

Intelligent Crop Monitoring System using IoT

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ABSTRACT- This project suggests a developing weather noticing system for confirming information about the outside using GSM Network development. Through GSM-based environmental and soil sensors, the proposed country climate noting server system gathers normal and soil information outside. In this venture we are involving sensors as soil dampness sensor, temperature and mugginess sensor, light sensor, co2 sensor and strain sensor, gas sensor. The field uses these sensors to help it manage the water level. In this case, we are using GSM's remote sensor network (worldwide framework for portable correspondence).

Index Terms- Arduino Board, Barometric Pressure Sensor, GAS Sensor, GSM Modem, LCD 16x2, LDR Sensor. Soil Moisture Sensor, Temperature & Humidity Sensor.

I.

INTRODUCTION

Shrewd agribusiness observing framework or basically brilliant cultivating is an arising innovation idea where information from a few horticultural fields going from little to huge scope and its encompassing are gathered utilizing savvy electronic sensors. The gathered information is examined by specialists and nearby ranchers to draw present moment and long-haul end on weather condition, soil fruitfulness, ebb and flow nature of yields, measure of water that will be expected for the following week to a month and so on. We can make shrewd cultivating a stride further via mechanizing a few pieces of cultivating, for instance savvy water system and water the board. We can apply prescient calculations on microcontrollers or SoC to work out how much water that will be required today for a specific horticulture field. Express, assuming that there was downpour yesterday and the amount of water required today will be less. Likewise in the event that dampness was high the dissipation of water at upper ground level will be less, so water required will be not exactly ordinary, in this way diminishing water use.

IOT is here to lessen the difficult work engaged with gathering this urgent agrarian information. On the off chance that physical work is involved, we need to convey a few a great many faculty to various horticultural destinations to gather the monotonous readings each and every day and there will be no confirmation in the information respectability since we the people we might get idle and may control the information which could push the master ends in the misguided course. Utilizing IoT [13-44] we can straightforwardly send the gathered information to a focal server progressively. Since we have robotized the data assortment, the information honesty is guaranteed and since the information handling is finished utilizing PCs, specialists might get progressed logical programming instruments to draw the most exact forecasts.

II.

RESEARCH ELABORATIONS

This venture presents for Smart Agriculture to foster a continuous observing framework for soil properties like Temperature, Humidity, and dampness crop yield distinguishing proof utilizing SMS-based Alerts. Additionally, using a portable device or a web application, it will be possible to oversee various field operations from a distance at any time and from any location. The IOT-based horticultural checking framework has been utilized to augment the yield of harvest by observing the natural boundaries and consequently giving the necessary data to ranchers from a distance.

i. ALGORITHM

Smart Agriculture Monitoring System using IOT algorithms is helpful in understanding the model in detail. The step-by-step algorithm can be seen below:

Step-1: Start

Step-2: Measure Agriculture field temperature and humidity, air quality, soil moisture, sun light and atmospheric pressure using sensors.

Step-3: Monitor the measured data of agriculture crops on GSM mobile phone.

Step-4: Display measured data on LCD.

Step-5: End

ii. FLOW CHART

The stream chart to control the robot vehicle with an Android-based versatile application:

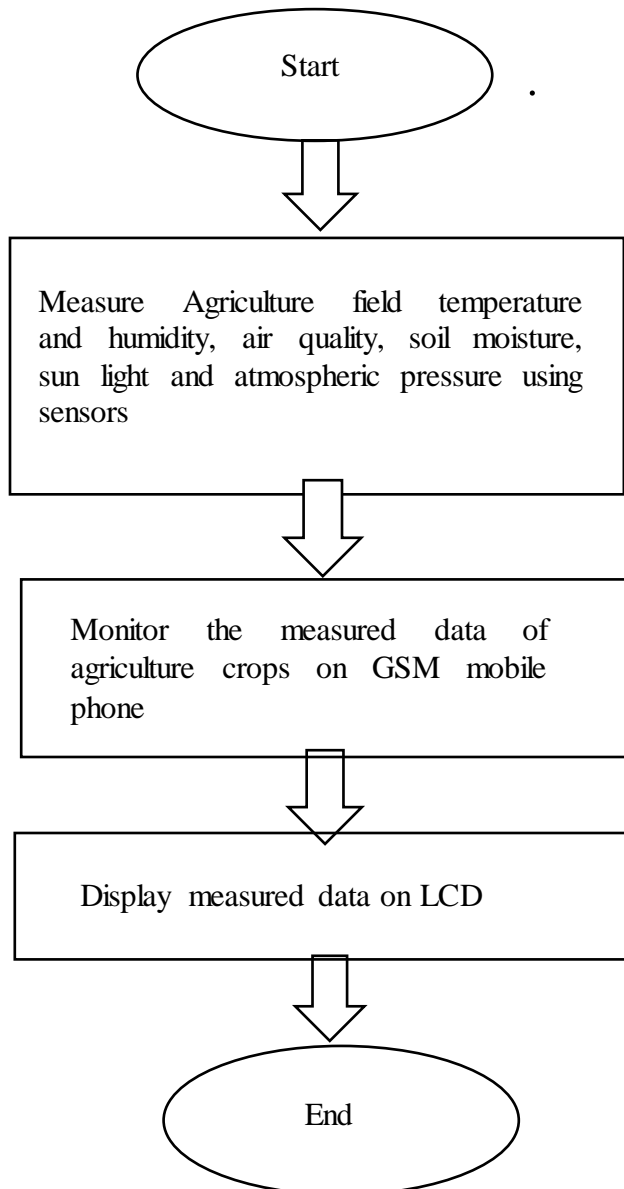


Figure 1: Flow Chart of the system

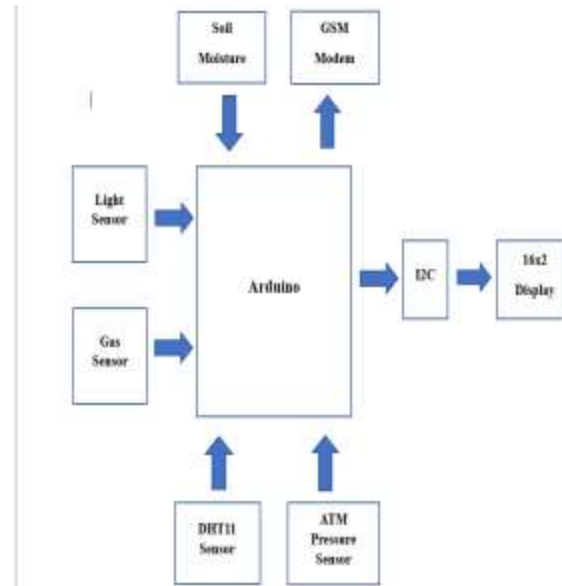
iii. BLOCK DIAGRAM

Figure 2: Block Diagram of the system

Savvy farming is a recently presented idea. A greater part of ranchers and farming specialists are new to this idea. Brilliant agribusiness includes the utilization of shrewd innovations, for example, mechanized machines, sensors, actuators, robots, and surveillance cameras to control and work horticultural terrains and creatures. The rationale is to expand the quality and amount of agrarian merchandise simultaneously remembering the expense and energy use.

iv. METODOLOGY

ARDUINO BOARD: A platform for open-source devices that focuses on easy-to-use hardware and programming is Arduino. Arduino sheets may translate inputs, such as light on a sensor, a finger pressing a button, or a tweet, into outputs, such as starting an engine, turning on an LED, or disseminating information online.

TEMPERATURE & HUMIDITY SENSOR: A basic, extremely affordable computerized temperature and stickiness sensor is the DHT11. It measures the surrounding air using a capacitive moisture sensor and a thermistor and emits an electronic signal on the information pin (no simple information pins are required).

LDR SENSOR: The blockage in a photo resistor, also known as a Light Dependent Resistor or a CdS (Cadmium Sulfide) Cell, decreases with increasing episode light force. It may also be mentioned as a photoconductor.

GAS SENSOR: A gas sensor changes over the parts and convergences of different gases into standard electrical signs by utilizing explicit physical and compound impacts. It has been generally utilized in the location of toxic and hurtful gases and petroleum gas spillage.

