IOT BASED SMART GREEN HOUSE FARMING SYSTEM

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OBJECTIVE

- To improve the yield of the agricultural production through smart farming in the agriculture field.
- To minimize and avoid the water getting stagnated in agricultural field due to heavy rainfall. To store and reuse the excess rain water in agri- field during drought.
- To reduce damage of crops and thereby increasing the production.
- To monitor the excess water by using soil moisture sensor, temperature sensor, humidity sensor , and field water level sensor.

INTRODUCTION

- During heavy rain fall, the crop growth on agricultural field will be decompose in this aspect the sensor can be placed to detect if any high water level and when it reaches the certain level automatically it pump the motor to remove the water.
- To implement the advanced agricultural while monitoring using sensor and to monitor the water level in agricultural field and also storing the excess water during rainy season.

LITERATURE SURVEY WITH RELATED WORKS

AUTHORS(journel/conference)	PARAMETERS	MICRO CONTROLLER	SMART SYSTEM	CLOUD PLATFORM	STORAGE FOR FUTURE
A Mondal, Z.Rehena (Journel)	Temperature ,soil moisture	Arduino UNO	YES	YES	YES
Abdurrahman,G.M.Gebru and T.T.Bezabith (Conference)	Soil moisture	PIC16F887	YES	YES	NO
P.A.Bhosale and V.V.Dixit (Journel)	Soil moisture, Temperature, wind speed, radiation and sunshine	PIC Micro controller	YES	NO	YES
J.Balendone (Journel)	Temperature,soil moisture	Irrigation controller(GPI,Delta –T)	YES	NO	YES

EXISTING SYSTEM

- Current type of existing system, the irrigation process is done manually.
  - Personally visiting the agricultural field
  - switching on motor manually,
  - Checking the functionality of motor and
  - Monitoring the water level regularly.
  - No storage process(Rain water harvesting system)

  Disadvantages
  - The crop gets damaged affected due to heavy rainfall.
  - Farmers faces huge production loss

PROPOSED SYSTEM

- Irrigation process can be monitored to predict the soil water level and to prevent the damage of crops
  - damage of crops can be reduced
  - increased production
  - water conservation
- Production of crop gets increased and thereby farmer gets profit
- Soil moisture sensor will give the status of soil in the field to get the required amount of water from the borewell instantly

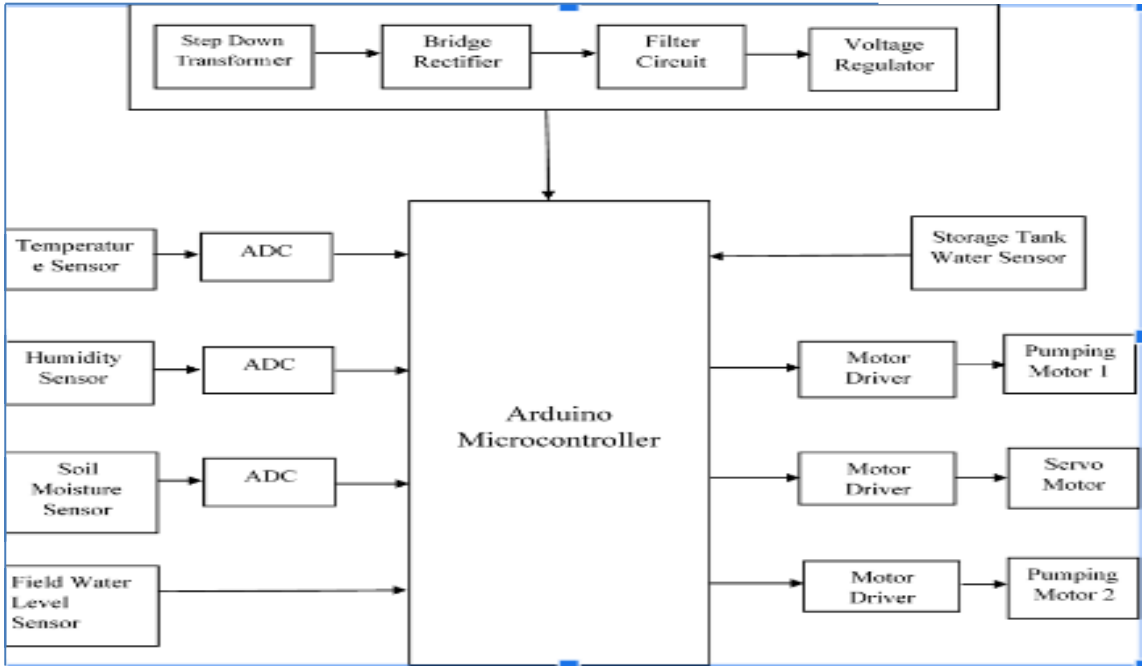
CONT..

