IOT BASED SMART AGRICULTURE SYSTEM

Presented by: A.kumar sai pavan(16030038)
K.venkatesh(160030623)
S.manideep(160031210)
Guide :-C.H.Sai Baba sir(ASST.PROF)

ABSTRACT

- Agriculture plays vital role in the development of economy in the country. In India about 70% of population depends upon farming.

- One of the solution to this problem is smart agriculture by modernizing the current traditional methods of agriculture.

- The highlighting features of this project includes smart control and intelligent decision making based on accurate real time field data.

INTRODUCTION

- Agriculture is considered as the basis of life for the human species as it is the main source of food grains and other raw materials.
- It plays vital role in the growth of country’s economy. It also provides large ample employment opportunities to the people.
- Growth in agricultural sector is necessary for the development of economic condition of the country.
- Unfortunately, many farmers still use the traditional methods of farming which results in low yielding of crops and fruits.
- But wherever automation had been implemented and human beings had been replaced by automatic machineries, the yield has been improved.
- Hence there is need to implement modern science and technology in the agriculture sector for increasing the yield.

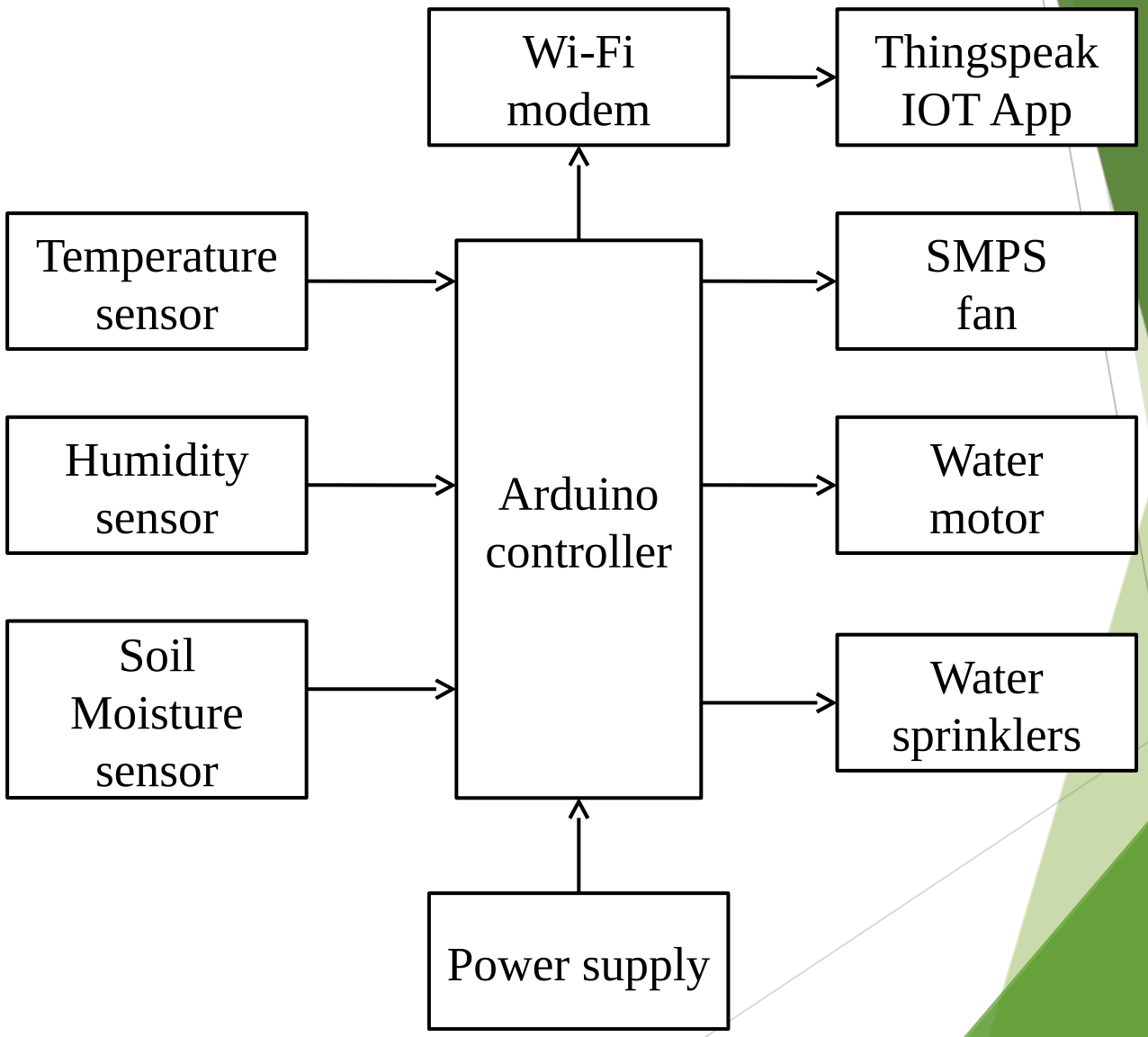
EXISTING SYSTEM

- Everything in the farm is totally dependent on humans. In order to perform operations like ploughing fields, spraying seeds, fertilizers we do require humans.
- Also in order to check the level of water inside the farm humans are required. This is how every activity in a farm is totally dependent on human beings.