SOIL MOISTURE SENSOR: To determine how much water is stored in the soil surface, soil dampness sensors analyse the water content in the soil.

BAROMETRIC PRESSURE SENSOR: A barometric tension sensor is a sensor that recognizes climatic strain. Different kinds of strain sensors exist using various materials and strategies.

GSM MODEM: A GSM module is a chip that will be used to set up communication between a mobile device, such as a phone, and a GSM or GPRS network.

16x2 LCD: A 16x2 LCD has two such lines and can display 16 characters per line.

RESULTS

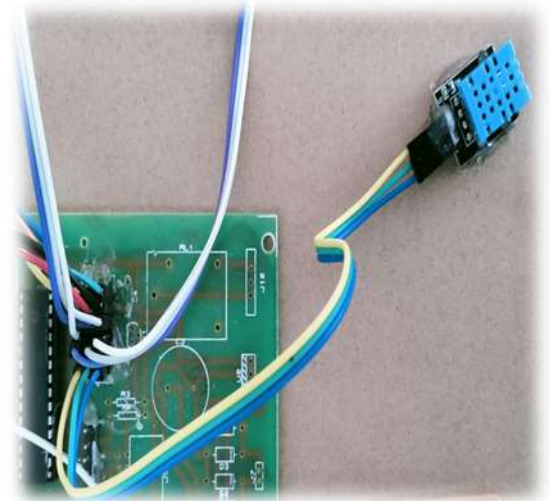
This brilliant farming utilizing the IoT framework is fueled by Arduino, it comprises Temperature and Humidity sensors, Soil Moisture sensors, light sensors, Atmospheric sensors, Gas sensors, and GSM modules. The IOT-based agriculture observation system begins by checking the air quality, moisture content, and UV beam detection. On the phone, SMS warnings are sent regarding the levels.

Soil dampness sensors sense the degree of the water content of the dirt. Assuming the dirt is dry it cautions. In the event t hat the temperature goes over the level, it alarms. In the event that the poisonous gases are distinguished, the gas sensor sends the information through SMS. This everything is shown on the LCD show module. Additionally, the Internet of Things (IoT) displays data on humidity, moisture, and water level together with date and time, according to each instant. Depending on the type of harvests grown, the temperature may be controlled at a particular level.

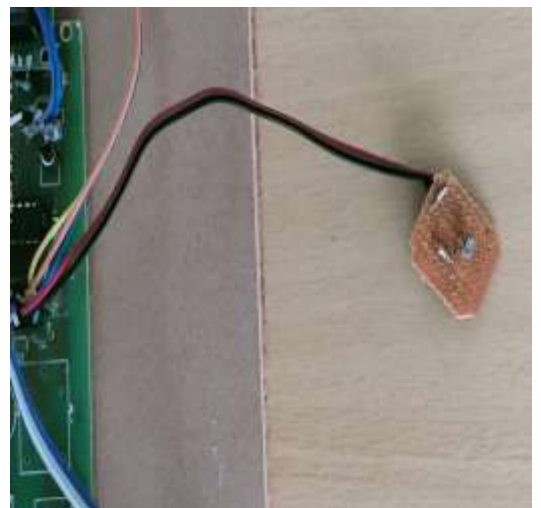
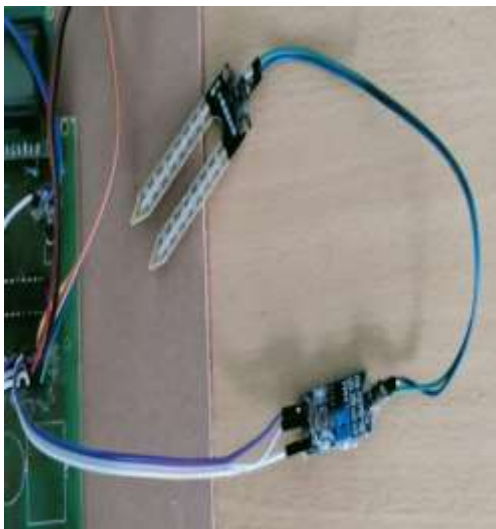
- Components connection:



