

An Intelligent Plant Monitoring and Warning System for Power Plant Based on IOT

Mr.S.Vijayasarithi¹, M.Ilakkiya², M.Roseniee³, T.Subhasri⁴, M.Kiruthika⁵

¹ Associate Professor, Department of EEE,

^{2, 3, 4, 5UG} Students, Department of EEE,

Panimalar Institute of Technology, Chennai, India

Abstract - Plant monitoring is seen as one of the most important tasks in any farming or agriculture-based environment. With the inception of Ambient Intelligent systems, there have been a rise in ambient intelligent based devices-Smart Homes and other similar technologies involving RFID has evolved over the past few years. Integration of such an ambient intelligent system with plant monitoring makes farming easier. In this paper, we discuss about the implementation of a smart plant monitoring system which makes use of the concept ambient intelligence with the use of .Net Gadgeteer which, proactively handles the plant monitoring system. The given implementation

Moisture sensor but it does not have a plant monitoring system.

Problem no 1: In the existing system health parameters of the patients cannot be monitored remotely.

Problem no 2: It does not have any alert system.

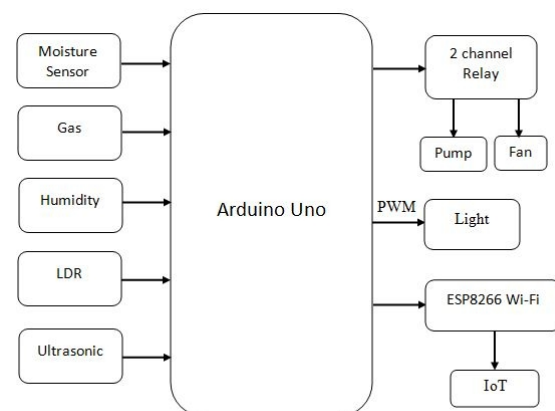
PROPOSED SYSTEM:

In order to overcome the drawback in the existing system here, we included plant monitoring also along with automatic watering. This technique is applicable to medicinal type plants that are growing out of sunlight.[12] It has specific temperatures and Ambient Conditions. And it should be under proper lighting and proper cooling it can be collected by using sensors and post those values over Cloud depending upon the scenario the pump light and fan will act.

1. INTRODUCTION

This project will monitor the indoor climate atmospheric and mechanical environments of commercial or public buildings, according to the World Health Organization (WHO). The temperature, humidity, air quality and lighting conditions of indoor space are highly related to human health, comfort perception, well-being, and work productivity. A plant wall system involves growing diverse types of green plants on a wvertically supported system that is attached to an internal or external wall or is designed as a standalone product. A plant wall system consists of vegetation, growing medium and irrigation and drainage systems. In addition to the initial aesthetic decoration, green plants make significant contributions to indoor environments via evaporation, air purification and water retention, which improves indoor climates and reduce energy use.

a. BLOCK DIAGRAM



I. EXISTING SYSTEM

In the existing system, we are using the Automatic Plant watering system using Arduino[21] it having a water pump with a monitoring system with a

BLOCK DIAGRAM EXPLANATION

Arduino Uno acts as a Controller of the system which is interfaced with the Gas, moisture, Humidity, Ultrasonic Sensor and LDR.

LDR [10] used to find out the intensity of light by using the intensity value we can apply PWM[9] to the Light

The pump is controlled by Relay is switching through the IoT [20] Depending upon the Moisture level in the Soil it will give alert message

All the sensor values can be monitor and control over the IoT

b. HARDWARE REQUIREMENT

- ❖ Gas Sensor
- ❖ LDR
- ❖ Humidity
- ❖ Moisture
- ❖ Ultrasonic
- ❖ Relay
- ❖ Pump
- ❖ Light and Fan
- ❖ Arduino UNO
- ❖ ESP8266 WIFI MODULE

c. SOFTWARE REQUIREMENT

- ❖ Arduino IDE
- ❖ IOT Cloud
- ❖ Embedded C Programming

OBJECTIVE:

The main objective of this project is using the hardware and software together. This project is used to implements the technology with nature.

Smart Plant pot[11] project have many features like It uses simple hardware and software.

It is nontoxic. It is totally free, it is an open source, no any license is required to execute this, It is like a second hand uses in gradient to protect the plants, IT automatically work and send all information on the cloud through android app which notify about plants condition, so doctor team can reach on time and we can save plant , this will be more valuable for earth.