- As now we are using motors to turn ON the bore wells or wells in order to send the water to the farm and later we need to turn OFF the motor after checking the availability of water in the farm.
- All these activities truly indicate that humans are essential in a farm.

PROPOSED SYSTEM

- Step 1:- This is the Hardware Equipment of the project. First we initialize the kit by using a toggle switch.
- Step 2:- Dump the code in the **Arduino Uno** module by using the USB port
- Step 3:-make a call to activate the SIM in the circuit board from the number in which the text message should receive
- Step 4:-keep the sensor in a open area to see the room temperature and note the values
- Step 5:-keep the sensors in the soil for knowing moisture value of soil
- Step 6:-on the bases of temperature, humidity, moister, values the motor ON or OFF

BLOCK DIAGRAM



HARDWARE IMPLEMENTATION

ARDUINO

- Open source electronic platform.
- Easy to use
- Inexpensive.
- Cross-platform.
- Flexible.
- 16MHZ clock.
- 32Kb flash memory.
- 14 digital pins and 6 analog pins.

GSM MODULE

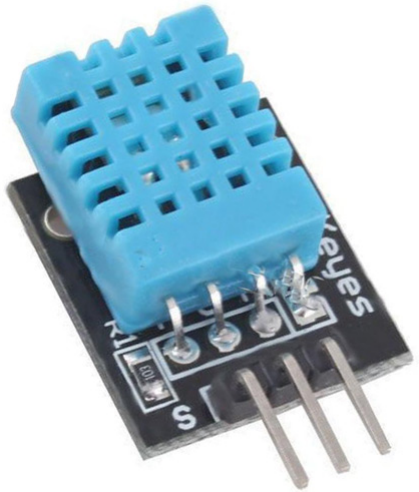
- Supply voltage: 3.8V - 4.2V
- Recommended supply voltage: 4V
- Power consumption:
  - sleep mode < 2.0mA
  - idle mode < 7.0mA
  - GSM transmission (avg): 350 mA
  - GSM transmission (peek): 2000mA
- Module size: 25 x 23 mm
- Interface: UART (max. 2.8V) and AT commands
- SIM card socket: microSIM (bottom side)
- Supported frequencies: Quad Band (850 / 950 / 1800 / 1900 MHz)
- Antenna connector: IPX
- Status signaling: LED
- Working temperature range: -40 do + 85 ° C

WATER SENSOR

- Working voltage: 5V
- Working Current: <20ma
- Working Temperature: 10°C~30°C
- Low power consumption
- Output voltage signal: 0~4.2V
- Detection Area: 40 mm x 16 mm