Card Board

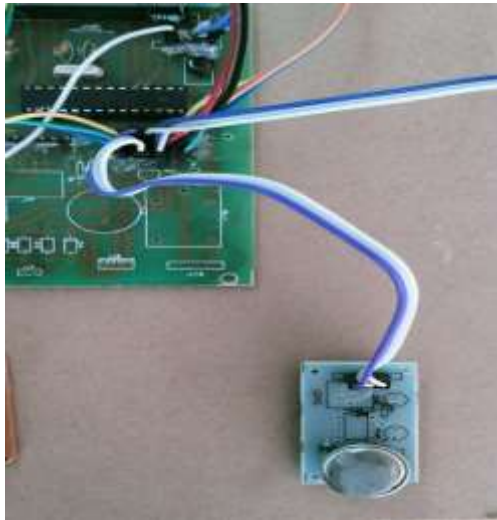


DHT11 sensor connection

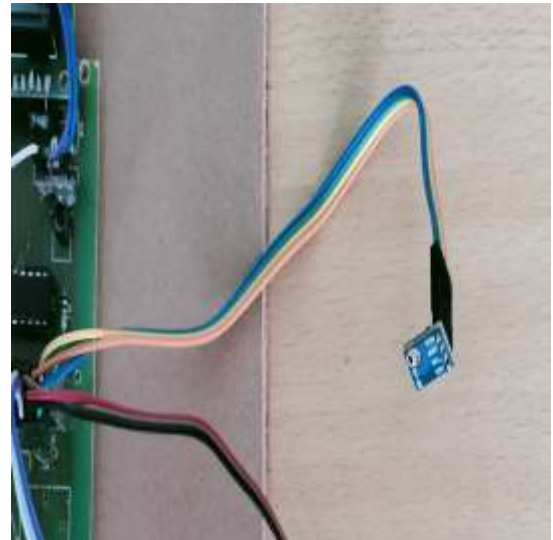


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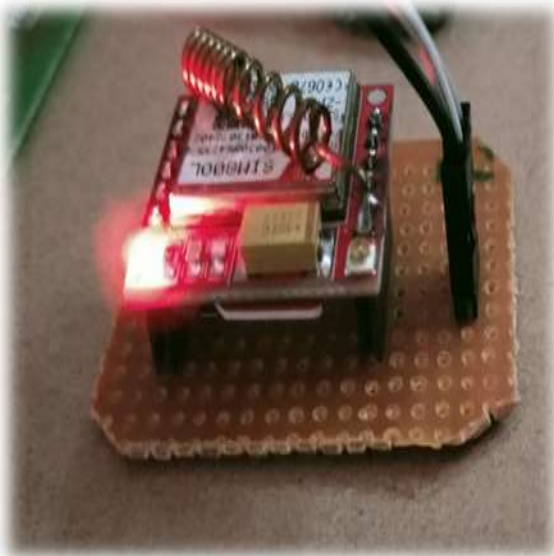
Soil moisture sensor connection



Light sensor connection



Gas sensor connection



Atmospheric pressure sensor

GSM module connection

- The experimental setup of the kit.

