



# Automatic Irrigation System

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**ABSTRACT-** This paper reflects on a concept of watering the plant is the most important cultural practice and one of the labor-intensive tasks in daily greenhouse operation. Watering systems ease the burden of getting water to plants when they need it. Knowing when and how much to water is two important aspects of watering process. To make the gardener works easily, the automatic plant watering system is created. There have a various type using automatic watering system that are by using sprinkler system, tube, nozzles and other. This system uses watering sprinkler system because it can water the plants located in the pots. This project uses Arduino board, which consists of ATmega328 Microcontroller. It is programmed in such a way that it will sense the moisture level of the plants and supply the water when required. This type of system is often used for general plant care, as part of caring for small and large gardens. Normally, the plants need to be watered twice daily, morning and evening. So, the microcontroller has to be coded to water the plants in the garden or farms about two times per day. People enjoy plants, their benefits and the feeling related to nurturing them. However for most people it becomes challenging to keep them healthy and alive. To accommodate this challenge we have developed a prototype, which makes a plant more self-sufficient, watering itself from a large water tank and providing itself with artificial sunlight. The pro-To type reports status of its current conditions and also reminds the user to refill the water tank. The system automation is designed to be assistive to the user

zone comes on, the water flows through the lateral lines and ultimately finally ends up at the irrigation electrode (drip) or mechanical device heads. Several sprinklers have pipe thread inlets on the lowest of them that permits a fitting and also the pipe to be connected to them.

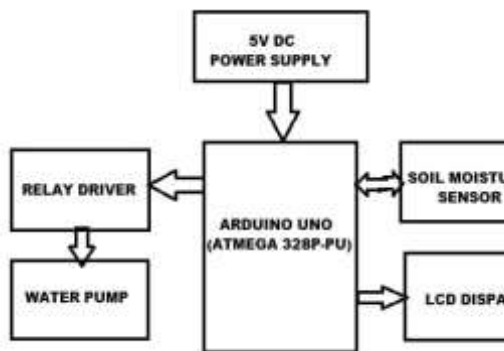
The sprinklers are usually used in the top of the head flush with the ground surface . As the method of dripping will reduce huge water losses it became a popular method by reducing the labor cost and increasing the yields. When the components are activated, all the components will read and gives the output signal to the controller, and the information will be displayed to the user (farmer). The sensor readings are analog in nature so the ADC pin in the controller will convert the analog signals into digital format. Then the controller will access information and when the motors are turned On/Off it will be displayed on the LCD Panel, and serial monitor windows. There are many systems are available to water savings in various crops, from basic ones to more technologically advanced ones. For instance, in onsystem plant watering status was monitored and irrigation scheduled based on temperature presents in soil content of the

## INTRODUCTION

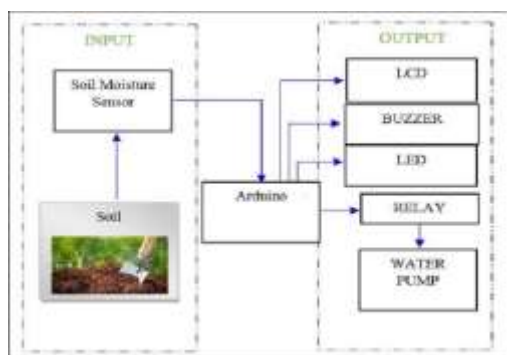
Today agriculture is using 85% of water for irrigation purpose only. This percentage may increase because of increased population growth and food demands . Thus water shortage is one of the problem in the world . Today most efficient plant monitoring systems are occurring day by day using optical and IR images of plants. When a

I. BLOCK DIAGRAM OF THE SYSTEM

It can be explained by following diagram



1. Architecture



II. Hardware Components

In this block diagram an Arduino board is an open source platform used for building electronics projects. Arduino is a programmable circuit's board which we can write a program based on your projects. Arduino program will be uploading with (IDE) integrated development environment software that runs on your computer it is used to write end upload computer code to the arduino physical board.

There are several relays used as a magnet to automatic operate a level of different plants. If the moisture level is found to be below the desire level the moisture sensor send the signal to the Arduino.

Soil moisture sensor measure the volumetric water content in soil since the direct gravimetric measurement of fresh soil moisture requires removing, drying, and waiting of a sample.

A small pump plus a driver is to provide enough current for the pump, my application need a spray distance about 1 meter, so this pump is enough but if you want to make a system that is spray large range you may need larger pump.

LCD stands for Liquid Crystal Display. It is a type of display technology commonly used in electronic devices like televisions, computer monitors, smartphones, and digital watches. LCDs are made up

of two polarizing filters with a layer of liquid crystal material in between them. When an electric current is applied to the liquid crystal layer, it changes the alignment of the crystals and allows light to pass through or block it.

Here are some of the key advantages of using an automatic irrigation system:

1. Conserves water: An automatic irrigation system can be programmed to deliver the right amount of water at the right time, which helps to conserve water and prevent overwatering.
2. Saves time: With an automatic irrigation system, you don't have to spend time watering your plants manually. The system can be programmed to turn on and off at specific times, which saves you time and effort.
3. Saves money: An automatic irrigation system can save you money on your water bills by using water more efficiently and preventing overwatering. It also reduces the need for manual labor or hiring someone to water your plants, which can save you money in the long run.

FUTURE SCOPE.

Here are a few potential areas of growth and development:

1. Smart Irrigation: With the advancement of technology, we can expect to see more advanced and sophisticated irrigation systems that are capable of optimizing water usage. Smart irrigation systems can collect and analyze data on weather patterns, soil moisture, and plant water needs to deliver the right amount of water at the right time.
2. Internet of Things (IoT) Integration: Automatic irrigation systems can be integrated with IoT devices to enable remote monitoring and control of irrigation systems. This can help farmers and homeowners to manage their irrigation systems from anywhere and also get real-time alerts in case of any issues.
3. Machine Learning and Artificial Intelligence (AI): Machine learning and AI can be used to analyze data collected from sensors and predict future water need

## CONCLUSION

The automated irrigation system was implemented using the ARDUNIO board by interfacing sensors to the microcontroller unit. The microcontroller unit continuously monitors the sensors data and if the sensors data exceeds a particular threshold value then the microcontroller unit sends an alert SMS to the mobile phone of an owner who is in remote location. The different values for the DHT11 sensor is measured under different climatic conditions and set the threshold value based on those practical values. This system can be extended by using WSN nodes for transmit data and also using data base systems to store the data at the field. The overall system can be powered up using solar cells to maintain the system in low cost.to make more accurate diagnoses and prescribe more effective treatments, while streamlining the process of patient care.

While many experts in the medical industry see potential for AI-assisted medical assistants, some are hesitant to fully embrace the technology due to concerns over privacy and security. However, with the right regulatory frameworks and security protocols in place, digital assistants like Doctor Robo could revolutionize the way medical care is delivered.

