



Solar and IoT Based Weather Monitoring System

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ABSTRACT

The Internet Web of Things features a vision in which the web amplifies into the genuine world, which consolidates regular objects. The IoT permits objects to be detected or controlled remotely over existing organize framework o, making openings for immaculate integration of the physical world into computer-based frameworks, and coming about in madestrides effectiveness, precision and financial advantage in expansion to diminished human intercession. This innovation has numerous applications like Sun powered cities, Savvy towns, Miniaturized scale lattices and Sun oriented Road lights and so on. The point / objective of this paper is to propose a Novel Shrewd IoT based Agriculture Stick helping agriculturists in getting Live Information (Temperature, soil dampness) for proficient environment monitoring which can empower them to do can savvy cultivating and increment their by and large surrender and quality of products.

Key words: IoT, monitoring, Weather Monitoring System

INTRODUCTION

The another time of Savvy Computing will be totally based on Web of Things (IoT). Web of Things (IoT), these days is playing a vital part of transforming “Traditional Technology” from homes to workplaces to “Next Era Everywhere Computing”. These days, the quality and adaptability of IoT has been changed and nowadays it is being utilized indeed by ordinary client. From the point of ordinary client, IoT has laid the foundation of improvement of different items like smart living, e-health administrations, computerization and even smart instruction. And from commercial point of view, IoT these days is being utilized in business management, fabricating, intelligent transportation and indeed farming One of primary regions where IoT based investigate is going on and unused items are propelling on everyday premise to form the exercises more astute and efficient towards superior generation is “Agriculture”. Agriculture segment is respected as the more crucial sector universally for guaranteeing nourishment security. IoT based rural meeting innovation makes tall esteem in terms of quality and expanded generation additionally of decreases burden on farmers in adequate way. The objective of this term paper is to propose IoT Based Savvy Adhere which can empower ranchers to have live information of soil dampness, environment temperature at exceptionally moo taken a toll so that live monitoring can be done.

RELATED WORKS

Internet of Things- Concept & Definition Internet of things (IoT) comprises of two words- Web and Things. The term “Things” in IoT alludes to different IoT devices having interesting characters and have capabilities to perform inaccessible detecting, inciting and live live checking of certain sorts of information. IoT devices are too empowered to have live trade of information with other associated gadgets and applications either directly or by implication, or collect information from other devices and prepare the information and send the information to various servers. The other term

“Internet” is defined as Worldwide Communication organize connecting trillions of computers over the planet enabling sharing of data.

A perfect IoT gadget comprises of various interfaces for making network to other devices which can either be wired or wireless. Any IoT based gadget comprises of following components:

- I/O interface for Sensors.
- Interface for connecting to Internet.
- Interface for Memory and Storage
- Interface for Audio/Video

SYSTEM ARCHITECTURE

The implemented system consists of a main block NODEMCU and sensors are connected to the NODEMCU. NODEMCU collects the information from different sensor, then its send a data to Web Server.

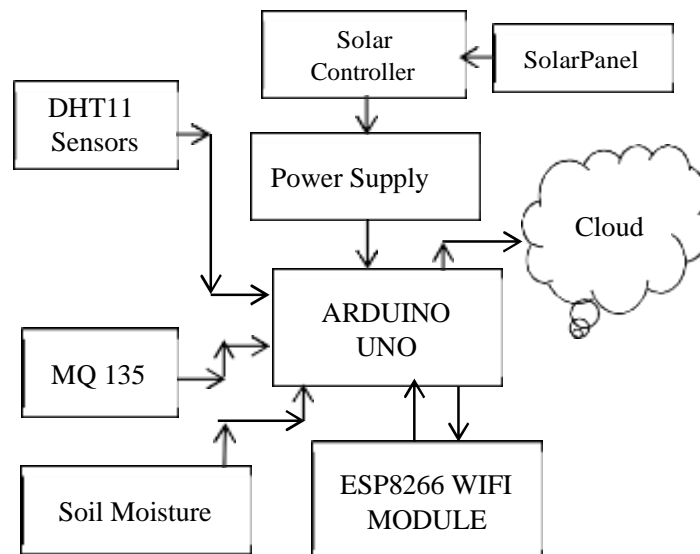


Fig. 1 Block Diagram of Solar and IoT Based Weather monitoring system

IMPLEMENTATION SETUP

A. Components required: Hardware

- 1) ARDUINO UNO
- 2) DHT11Sensor
- 3) Soil Moisture
- 4) ESP8266
- 5) WIFI Module

B. Components required:Software

- 1) ARDUINOIDE
- 2) XAMPP Server
- 3) PHPLanguage

- 1) ARDUINO UNO

Arduino Mega 2560 is planned for developing Arduino based robots and doing 3D printing technology based inquire about. **Arduino Uno** is a microcontroller board based on the ATmega328P. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator (CSTCE16M0V53-R0), a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.



Fig. 2 ARDUINO UNO

2) DHT11Sensor

It senses the temperature of the surrounding. It's a 4-pin device. We should connect a 10k resistor between pin 1 and pin 2. Pin1 is connected to the 3.3V. Pin 4 is connected to GND. Pin 2 is the output pin which gives input to the NODEMCU pin D4. Pin 3 is left empty. It consists of a humidity sensing component, a NTC temperature sensor and a IC on a backside of the sensor.



Fig. 3 DhT 11 sensor

3) Soil Moisture Sensor

It has two probes and it allow current to pass through soil when it gets the resistance value to measure the moisture content in the soil. If the water is more it conducts higher electricity and lesser resistance and the moisture level is higher.



Fig. 4 Soil moisture sensor

4) Solar Panel

A solar cell panel, solar electric panel, photo-voltaic (PV) module or solar panel (PV) is an assembly of photo-voltaic cells mounted in a framework for installation. Solar panels use sunlight as a source of energy to generate direct current electricity. A collection of PV modules is called a PV panel, and a system of PV panels is called an array. Arrays of a photovoltaic systemsupply solar electricity to electrical equipment.



Fig. 5 Solar Panel

5) XAMPP server:

XAMPP is a completely free, easy to install Apache distribution containing Maria DB, PHP, and Perl. The XAMPP open source package has been setup to be incredibly easy to install and to use. XAMPP is a compilation of that is published under GPL. Please check every single license of the contained products to get an overview of what free software (comparable to a Linux distribution), it's free of charge and it's free to copy under the terms of the GNU General Public License. But it is only the compilation of XAMPP is, and what isn't, allowed. In the case of commercial use please take a look at the product licenses (especially MySQL), from the XAMPP point of view commercial use is also free.

EXPECTED RESULT

After sensing the data from different sensor devices, which are placed in particular area of interest. The sensed data will be automatically sent to the web server, when a proper connection is established with server device.

FUTURE SCOPE

Future work would be centered more on increasing sensors on this adhere to bring more information especially with respect to Bug Control and by too integrating GPS module in this IoT Adhere to improve this agriculture IoT Innovation to full-fledged agriculture exactness prepared item.

CONCLUSION

In this Term Paper, a Novel Savvy Farming Enabled: IoT Based Farming Adhere for Live Monitoring of Temperature and Soil Dampness has been proposed utilizing Arduino, Cloud Computing and Solar Innovation. The adhere has tall proficiency and accuracy in getting the live information of temperature and soil dampness.

The Agribusiness adhere being proposed via this paper will help agriculturists in expanding the agriculture surrender and take proficient care of food production as the adhere will continuously give helping hand to agriculturists for getting precise live nourish of environmental temperature and soil dampness with more than 99% exact comes about.

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