't think about the humidity, level of water and especially climate condition which terrible a farmer increasingly The Internet of things (IOT) is remodelling the agribusiness empowering the agriculturists through the extensive range of strategies, for example, accuracy as well as practical farming to deal with challenges in the field. IOT modernization helps in assembly information on circumstances like climate, dampness, temperature and fruitfulness of soil, Crop web based examination empowers discovery of wild plant, level of water, bug location, creature interruption in to the field, trim development, horticulture. IOT utilize farmers to get related with his residence from wherever and at whatever point. Remote sensor structures are utilized for watching the homestead conditions and tinier scale controllers are utilized to control and mechanize the home shapes. To see remotely the conditions as picture and video, remote cameras have been used. IOT development can diminish the cost and update the productivity of standard developing.

Keywords: Arduino, Lcd, Relay, Transformer, Bridge Rectifier, Moisture Measurement, Level Measurement using probe, Nodemcu

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I.INTRODUCTION

The Agriculture Parameters are utilizing an IOT Technology and system availability that draw in these objects to assemble and deal information. "The IOT enables things selected recognized or potentially forced remotely crosswise over completed the process of existing configuration, manufacture open gateways for all the additional obvious merge of the substantial earth into PC based frameworks, in addition to acknowledging overhauled capacity, precision and cash interconnected favoured stance. Precisely when IOT is extended with sensors and actuators, the improvement modify into an occasion of the all the extra wide category of electronic physical structures, which in like manner incorporates headways, for instance, clever grids, splendid homes, canny moving and smart urban groups [1]. All is especially specific through its introduced figuring configuration anyway can interoperate within the current Internet establishment.

2. SYSTEM ANALYSIS

2.1 EXISTING SYSTEM

Horticulture is the foundation of our Nation. In long time past days agriculturists used to figure the ripeness of soil and influenced presumptions to develop which to kind of product. They didn't think about the dampness,level of water and especially climate condition which horrible an agriculturist more. They utilize pesticides in view of a few suspicions which made lead a genuine impact to the yield if the supposition isn't right .The profitability relies upon the last phase of the harvest on which agriculturist depends.

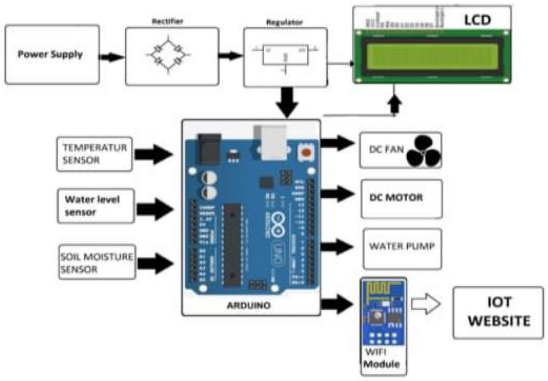
2.2 PROPOSED SYSTEM

To improve the efficiency of the product there by supporting both rancher and country we need to utilize the innovation which appraises the nature of harvest and giving recommendations. The Internet of things (IOT) is revamping the agribusiness engaging the farmers by the broad assortment of techniques, for instance, accuracy and conservative cultivation to go up against challenges in the field. IOT advancement aids in social affair information on conditions like atmosphere, temperature and productivity of soil, harvest web watching engages area of weed, level of water, bug acknowledgment, animal interference in to the field, alter improvement, cultivation . IOT utilize farmers to get related with his residence from wherever and at whatever point. Remote sensor frameworks are used for checking the farm conditions and little scale controllers are used to control and robotize the property shapes.

2.3 ADVANTAGES OF PROPOSED SYSTEM

- Increases the growth rate.
- Uses little energy and saves too.
- IoT produces healthier and happier plants.
- Provides controlled environment agriculture(CEA).
- Used in the applications of green house agriculture, vertical farming etc.

