IOT Based AGRICULTURE Control and Irrigation

B_TEAM

Introduction

- The Internet of Things (IoT) has made a revolution in all the fields of human life by making the work be smart and effective.

- The main idea of this paper is to propose the IoT based framework for the farmers by analyzing the live information like (moisture ,temperature) .

- A greenhouse is a building or a house for plant growth. Using IoT modules and web servers, we can make this green house building a smart space.

Motivation

01 *Monitoring of live condition of soil & climate conditions*

02 *Get better yield and seamless management*

03 *Management of crops using sensors*

04 *Adding of fertillizer and irrigating the field in optimum level*

Literature Survey[1]

- Intelligent management is must in the modern world, although energy supply systems tend to be regulated using traditional methods. It also involves workers tracking and collecting consumer data, which leads to human error
- The GSM network uses this dual-way communication system to send SMS through the device interface and send information to user through SMS. Relay and LCD circuits are used to alter and display information such as current, devices, voltage and billing, or sudden GUI power outages for customers
- In the event of a power supply voltage, our system may also send a warning to the energy supplier and automatically shut down the power supply until the power supply voltage has been corrected.

Literature Survey[2]

- **IOT technology has made it digital and interactive and has revolutionized all aspects of human life**

- **The method offers IoT-based smart farm stick that enables farmers to get**
  streaming information's to monitor the environment for smart farming and its
  overall yield and quality
- **The proposed product will be tested with high accuracy to feed data of more than 98% in vibrant agricultural fields**

Problem

- Humidity and temperature control is the key for suceess in farming

- Improper management of humidity and temprature would affect leaf growth, photosynthesis, pollination, occurrence of diseases and finally economic yield.

- In Traditional agriculture methods weather forecasting and rain detection is not possible

Proposed Method

- The purpose of this article is to propose a new agriculture smart IoT device to help farmers to collect live environmental data(temperature, soil moisture) to monitor smart agriculture and increase overall yield

- The Smart Farming Stick dependent on IoT contains the ESP8266 soil temperature and moistness checking framework and moves information to the cloud through the ESP8266 Wi-Fi module to thinkspeak

- This IoT device computes 3 qualities: environment, soil moisture.This would also take into weather,rain update,live crop analysics into consideration

Proposed Method

- Considering three input constrains of soil moisture ,temprature ,weather updates and present condition of crop fertilizers and irrigation pattern is formulated

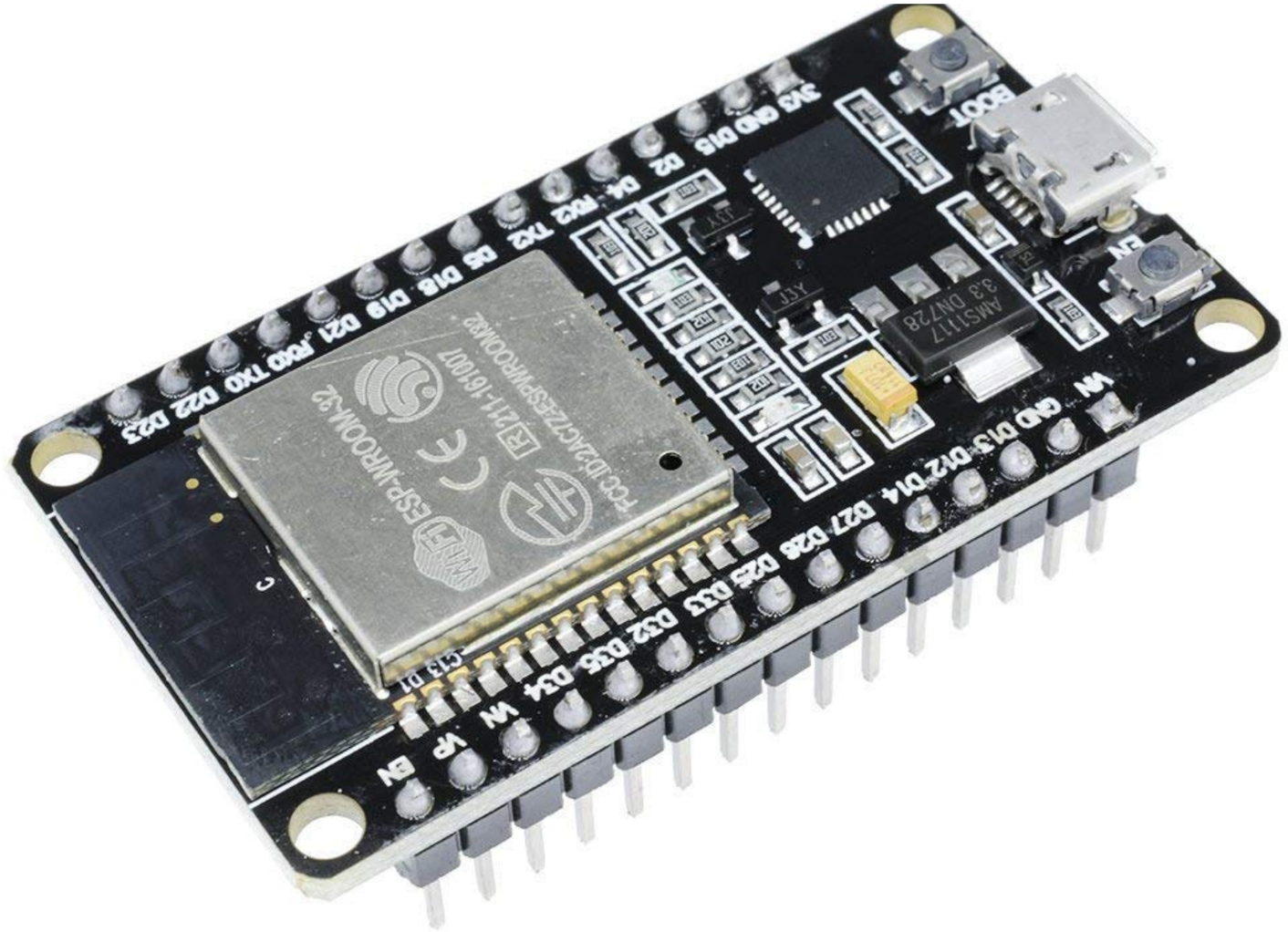
- This would act as a survalience system during night time and analyse the live crop during the morning time