- Humidity and Temperature sensor are placed in the field to analysis the atmospheric condition on farming.
- IoT in agricultural field for its highly scalable, interoperable and pervasive nature
- IoT based smart farming presents the experimental setup for implementing the proposed system and results.
- The sensor captured data of the smart agricultural system is uploaded into the cloud in a secured manner by recognition using a web service

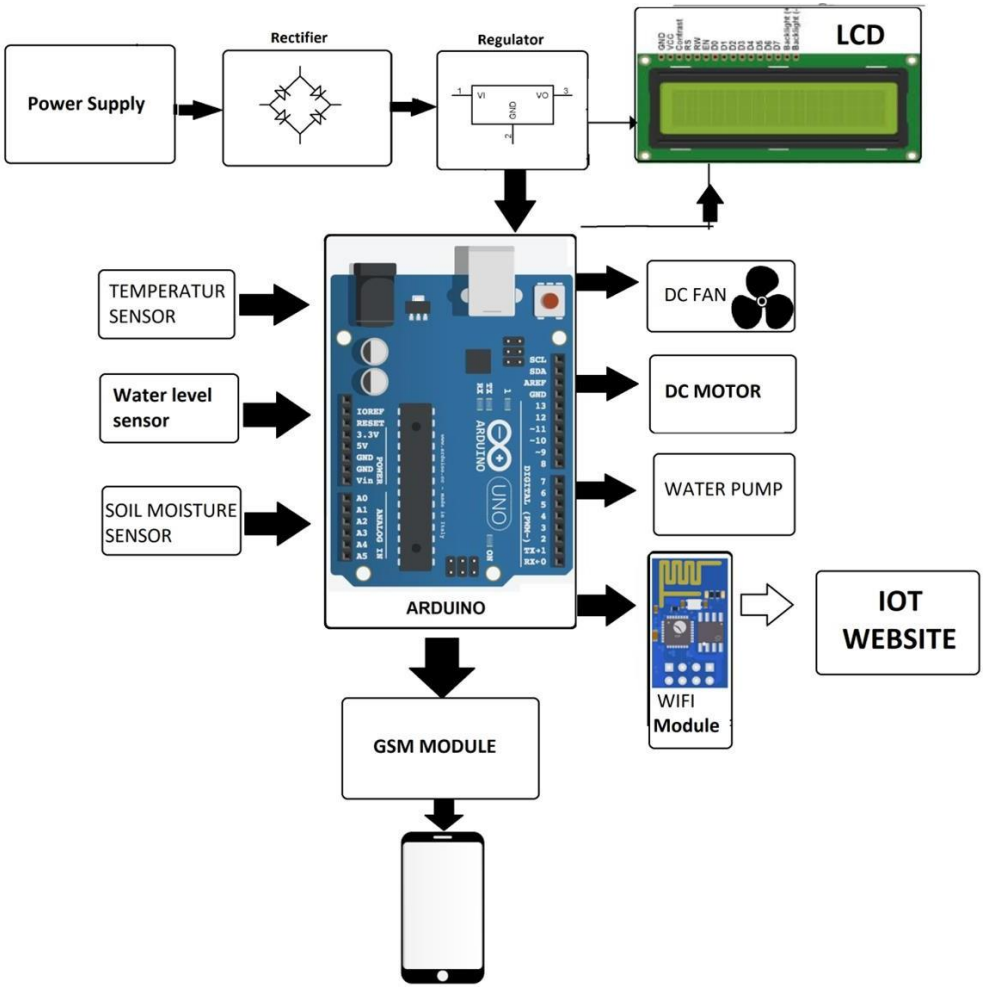
ADVANTAGES

- The ground water level gets increased
- There is no need to place bore-well underneath
