

Smart Iot Based Automation To Save Crops

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Abstract- The main theme of this project is to prevent the crops from the heavy rain and save the rain water. The rain sensor is used for the working of the automatic roof. This system protects the crops by the auto roof which covers the whole field. The rain sensor is activated when there is rainfall and gives intimation to the controller and it will indicate to DC motor and it automatically close the roof. In this project, the roof is closed automatically.

Keywords- Arduino Uno Rain sensor, Soil sensor, Stepper motor Stepper motor, Relay

I. INTRODUCTION

As human beings we cannot control the natural phenomenon such as rain, humidity, high temperature, etc. Some of the measures are taken against this environmental hazard but they are performed manually. Here comes the need of automation. Automation greatly decreases then need for human sensory and mental requirements as well. An automation system consisting of a connection between hardware and software has freed the individuals from their day to day chores. In this paper we try to establish new intelligent system which helps to protect the user daily home application and other useful material against environmental impact like rain. In this project we are proposing the system which prevents the spoilage of crops due to heavy rains.

IOT based water supply monitoring and controlling system:

Experts have analysed collected data for finding correlation between environment work and yield for standard work. They are concentrated on crop monitoring, information of temperature and rainfall is collected as initial spatial data and analysed to reduce the crop losses and to improve the crop production. An IOT Based Crop-field monitoring an irrigation automation system explains to monitor a crop field. A system is developed by using sensors and according to the decision from a server based on sensed data, the irrigation system automated. By using wireless transmission the sensed data forwarded towards to web server database.

Wireless Disaster Monitoring and Management System for Crops:

This paper suggests architecture to control gate by monitoring high density and then communicate in real time. Considering the recent events that took place on June 2013, a destructible situation has taken place due to heavy rainfall and cloud bursting at various places. Many dams were out of knowledge on various parameters about the flow and discharge from the nearer dams which were affected earlier and due to lack of communication among these dams, lead to considerable damage of property and life.

II. LITERATURE SURVEY

Survey played a very vital role in this project, we analyzed the existing products for protection of vehicles and clothes during rain, there were many demerits which we noticed during the survey, some of them are the existing products are to be operated manually, and if incase there's no one in the home to operate the switch then the clothes easily get wet and the product will be of no use, and secondly if there's a disabled person in the house then he/she will not be able to operate the system and this kind of system needs knowledge regarding the operation.

III. EXISTING SYSTEM

The green house technology in agricultural engineering (cultivation, drying and space heating). The greenhouse can provide control environment for high value crops like medical plants, flowers etc

Crops grown inside the greenhouse are healthy and give better results. But not all crops require protection from temperature, rainfall etc. Few crops need high temperature, more water (rainfall) etc. so new updation is required to fulfil this need.



IV. PROPOSED SYSTEM

The newly proposed system, there is utter necessity to sense the rain is very important else the hard yarned crop yield will be destroyed which is a tremendous loss to the former. To avoid this condition, sensing the parameters are done through the rain sensor.

The sensed data is sent to the microcontroller, which is pre-programmed according to the requirement. The data collected from the sensor is processed and relevant action is taken. The microcontroller is instructed to control the DC motor which is used to cover the crop roof. As soon as rain is detected, the motor is activated by the microcontroller and the protective cover is covered on the rooftop of the crop.

Components for the component module:

1. Arduino UNO
2. Rain Sensor
3. Soil Sensor
4. Stepper Motor
5. Relay
6. Motor Driver.
7. Node MCU

ARDUINO UNO:

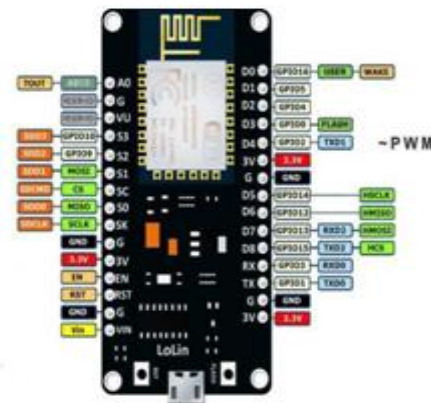
The Arduino UNO is frequently used microcontroller board in the family of an Arduino. The main advantage of this board is if we make a mistake we make a mistake we can change the microcontroller on the board.