PROPOSED DESIGN

01 *ESP 32 module*

02 *ds18b20 temperature sensor*

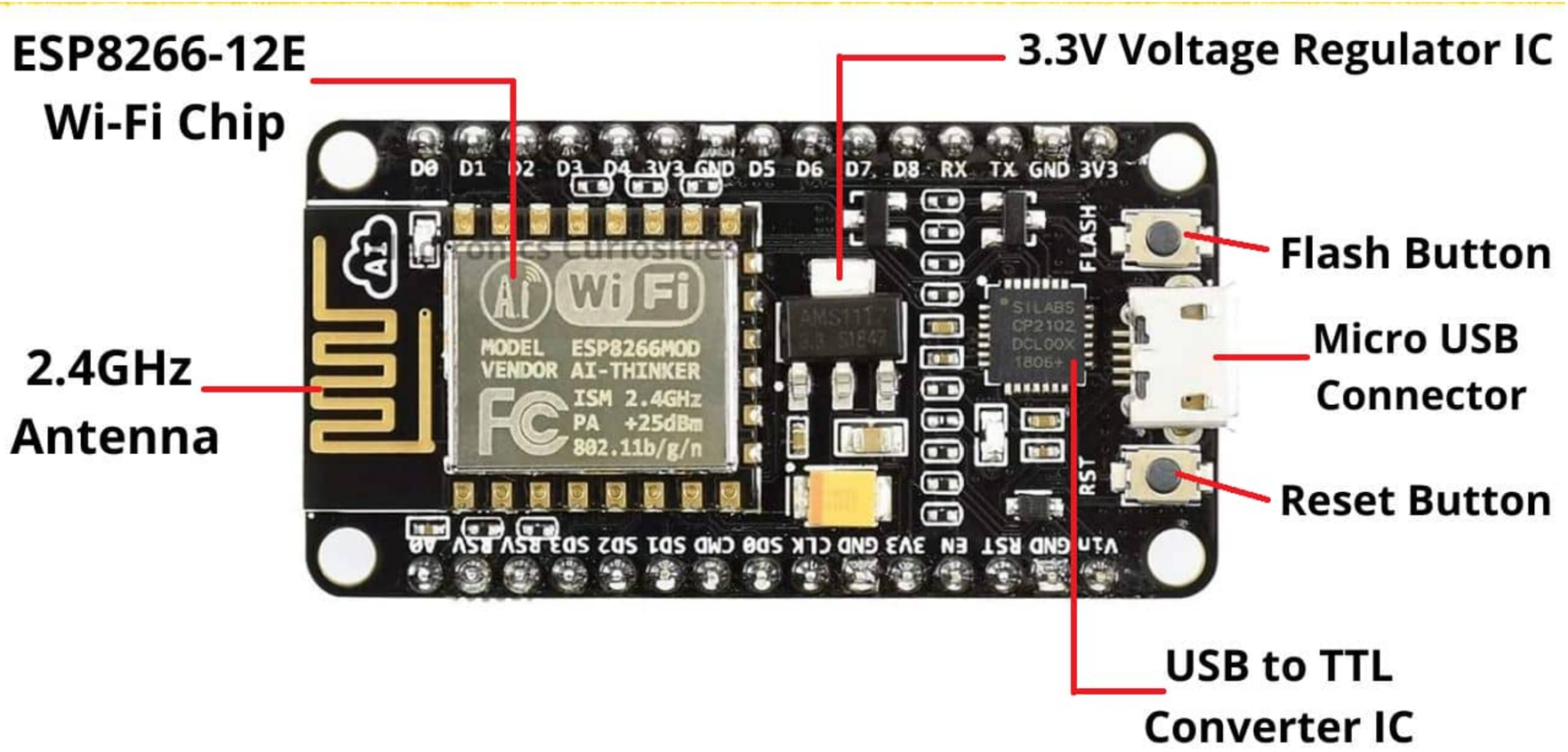
03 *ESP8266 Wi-Fi*



ESP826

6

- *built-in 1 MiB flash memory*
- *connection via Wi-Fi*
- *Open source IoT Platform*



The ESP8266 is a low-cost Wi-Fi microchip, with built-in TCP/IP networking software, and microcontroller capability

DS18B20 Temperature Sensor Module

- *Working Voltage: 3V~5.5V*

Detected Temperature Range: -55°C~+125°C (-67°F~+257°F)

Pins

- *VCC: 3.3V-5V working voltage*
- *DQ : data input/ output pin*
- *GND: ground*

DS18B20 digital temperature sensor works on a single bus and it has 64-bit ROM to store the serial number of component

Soil Moisture Sensor

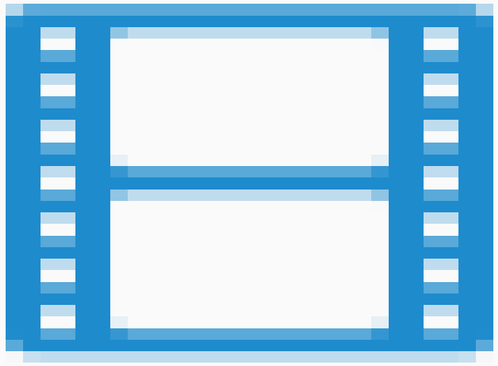
The fork-shaped probe with two exposed conductors, acts as a variable resistor (just like a potentiometer) whose resistance varies according to the water content in the soil.

iot1

```
int LedPin=4;
void setup() {
  // put your setup code here, to run once:
  pinMode(4,OUTPUT);
  pinMode(A0,INPUT);
  Serial.begin(9600);

void loop() {
  // put your main code here, to run repeatedly:
  int moisture=analogRead(A0);
  //digitalWrite(4,HIGH);
  Serial.println(moisture);
  delay(100);
  if(moisture<700)
  {
    digitalWrite(4,HIGH);
    delay(100);
  }


  delay(100);
  if(moisture>1000)
  {
    digitalWrite(4,LOW);
    delay(100);
  }
}
```



Experimental Results and Discussion

- The different components are the following: GPS, Power supply unit, ESP8266, soil moisture, and
  temperature sensor.

- Here, the controller is used to connect all the components connected to the microcontroller.

- The agricultural device is equipped with iot technology and can be accessed through online test boards with various sensors and live data transmissions through Thingsspeak.com. The sensors like temperature, soil moisture with cloud server

Future Scope

This System can be further modified by collecting and combining realtime robot in the feild and undergo ploughing seeding process also

ESP8266 wifi enabled module can be replaced with a specially designed board which would make the system more efficient and economical

CONCLUSION

01

Agriculture stick using IoT will be used to support the farmers to monitor the data like temperature and soil moisture, which results in an increase in food production.

02

The wireless monitoring of the farm using a temperature sensors and humidity sensors can be used to reduce
human power consumption

03

The purpose of this article is to propose a new Smart IoT to help farmers to collect live environmental data to monitor smart agriculture and increase overall yield and product quality

References

01

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02

02

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Thank You