

# AQUAGUARD

Simulated IoT-based Water  
Management System

**live demo link :** <https://aquaguardd.netlify.app/>

# INTRODUCTION

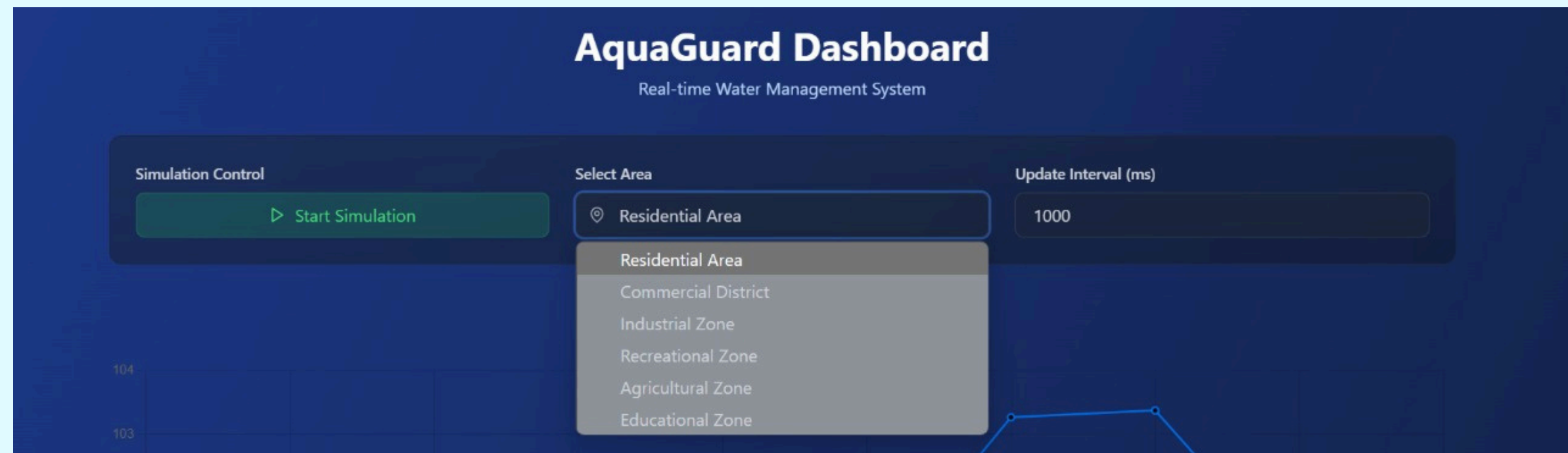
## AquaGuard: Simulated IoT-Based Water Management System

Optimizing water usage and detecting inefficiencies through data simulation and analysis.

### KEY POINTS:

- 1.Importance of water management in modern systems.
2. Challenges of real-time monitoring due to physical hardware requirements..
3. AquaGuard offers a virtual solution to simulate IoT data and optimize water systems.

### VISUALS:



# WORKING MECHANISM



- 1) Water flow rate.
- 2) Pressure.
- 3) Temperature

GRAPH ANALYSIS AND  
DATA VISUALISATION

WEBSITE BACKEND

RECOMMENDATION  
SYSTEM

DATA FROM THE SENSORS  
GIVEN TO THE MODEL  
(here for simplicity we used  
.csv file and provided  
synthetic data)

# GRAPH ANALYSIS

➡ Flow rate vs time interval



# GRAPH ANALYSIS

➡ Pressure vs time interval



# GRAPH ANALYSIS

➡ Temperature vs time interval





# SYSTEM FEATURES:

- SIMULATED SENSOR DATA GENERATION:**



Water flow rate sensor



Water pipeline pressure sensor





Water temperature sensor


# SYSTEM FEATURES:

- **RECOMMENDATION ENGINE AND SYSTEM ALERTS**


### System Alerts


 **High water pressure detected. Inspect the system.**  
19/1/2025, 2:41:16 am


 **Sensor calibration completed successfully.**  
19/1/2025, 2:41:16 am

 **Leak probability above threshold. Investigate leak source.**  
19/1/2025, 2:41:16 am

### Recommendations

 **Inspect System for Clogging** high  
Check pipes for obstructions to ensure optimal flow.  
19/1/2025, 2:41:16 am

 **Verify Sensor Calibration** medium  
Perform sensor calibration for accurate readings.  
19/1/2025, 2:41:16 am

 **Regular Maintenance Check** low  
Schedule periodic maintenance for system longevity.  
19/1/2025, 2:41:16 am



# PROBLEMS ADDRESSED



**Water Wastage**



**Water Scarcity**

**Leaks and Infrastructure Issues**

**Monitoring and Maintenance Challenges**

# TECH STACKS

**HTML, CSS, TYPESCRIPT, REACT.JS, CHART.JS**

**PYTHON, NUMPY (to generate synthetic data  
that mimics the real time database),  
MATPLOTLIB (for generating graphs)**

“Efficient, Intelligent, and Sustainable Water Management.”

# TEAM : AG32

1. Bhavya pandey.
2. Ashika Singh.
3. Anisha Sharma.
4. Anushka Nirat.
5. Vishakha Khatri.



THANK  
YOU