

PAPER TITLE: Automated Plant Watering System

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AUTHOR: Jagadeesh Kumar H. B, Punitha.K, Shivaraj Sudarshan Gowda, Devarajnayaka R

PROBLEM MENTIONED/SOLUTION OBTAINED:

Problem Statement

During day-to-day activities many people often forget to water their plants and thus it becomes challenging for them to keep their plants healthy and alive. Also, it is a challenge for farmers to maintain their fields and manage watering of plants during shortage of water.

Solution

project aims to implement a simple system, using automatic irrigation, watering a small potted plant or crop with minimal human intervention and notify the user with the current status of the plant

ALGORITHM USED:

There are two functional components in this paper. They are moisture sensor and motor / pump.

A. Detecting Moisture Content:

This will be achieved by soil moisture sensor. They are connected to an Arduino microcontroller board. Arduino board is programmed using the IDE software. Humidity sensor senses to indicate that the plant needs watering humidity levels in the soil, and sends the signal to the Arduino.

B. Automatic Watering to The Plant and User Notifications:

On receiving logic high signal, Arduino will notify the user by turning on the first buzzer. In this work we have used an Arduino microcontroller in combination with relay control switch to control the motor and overall functioning. Motor may be driven by external 9V battery with interfacing to microcontroller.

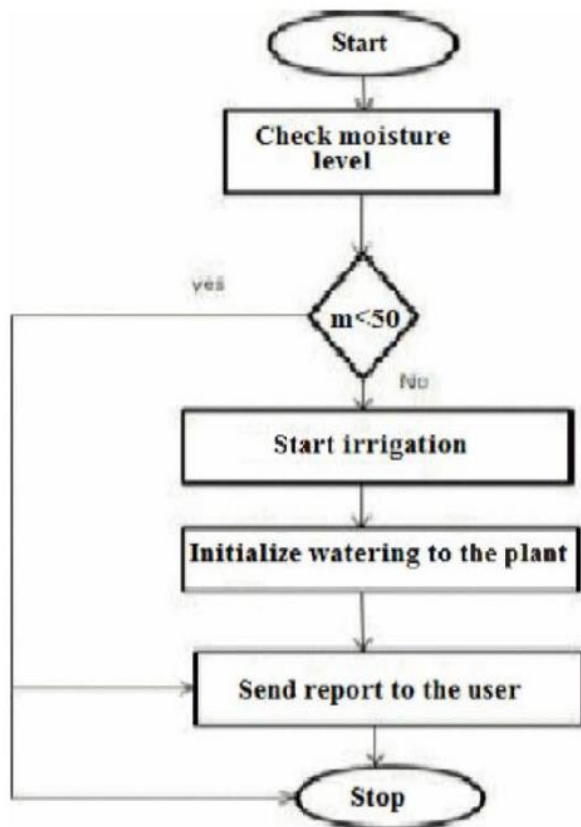


Fig. 5: Flowchart of Automated plant watering system

TOOLS USED/IMPLEMENTED:

1. Arduino Uno 2. Moisture Sensor 3. Water Pump 4. Relay Module 5. Arduino IDE Tool

RESULTS AND DISCUSSION:

A. Build System Relay:

- In this step, connections are established between solid-state relays, an Arduino, and a small fountain pump system.
- The Arduino is used to control the pump, allowing it to open or close automatically based on soil moisture levels.
- To create connections, a wire from the pump is partially stripped, leaving half of it insulated. The cut wire is then connected to two output relays at both ends, and electrical tape is used to secure the connections.
- The ground relay is connected to the Arduino's ground, and the relay input is connected to Arduino digital pins. This setup enables the Arduino to control the pump through the relays.

B. Build System Reservoir:

- This section focuses on creating a reservoir system for supplying water to the plant.

- A submerged pump is used to provide the required amount of water for the plant.
- To automate this process, a float valve is employed. The float valve opens when more water is needed and closes when the water level rises to an appropriate level.
- It's important to ensure that the float valve chamber is drilled at a height that can accommodate the width of the tank's float, allowing it to function properly.

C. Build System Tubing and Connect:

- This step involves connecting plastic tubing to the system.
- Small holes are drilled in the tubing to allow water droplets to be distributed to the plants.
- These tubing connections help ensure even water distribution to the plants.

KNOWLEDGE AQUIRED:

- Basic idea of Water planting system.
- Tools used to achieve it.
- Use of drip irrigation

IMPORTANT REFERENCE:

Vinay Bakale and SiddheshTolakar, "Wireless Automatic Plant Irrigation System", International Journal on Recent Technologies in Mechanical and Electrical Engineering.

Sanju kumar, and R.V. Krishnaiah, "Advance Technique for Soil Moisture Content Based Automatic Motor Pumping for Agriculture Land Purpose". International Journal of VLSI and Embedded Systems- IJVES, Vol 04, Article 09149; September 2013, pp 599-603.