**Phase 2 project:**

**Project Title: SMART WATER FOUNDATIONS**

**Project ID :** proj\_223731\_Team\_5

**College Code:** 6208

**College :** Gnanamani College of Technology

**Branch:** B.Tech-Information Techology

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**Team members:**

* MATHANRAJ NS (620821205035)
* SIVAPRIYAN UV(620821205306)
* MOHANRAJ R(620821205036)
* ARULSURIYAN R (620821205004)
* SIVANESAN S(620821205305)

**SMART WATER FOUNDATIONS**

**Definition:**

A Smart Water Foundation project using IoT refers to an initiative that employs Internet of Things (IoT) technology to enhance the management, conservation, and sustainability of water resources. It involves the deployment of IoT devices equipped with sensors and communication capabilities to collect real-time data on various aspects of water systems, such as quality, quantity, and infrastructure conditions. This data is then processed and analyzed to optimize water usage, improve efficiency, detect issues like leaks or contamination, and promote responsible water management practices. These projects aim to leverage IoT technology to address water-related challenges and contribute to more intelligent, efficient, and sustainable water management.

**Additional Implemention:**

Smart Water Management is the activity of planning, developing, distributing and managing the use of water resources using an array of IoT technologies which are designed to increase transparency, and make more reasonable and sustainable usage of these water resources.

**Components Needed:**

1.8051 Microcontroller

2.IoT Module - ESP32

3.Sensors- UltrasonicSensors,pHSensors,TurbiditySensors,FlowSensors

4.Actuators

5.Power supply -Solar

6.Communication - MQTT,HTTP

7.IoT platform - Azure IoT,Google Cloud IoT

8.Data storage

**PHASE 2**

**1.Leak Detection:**

Use IoT sensors to detect leaks in water supply pipelines. This can help in early leak detection, reducing water wastage, and preventing damage to infrastructure.

Algorithm: Machine Learning Algorithms

**2.Water Usage Analytics:**

Collect data on water consumption patterns to identify trends and anomalies. This can aid in optimizing water distribution and billing processes.

Algorithm: Ramdom Forest Algorithm

**3.Mobile Apps for Water Management:**

Develop user-friendly mobile applications that allow consumers to monitor their water usage, receive alerts, and report issues such as leaks or water quality concerns.

Algorithm: Machine Learning Algorithms

**4.Remote Valve Control:**

Enable remote control of water valves to shut off or redirect water flow during emergencies or maintenance, improving system resilience.

Algorithm: Machine Learning Algorithm

**5.Real-time Alerts:**

Set up real-time alerts and notifications for critical events such as equipment failures, water quality breaches, or excessive water usage.

Algorithm: AI Algorithm

1. **Solar-Powered IoT:**

Consider using solar power to operate IoT sensors and devices, reducing energy costs and making the system more sustainable.

Algorithm: Maximum Power Point Tracking Algorithm