

Detection and Controlling of Water Overflow using IoT

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Abstract: Water wastage is a major disadvantage for any form of life as there is only 3% of fresh water is available on earth and 0.5% of water is edible to drink. So we should use fresh water appropriately and do not waste. To avoid this wastage the product we are going to develop will help in some cases. The main purpose to implement this model is automated water filling to maximum capacity of container placed below the filling point. This helps to reduce overflow of water and mainly required or maximum capacity that a container can bare. This application is useful in mineral water plant where people put 5rs coin in the machine and machine vend predefined quantity of water, but here people don't use same type cans to fill they take unsized cans where some water gets wasted. To avoid that this model helps which is automated. And further updates can be done like price calculation automatically for quantity of water filled.

Keywords: Water wastage

I. INTRODUCTION

Drinking water is water that is safe and suitable for human consumption. It is a vital resource for human life and plays a critical role in maintaining good health. Drinking water can come from various sources, including groundwater, surface water, and municipal water supplies. Water is a transparent, odorless, tasteless liquid that is essential for the survival of all living organisms. It is a basic necessity for human life, and it plays a crucial role in various biological processes, including digestion, circulation, and temperature regulation. It is the most abundant substance on Earth's surface, covering approximately 71% of the planet's surface. However, only a small percentage of this water is freshwater that is accessible for human use, with the majority of it being in the form of saltwater in oceans and seas. Despite its abundance, water scarcity is a growing concern worldwide, and it is estimated that more than two billion people lack access to safe and clean water. Saving drinking water using IoT is an innovative approach to conserve water and reduce wastage. This system uses sensors connected to the internet of things (IoT) to monitor the usage of water.

II. LITERATURE SURVEY

In this paper we have studied about the automated water tap which turns on and off automatically when hand is placed under the e-tap. This module is the basic module of automation where only its useful for washing hands but not for filling containers. [1]

This paper proposes the system where the fixed amount or quantity of water is predefined for the predefined quantity or volumes. So here in this system this allows only for the monitoring and controlling of water. But in our system we developed for any size and shape of the container placed below the filling point (tap) our system fills the water to the maximum capacity of the container. [2]

Automatic Water Tank Level and Pump Control System is which it only controls the defined amount of water capacity as the above system which already existed. But we developed a scanning system which allows to find the height of the neck of container placed from tap to neck of container. So with this system which we developed helps to fill any irregular size and shaped container. [3]

III. METHODOLOGY

Scanning the object placed under the filling point and filling water to the maximum capacity of the container is the main processing steps in our system. Here is the methodology to achieve this.

1. Initialization: The system starts by initializing all the components, such as the DC motor, DC pump, proximity sensor, and ultrasonic sensor. This includes setting up the necessary configurations and connections.
2. Object Detection: The proximity sensor and ultrasonic sensor are used to detect the presence and position of the container placed under the filling point. The proximity sensor can sense when the container is in position, and the ultrasonic sensor can measure the height of the container.
3. Scanning Object Height: The ultrasonic sensor is used to scan the height of the container. By emitting ultrasonic waves and measuring the time it takes for the waves to bounce back, the sensor can calculate the distance to the top of the container. This information is used to determine the container's current fill level.
4. Filling Water: Based on the height measurement obtained from the ultrasonic sensor, the system calculates the amount of water required to reach the maximum capacity of the container. The DC pump is activated to start filling water into the container, while the DC motor controls the flow rate and ensures a steady and controlled filling process.
5. Monitoring and Control: Throughout the filling process, the system continuously monitors the container's height using the ultrasonic sensor. It compares the current fill level with the desired maximum capacity and adjusts the flow rate accordingly to prevent overflowing.
6. Completion and Shutdown: Once the container reaches the desired maximum capacity, the system stops the water flow by deactivating the DC pump and DC motor. The filled container can then be removed, and the system can be reset for the next filling operation.

IV. RESULT

In our system which we developed achieved finding height of object by scanning process. Which helps to find out object distance between filling point and neck or top of the container.

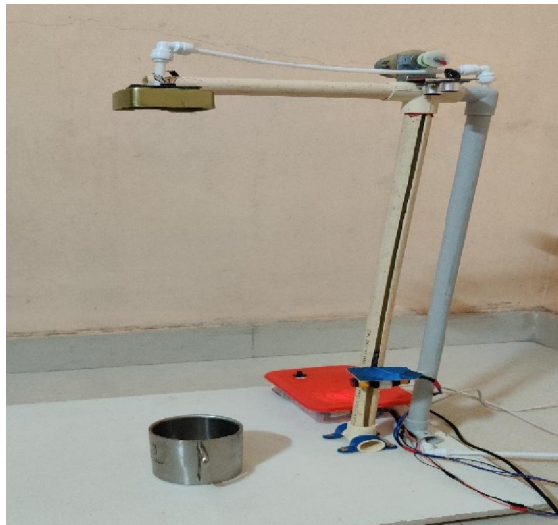


Fig.[1]

Now after the scanning and height measuring process, the filling process starts and continuously measures the water height when it is in the filling process.

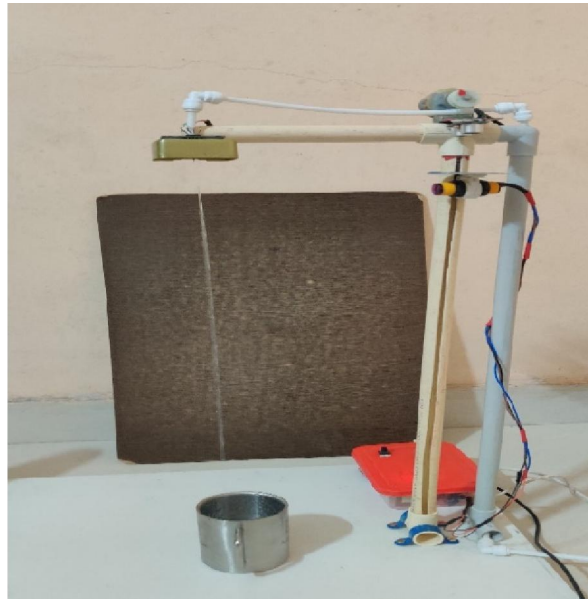


Fig.[2]

Final phase in this process is stopping the water pump when the water reaches the maximum capacity of the container placed below filling point(tap).



Fig.[3]

V. CONCLUSION

Detection and Controlling of Water Overflow using IOT is very useful in saving drinking water. System detects the height of the object and fills out the water container without water overflow. Water can be filled to different types of containers without overflow.

This project can be mainly used in mineral water plant and industrial filling processes.

For further we can add features to this project like flow rate and pricing accordingly the water filled.

By keeping the embedded devices in the environment for monitoring enables self protection (i.e., smart environment) to the environment. To implement this need to deploy the sensor devices in the environment for collecting the data and analysis. By deploying sensor devices in the environment, we can bring the environment into real life i.e., it can interact with other objects.

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