DHT 11 SENSOR

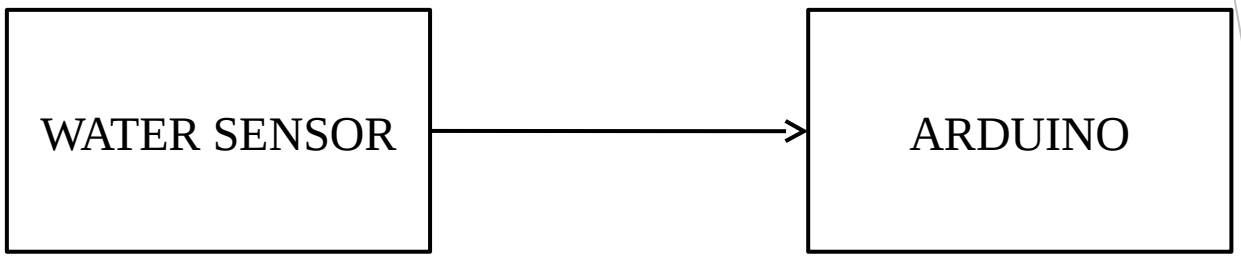
- Operating Voltage: 3.5V to 5.5V
- Operating current: 0.3mA (measuring) 60uA (standby)
- Output: Serial data
- Temperature Range: 0°C to 50°C
- Humidity Range: 20% to 90%
- Resolution: Temperature and Humidity both are 16-bit
- Accuracy: ±1°C and ±1%



DHT11 SENSOR

- The pins on the sensor are OUT, for signal, the one in the –ve , +ve sign are for input.
- The OUT pin goes to digital pin 2 on the Arduino.
- The middle pin goes to 5V, and the minus sign goes to GND.

WATER SENSOR



- Connect the $+V_s$ to +5v on your Arduino board.
- Connect S to digital pin number 8 on Arduino board.
- Connect GND with GND on Arduino.