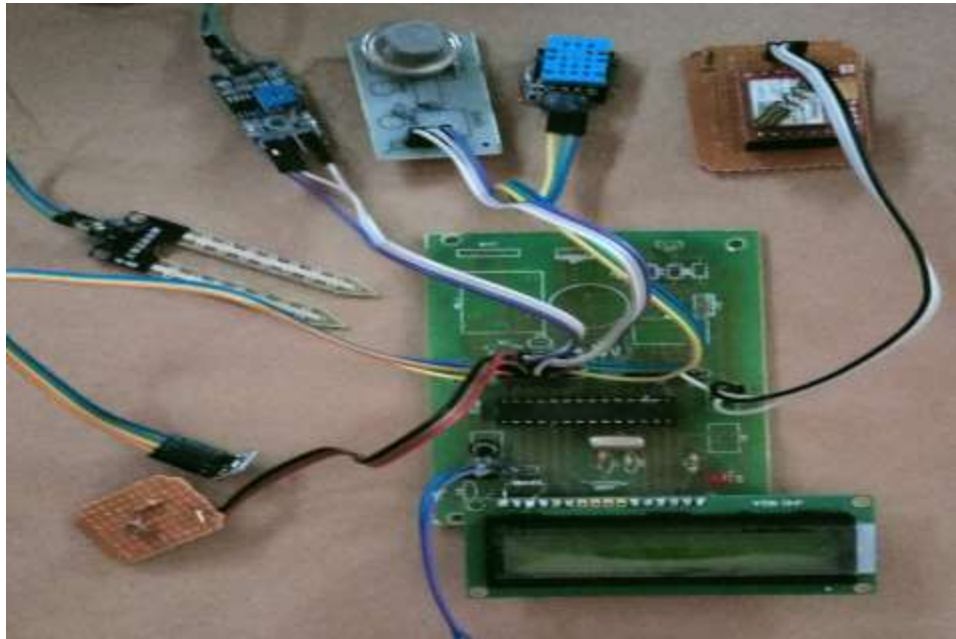


Figure 6: The experimental setup of the kit.

- Project prototype

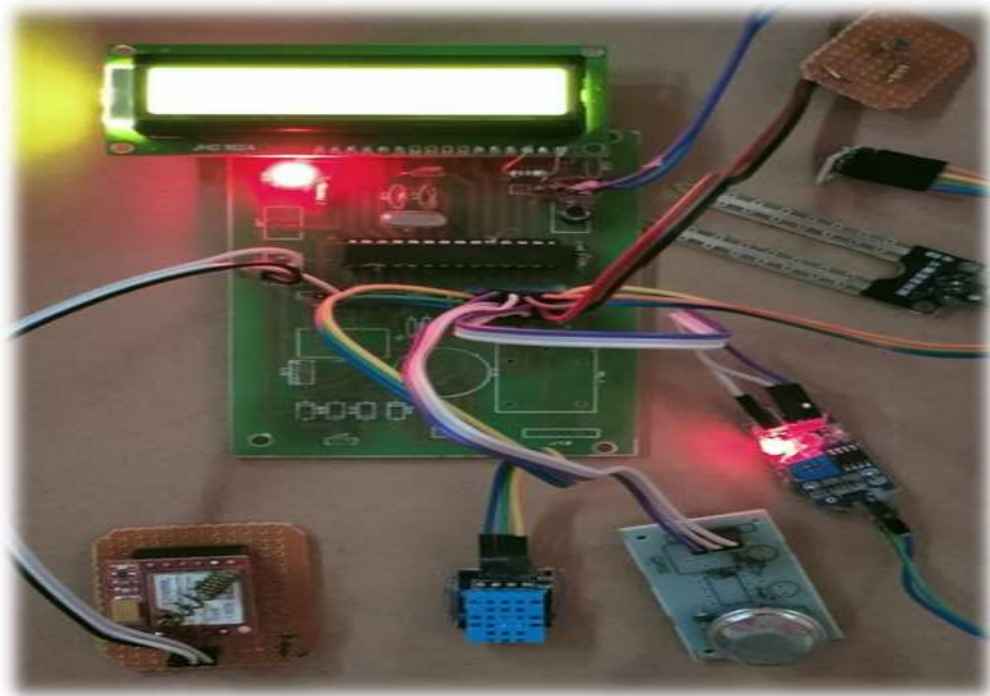


Figure 8: Project prototype

➤ Final Output Values



Figure 9: Final Output Values

➤ Abnormal sensor values alert through SMS to phone



➤ Figure 9: Abnormal sensor values alert through SMS to phone

III.

CONCLUSION

IoT will assist with upgrading savvy cultivating. Utilizing IoT the framework can foresee the dirt dampness level and moistness so the water system framework can be observed and controlled. IoT is used in a variety of horticultural settings to increase time production, water the board, monitor crops, soil executives, and manage bug sprays and pesticides. This framework likewise limits human endeavors, works on methods of cultivating and assists with acquiring brilliant cultivating. Other than the benefits given by this framework, shrewd cultivating can likewise assist with developing the market for rancher with single touch and least exertion..

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