NODE MCU

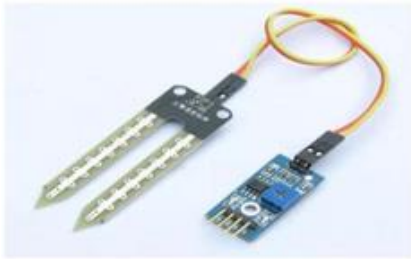
The NodeMCU ESP8266 development board comes with the ESP-12E module containing ESP8266 chip having Tensilia Xtensa 32-bit LX106 RISC microprocessor. This microprocessor RTOS and operates at 80MHz to 160MHz adjustable clock frequency. NodeMCU has 128KB RAM and 4MB of flash memory to store data and programs. Its high processing power with in-built Wi-Fi / Bluetooth and Deep Sleep Operating features make it ideal for IoT projects.

NodeMCU can be powered using Micro USB jack and VIN pin (External Supply Pin). It supports UART, SPI and I2C interface.



SOIL SENSOR:

Soil moisture sensors measure the volumetric [water](#) content in soil. Since the direct [gravimetric measurement](#) of free soil moisture requires removing, drying, and weighing of a sample, soil moisture sensors measure the volumetric water content indirectly by using some other property of the soil, such as electrical resistance, dielectric constant, or interaction with [neutrons](#), as a proxy for the moisture content.



STEPPER MOTOR

A stepper motor, also known as stepper motor or stepping, is a brushless DC electric motor that divides a full rotation into a number of equal steps. The motor's position can then be commanded to hold at one of these steps without any position sensor for feedback (an open-loop controller), as long as the motor is carefully sized to the application in respect to torque and speed.



RELAY:

This module contains two relays that are electrically isolated from the controlling input. The relays can be switch higher voltage and current loads than a microcontroller can traditionally accomplish.



MOTOR DRIVER:

The most commonly used actuator in any electronic device/machine will be motors next to solenoids, pneumatics and hydraulics. From a simple vibration motor inside a mobile phone to complex [stepper motors](#) in CNC machines, these DC machines can be found everywhere. To control a motor using

a [Microcontroller](#) or processors we need something called a Motor Driver or Motor Controller.



RAIN SENSOR:

A water sensor or rain switch is a switching device activated by rainfall. There are two main applications for rain sensors. The first is a water conservation device connected to an automatic irrigation system that causes the system to shut down in the event of rainfall. The second is a device used to protect the interior of an automobile from rain and to support the automatic mode of windscreen wipers.

V. WORKING WITH BLINK APP

CREATE A BLYNK ACCOUNT:

After you download the Blynk App, you'll need to create a New Blynk account. This account is separate from the accounts used for the Blynk Forums, in case you already have one. We recommend using a **real** email address because it will simplify things later.

CREATE A NEW PROJECT:

After you've successfully logged into your account, start by creating a new project.

CHOOSE YOUR HARDWARE:

Select the hardware model you will use. Check out the list of supported hardware.

TOKEN:

Auth Token is a unique identifier which is needed to connect your hardware to your smartphone. Every new project you create will have its own Auth Token.

ADD A WIDGET:

Your project canvas is empty, let's add a button to control our LED. Tap anywhere on the canvas to open the widget box. All the available widgets are located here. Now pick a button.

RUN THE PROJECT:

When you are done with the Settings - press the PLAY button. This will switch you from EDIT mode to PLAY mode where you can interact with the hardware. While in PLAY mode, you won't be able to drag or set up new widgets, press STOP and get back to EDIT mode.

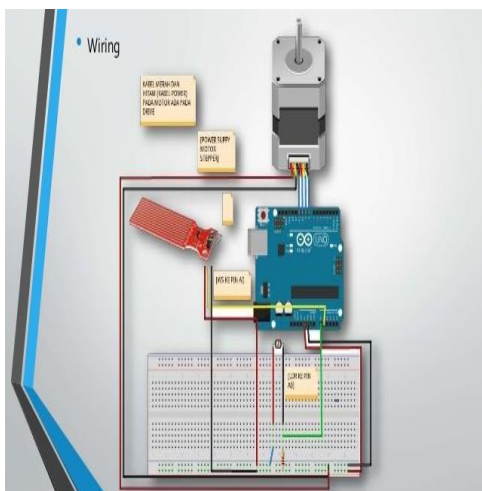
You will get a message saying "Arduino UNO is offline". We'll deal with that in the next section.