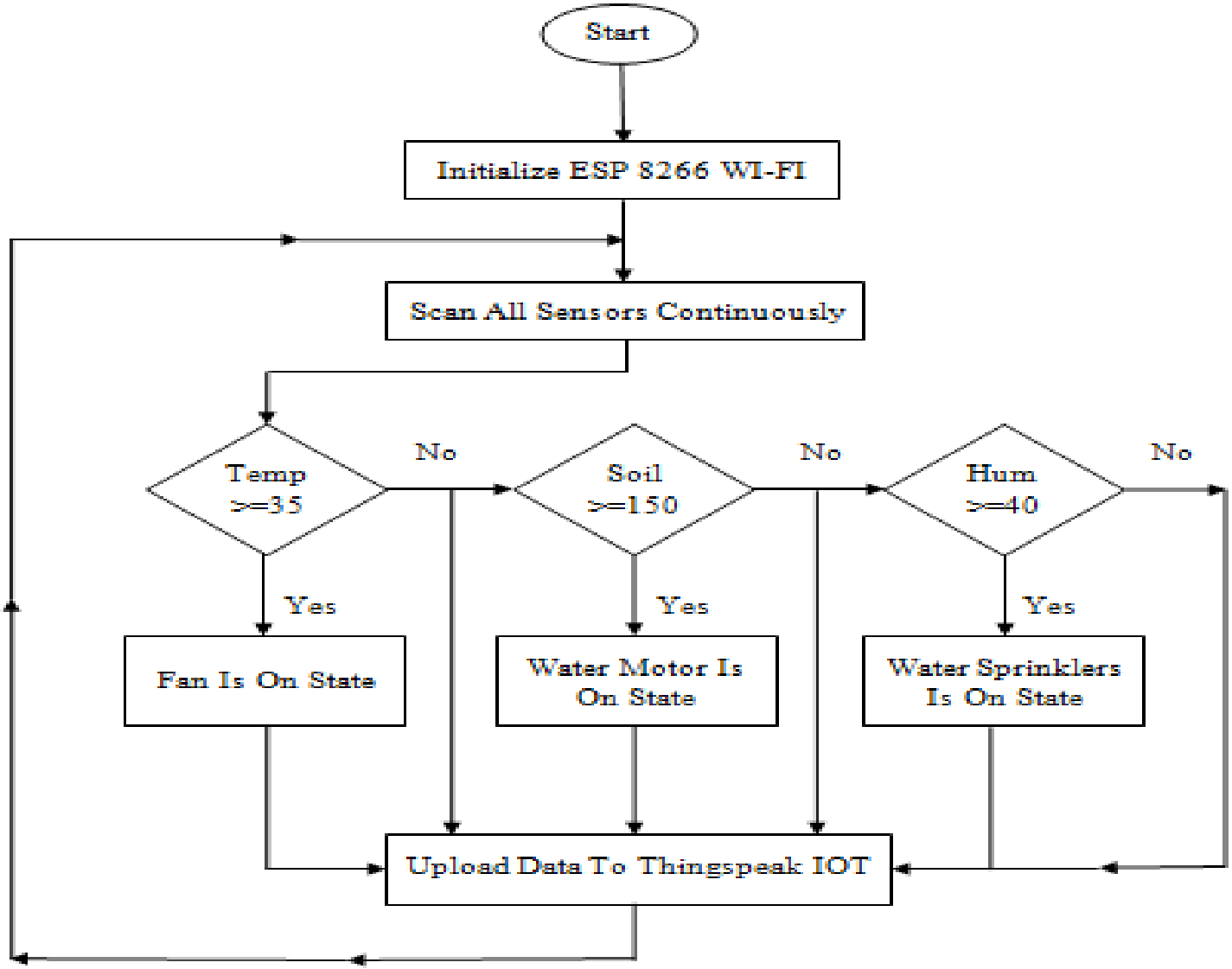
SOFTWARE

- Arduino IDE is an open-source software program that allows users to write and upload code within a real-time work environment.
- As this code will thereafter be stored within the cloud or , it is often utilized by those who have been searching for an extra level of redundancy.
- The system is fully compatible with any Arduino software board.
- Enhanced and intuitive tools provide users with access to advanced coding applications.

Sample Code

- gsm.println("AT+CMGF=1");
- delay(1500);
- gsm.println("AT+CMGS=\"9951529818\"\r");
- delay(1500);
- gsm.println("HUMIDITY CLIMATE IS HIGH TAKE ALERT..!");
- delay(1500);
- gsm.println((char)26);// ASCII code of CTRL+Z
- delay(1500);

FLOW CHART


Start
Initialize ESP 8266 WI-FI
Scan All Sensors Continuously
Temp >=35
No
Soil >=150
No
Hum >=40
No
Yes
Yes
Yes
Fan Is On State
Water Motor Is On State
Water Sprinklers Is On State
Upload Data To Thingspeak IOT

FUTURE PROSPECT

- By using remote control humanoid with GPS system here it will be much useful for farmers where they can perform different tasks like plucking weeds and also for spraying pest controllers.
- It can also be used to protect the field from bird and animal scaring by keeping vigilance etc.

REFERENCES

- S. R. Nandurkar, V. R. Thool, R. C. Thool, “Design and Development of Precision Agriculture System Using Wireless Sensor Network”, IEEE International Conference on Automation, Control, Energy and Systems (ACES), 2018

- JoaquínGutiérrez, Juan Francisco Villa-Medina, Alejandra Nieto-Garibay, and Miguel Ángel Porta-Gándara, “Automated Irrigation System Using a Wireless Sensor Network and GPRS Module”,IEEE TRANSACTIONS ON INSTRUMENTATION AND MEASUREMENT, 0018-9456,2016

- Dr. V .Vidya Devi,G. Meena Kumari, “Real- Time Automation and Monitoring System for Modernized Agriculture” ,International Journal of Review and Research in Applied Sciences and Engineering (IJRRASE) Vol3 No.1. PP 7-12, 2018

THANK YOU