Monitoring and Conserving Water in Public Places

Description

Water conservation is a critical issue, and it's essential to find innovative ways to monitor and reduce water wastage, especially in public spaces like gardens and parks. In this document, we propose a comprehensive solution that utilizes technology to monitor and manage water usage efficiently. Our idea revolves around the use of sensors, microcontrollers, and a dedicated application to achieve this goal.

Components

1. Water Flow Sensor

A water flow sensor is a crucial component that measures the flow rate of water passing through it. It is typically installed in the water supply system to monitor how much water is being used.

2. Microcontroller

A microcontroller, such as Arduino or Raspberry Pi. It processes data from the water flow sensor and other sensors and controls the actions based on predefined parameters.

3. ESP32 or Wi-Fi Module

Wireless communication between the microcontroller and the application is made possible by the ESP32 or Wi-Fi module. It enables system remote control and real-time data transmission.

4. Application

Users may easily monitor and control water usage in public settings because it is accessible via smartphones and other devices..

Functionality

Our system incorporates three key features to efficiently monitor and conserve water in public places:

1. Climate-Based Watering

The application collects weather data, including humidity and temperature, from reliable sources. When the humidity is high, indicating dry conditions, the system notifies the application to increase the frequency and duration of watering for plants in public gardens. Conversely, during periods of rain or high soil moisture, the application notifies the person in-charge.

2. Leak Detection

Water leak detection is a crucial aspect of water conservation. Sensors installed in water pipes continuously monitor the flow of water. If an abnormal flow rate is detected, the system sends an alert to the application. The waterman responsible for maintenance can then promptly investigate and repair any leaks, preventing water wastage.

3. User-Friendly Application

Our application provides a user-friendly interface for both administrators and the general public. Users can:

- Monitor real-time water usage.

- Set watering schedules based on climate and plant requirements.

- Receive alerts for leak detection and maintenance issues.

- View historical water usage data.

- Control water flow remotely.

Benefits

Implementing our system in public places offers several advantages:

- Water Conservation: By adjusting watering schedules based on climate and soil moisture, our system significantly reduces water wastage.
- Cost Savings: Efficient water usage leads to reduced water bills and maintenance costs.
- Environmental Impact: Conserving water is essential for preserving natural resources and reducing the carbon footprint associated with water production and distribution.
- Convenience: The user-friendly application empowers administrators and users to make informed decisions and control water usage efficiently.
- Early Leak Detection: Detecting and addressing leaks promptly prevents extensive water wastage and potential damage to infrastructure.

Conclusion

In conclusion, our innovative system, comprising water flow sensors, microcontrollers, Wi-Fi modules, and a user-friendly application, offers a comprehensive solution for monitoring and conserving water in public spaces. By intelligently adjusting watering schedules and promptly detecting leaks, we aim to contribute to a sustainable and environmentally conscious approach to water management.