- Even when there is no rainy season we can make the cultivation since the groundwater is at its good level
- The quality of the crops will be at its best so that the farmers could got good productivity
- The disaster subsidy for farmers given by the government will also be reduced since there will be lesser loss which is a profit for the government

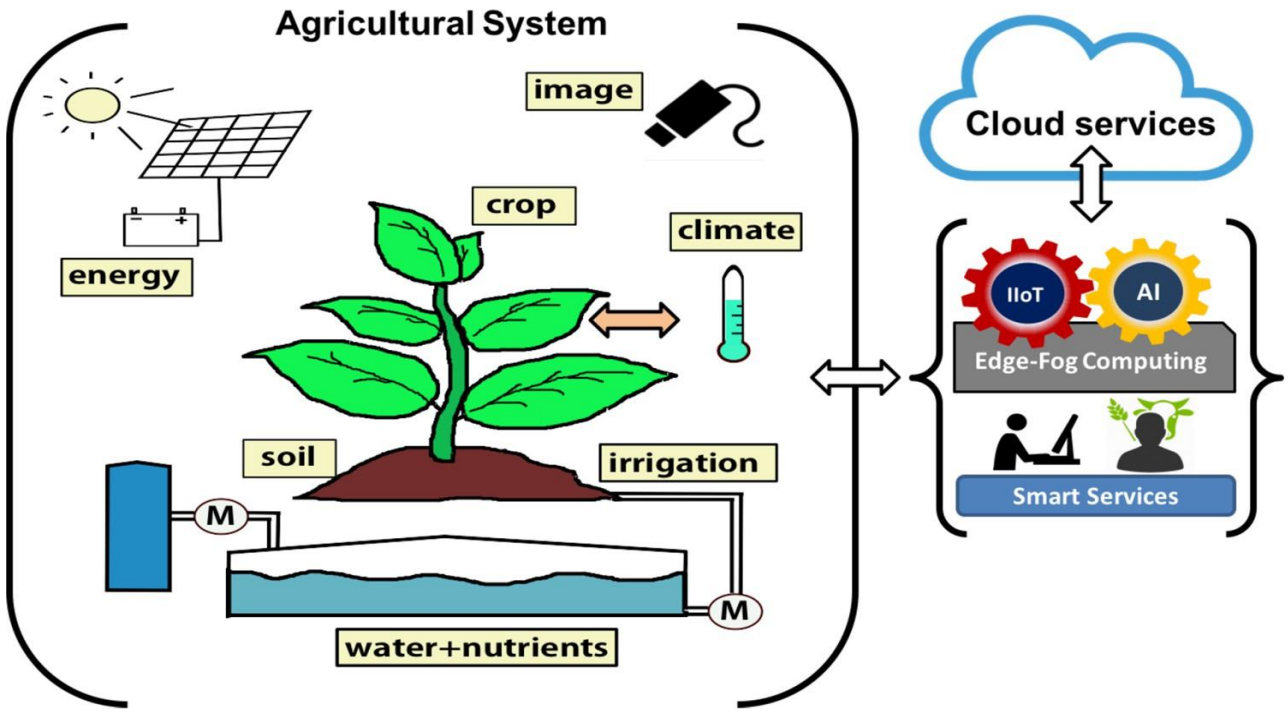
BLOCK DIAGRAM



BLOCK DIAGARM



AGRICULTURAL SYSTEM



HARDWARE REQUIREMENTS

Sensors used

- soil moisture sensor
- Humidity Sensor
- Temperature Sensor
- Water level sensor
- Servo motor
- Water pumping motor
- Arduino Microcontroller
- Motor driver
- Power supply
- Cloud sever