VI. CONCLUSION

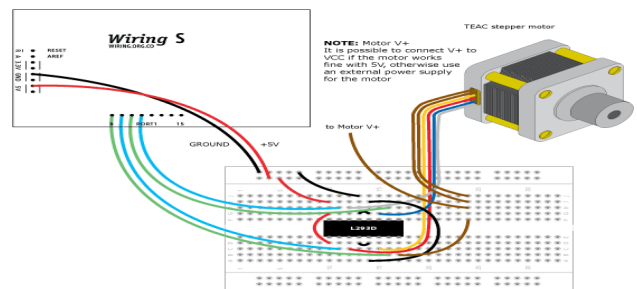
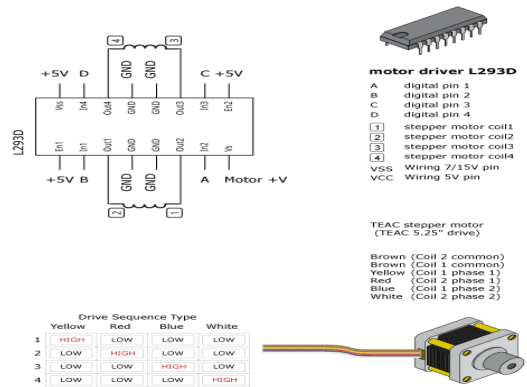
This GSM based agriculture monitoring system serves as a reliable and efficient system for monitoring agricultural parameters. The corrective action can be taken and reduce the human power, but it also allows user to see accurate changes in it. To develop and implement a system which protects the vehicles, clothes, small scale agricultural crops, etc automatically by detecting rain without the need of human beings. This project entitled smart protection against environmental impact is small step towards the comfort ability and save our time. By considering above views, which encourage us to choose such a project. To design a smart system to prevent the hazards caused due to rain using sensors and arduino microcontroller. To develop electromechanical system to perform automatic roof mechanisms as rains detected using rainsensors.

VII. RESULTS

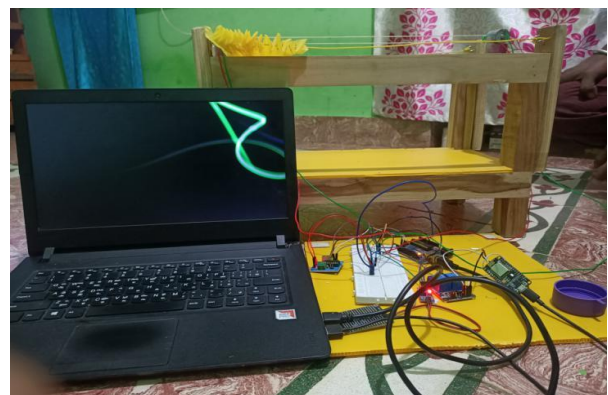
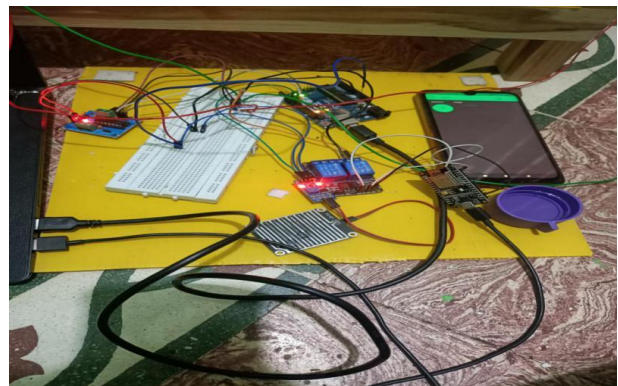
COMPONENT MODULE



Setup of Rain Sensor



Motor Setup Mechanism





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