DESCRIPTION:

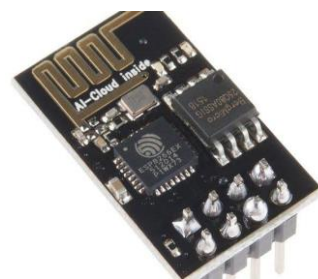
1. Arduino Uno :

The **Arduino Uno** is an open-source microcontroller board based on the Microchip ATmega328P microcontroller and developed by **Arduino.cc**[14]. . The board has 14 digital I/O pins (six capable of PWM output), 6 analog I/O pins, and is programmable with the **Arduino IDE** (Integrated Development Environment)



2. ESP8266 WiFi Module:

The **ESP8266 WiFi Module** is a self contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your **WiFi** network. The **ESP8266**[15] is capable of either hosting an application or offloading all **WiFi** networking functions from another application processor.



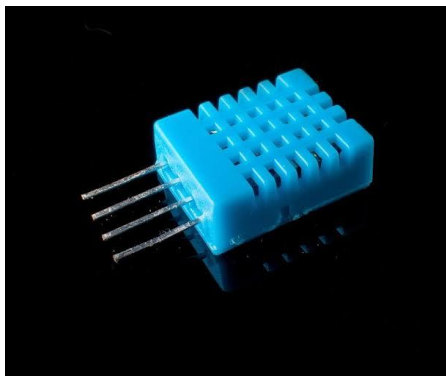
3. GAS SENSOR:

Gas sensors (also known as **gas detectors**) are electronic devices that detect and identify different types of gasses. They are commonly used to detect toxic or[13] explosive gasses and measure **gas** concentration. ... This type of **sensor** employs a chemiresistor which comes in contact and reacts with target gasses.



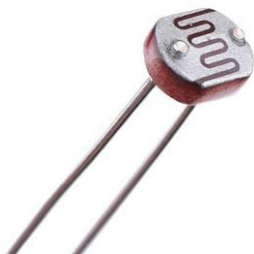
4. HUMIDITY SENSOR:

A **humidity sensor** is an electronic device that measures the **humidity** in its environment and converts its findings into a corresponding electrical signal. ... Relative **humidity** is calculated by comparing the live **humidity** reading at a given temperature to the maximum amount of **humidity** [17] for air at the same temperature.



5. LDR:

What is an **LDR** (Light Dependent Resistor) An **LDR** is [16] a component that has a (variable) resistance that changes with the light intensity that falls upon it. This allows them to be used in light sensing circuits.



6. SOIL MOISTURE SENSOR :

A small charge is placed on the electrodes and electrical resistance through the [19] **sensor** is

measured. As water is used by plants or as the **soil moisture** decreases, water is drawn from the **sensor** and resistance increases. Conversely, as **soil moisture** increases, resistance decreases.

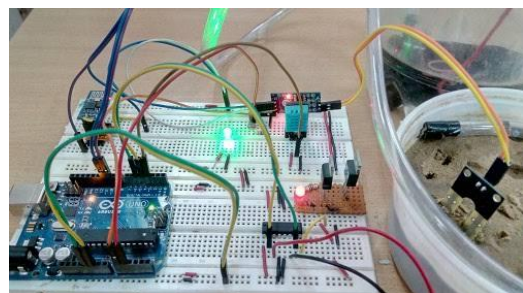


7. ULTRASONIC SENSOR:

An **ultrasonic sensor** is an electronic device that measures the distance of a target object by emitting **ultrasonic** sound waves, and converts the reflected sound [18] into an electrical signal. **Ultrasonic** waves travel faster than the speed of audible sound.



PROTOTYPE :



OUTPUT DISPLAY:

```
void lowAlertSMS(){
  delay(100);
  Serial.println("AT+CMGF=1"); //Sets the GSM Module in Text Mode
  delay(1000); // Delay of 1000 milli seconds or 1 second
  Serial.println("AT+CMSS=1,\"S1\"");
  for(int j=0;j<10;j++){
    value = EEPROM.read(j);
    Serial.println(value);
    delay(3);
  }
  Serial.println("\n");
  delay(1000);
  Serial.println("Alert !!! Low moisture level Detected");// The SMS text you want to send
  delay(100);
  Serial.println((char)26);// ASCII code of CTRL+Z
  delay(1000);
}
```

CONCLUSION:

Plant monitoring and smart system using IoT with the help of a Raspberry Pi controller helps to ease the most tedious. This system monitors various plant parameters and inform the user about the details of plant through their smart phone. It also helps to solve many issues occurring in the existing plant. Plant monitoring and smart system using IoT with the help of the Raspberry Pi controller will bring more convenience and comfort to people's lives for taking care of plant. Any Android supported device can be used to install the smart gardening system. The user can control and monitor the environment of the garden using the android application. The controller in this system (Raspberry Pi) [22] provides an economic and efficient platform to implement the plant monitoring and smart system using IOT. The main advantage of the smart system is that the user can monitor the plant using the internet from far distances during leisure time or whenever necessary.

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