SOFTWARE REQUIREMENTS

- **Required tools**
- Compiler : Arduino IDE
- OS platform: Windows or Linux
- Testing tool : Proteus 7 professional
- Language used: Embedded C

EMBEDDED C PROGRAM

```
#define BLYNK_PRINT SwSerial #include <SoftwareSerial.h>
SoftwareSerial SwSerial(10, 11); // RX, TX
#include <BlynkSimpleStream.h> #include <DHT.h>
char auth[] = "YABPWW8StqnJSG0o4s5VE_rOugMKvOSm";
#define DHTPIN 2 // What digital pin we're connected to
#define DHTTYPE DHT11 // DHT 11 DHT dht(DHTPIN, DHTTYPE);
BlynkTimer timer; #include<Servo.h> Servo s1;
void sendSensor()
{
  float h = dht.readHumidity();
  float t = dht.readTemperature(); // or dht.readTemperature(true) for Fahrenheit
  if (isnan(h) || isnan(t)) {
    SwSerial.println("Failed to read from DHT
```

```
  sensor!");
      return;
    }
    Blynk.virtualWrite(V5, h); Blynk.virtualWrite(V6, t);
  }

  void setup()
```

Cont..

```
void setup()
{
  SwSerial.begin(9600);

  Serial.begin(9600); Blynk.begin(Serial, auth);

  dht.begin();
 timer.setInterval(1000L, sendSensor); pinMode(A2,INPUT);//temp pinMode(6,OUTPUT);// WM 1
   pinMode(5,OUTPUT);// WM 1
    pinMode(9,OUTPUT);// WM 1
   pinMode(10,OUTPUT);// WM 1
     pinMode(A5,INPUT);//wl pinMode(A4,INPUT);//wl pinMode(A0,INPUT);//MOI
```

```
 s1.attach(3);
}
void loop()
{
  s1.write(0); while(1)
          {
Blynk.run();
  timer.run();
  int temp=analogRead(A2); int moi=analogRead(A0);
    int w1=digitalRead(A4); int w2=digitalRead(A5);
temp=temp*0.4848;
                Cont..
if(w1==0)
   {
   // s1.write(0); digitalWrite(5,1);
    digitalWrite(10,0); // w1 motor on
   // digitalWrite(6,0);
   // digitalWrite(9,0); // w2 off
   }
    else
    {
     digitalWrite(5,0); digitalWrite(10,0); // w1 motor on
// digitalWrite(6,0);
// digitalWrite(9,0); // w2 off
    }
```

```
if(w2==0)
            {
              s1.write(95); digitalWrite(6,1); digitalWrite(9,0);
             s1.write(95);
        }
            else
            {
           s1.write(0);    digitalWrite(6,0);    digitalWrite(9,0);
            s1.write(0);
              }
        }}
```

RESULT

S.NO	MODULE	THRESHOLD VALUE	ACTION
1	WATER LEVEL SENSOR 1	0	Pumping motor 1 Start run for pumping water
2	WATER LEVEL SENSOR 2	0	Pumping motor 2 Start run and servo motor is closed.
3	DHT11(TEMPERATURE AND HUMIDITY)	Temperature and humidity current values	Pumping motor 2 Start run and servo motor is closed.
4	SOIL MOISTURE SENSOR	Moisture sensor current values between(0-1000)	Values updated through IOT

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DEMO

Video from Clekha.mp4

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Dear Author,

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