3. ARCHITECTURE DIAGRAM



3.1 HARDWARE REQUIREMENT

- Microcontroller(Arduino)
- Relay
- Lcd
- Temperature sensor
- Humidity
- Soil moisture
- LDR
- IOT

3.2 SOFTWARE REQUIREMENT

- Ardunio Ide
- Embedded C

4. SOFTWARE PLATFORM

NODEMCU:

Development Board NodeMCU is an Open Source Firmware Development Board that helps to mainly build IoT projects with the help of few LUA Scripts. Usually the development board consists of a pre-loaded LUA scripting language, but it is also compatible with Arduino IDE and can be programmed in a fashion similar to that of Arduino. It is analogous to Arduino Hardware with a built in Input / Output pins, it possesses a chip with built in Wi-Fi that enables direct connectivity to internet, thereby facilitating easy control of things from online. It accelerates the Internet of Things projects by providing simplistic and easy development environment for the programmers. The Development Board is based on ESP8266 Chip, integrated GPIO (General Purpose Input Output), PWM (Pulse with Modulation), IIC (Interconnected Integrated Circuit), and ADC (Analog to Digital Converter). It supports a wide variety of libraries, including those for HTTP, UDP, MQTT, and normal GPIO controls. 1.3.2 ESP8266 The ESP8266 chip is the primary component of the development board, it works on 3V logic. It is the chip that is chiefly responsible for the board's ability to connect to Wi-Fi. The early models possess a self-contained System on Chip, and a full TCP/IP stack thereby providing any microcontroller connected to it, the ability to access the Wi-Fi networks. Owing to the technological developments, the recent models have microcontroller ability integrated with the Wi-Fi chip. It has a powerful on-board processing unit and the storage capability is sound enough to allow integration with sensors and other applications via the GPIO pins.

Features

- 32-pin QFN package
- Integrated RF switch, 24dBm PA, DCXO, and PMU
- Integrated RISC processor, on-chip memory and external memory interfaces
- Integrated MAC/baseband processors
- Quality of Service management
- I2S interface for high fidelity audio applications
- Integrated WEP, TKIP, AES, and WAPI 1.3.2.2 Specifications
- 802.11 b/g/n
- Wi-Fi Direct (P2P), SoftAP
- integrated TCP/IP protocol stack
- Integrated T/R switch, LNA, power amplifier and matching network Integrated PLLs, regulators, DCXO and power management units
- +19.5dBm output power in 802.11b mode
- Power down leakage current of <10uA
- Integrated low power 32-bit CPU could be used as application processor SDIO 1.1/2.0, SPI, UART
- STBC, 1×1 MIMO, 2×1 MIMO

5. FUTURE ENHANCEMENT

By further enhancement of this project farmers can bring large areas of land under cultivation. Only the exact amount of fungicide and pesticide can be used. The system can further been improved by incorporating new self-learning techniques which could deployed in the cloud to understand the behavior of the sensing data and can take autonomous decisions. The other problem farmers are facing is the crop destruction by the wild animals. So the future work include the design of the system that may monitor the farm by installing sensors at the boundary of farm and camera module which may take a snapshot once the sensor detects the entrance and transmit the real time pictures by integrating it with other information.

6. CONCLUSION

Agriculture are gradually being replaced and enhanced by more sophisticated and accurate digital and electronic device. A high percentage of agriculture revenue is lost to power loss, incorrect methods of practicing. This is reduced by the use of smart sensors. The proposal is to perform the agriculture in smart and more efficient way. In addition, this method advocates

for the use of the Internet of Things.Internet of Things has enabled the agriculture crop monitoring easy and efficient to enhance the productivity of the crop and hence profits for the farmer. Sensors of different types are used to collect the information of crop conditions and environmental changes and this information is transmitted through network to the farmer/devices that initiates corrective actions. Farmers are connected and aware of the conditions of the agricultural field at anytime and anywhere in the world.

REFERENCES

1. K.lakshmisudha, swathi hegde, neha cole, shruti iyer, " good particularity most stationed cultivation spinning sensors", state-of-theart weekly going from microcomputer applications (0975-8887), number 146-no.11, july 2011
2. Nikesh gondchawar, dr. 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. Overall Journal on Recent and Innovation Trends in Computing and Communication ISSN: 2321- 8169 Volume: 5 Issue: 2 177 – 181
3. 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
4. Lustiness. r. nandurkar, slant. r. thool, r. tumor. thool, "plan together with situation coming from rigor horticulture technique executing trans-missions sensor network", ieee world consultation toward telemechanics, regulate, intensity also wiring (aces), 2014. Development (TIAR 2015).
5. Paparao Nalajala, D. Hemanth Kumar, P. Ramesh and Bhavana Godavarthi, 2017. Design and Implementation of Modern Automated Real Time Monitoring System for Agriculture using Internet of Things (IoT). Journal of Engineering and Applied Sciences, 12: 9389- 9393.