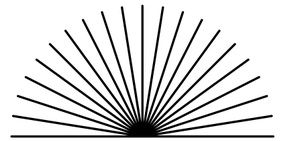
Rakkaranta

Real time IoT System



Meet the Team Members

QIAN WANG **DIANZHONG WANG**

Focuses on hardware design, sensor selection and integration, data collection, and communication between devices and the cloud.

YE THU HLAING

Handles backend data processing, cloud services management, machine learning model development, and deployment, ensuring smooth data handling and predictive analysis.

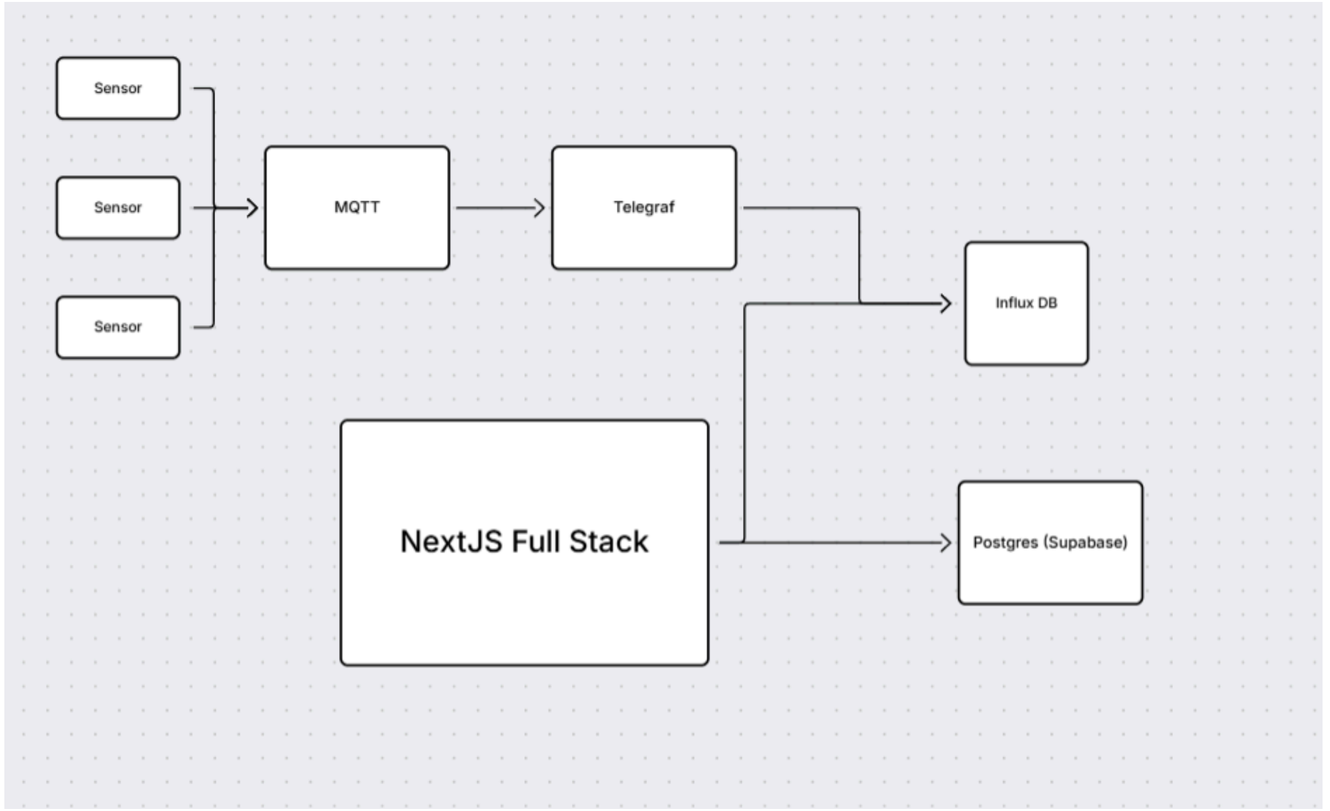
AHANAF ADIL

Responsible for designing and developing user interfaces, including web and mobile apps, focusing on UI/UX, API integration, and data display.

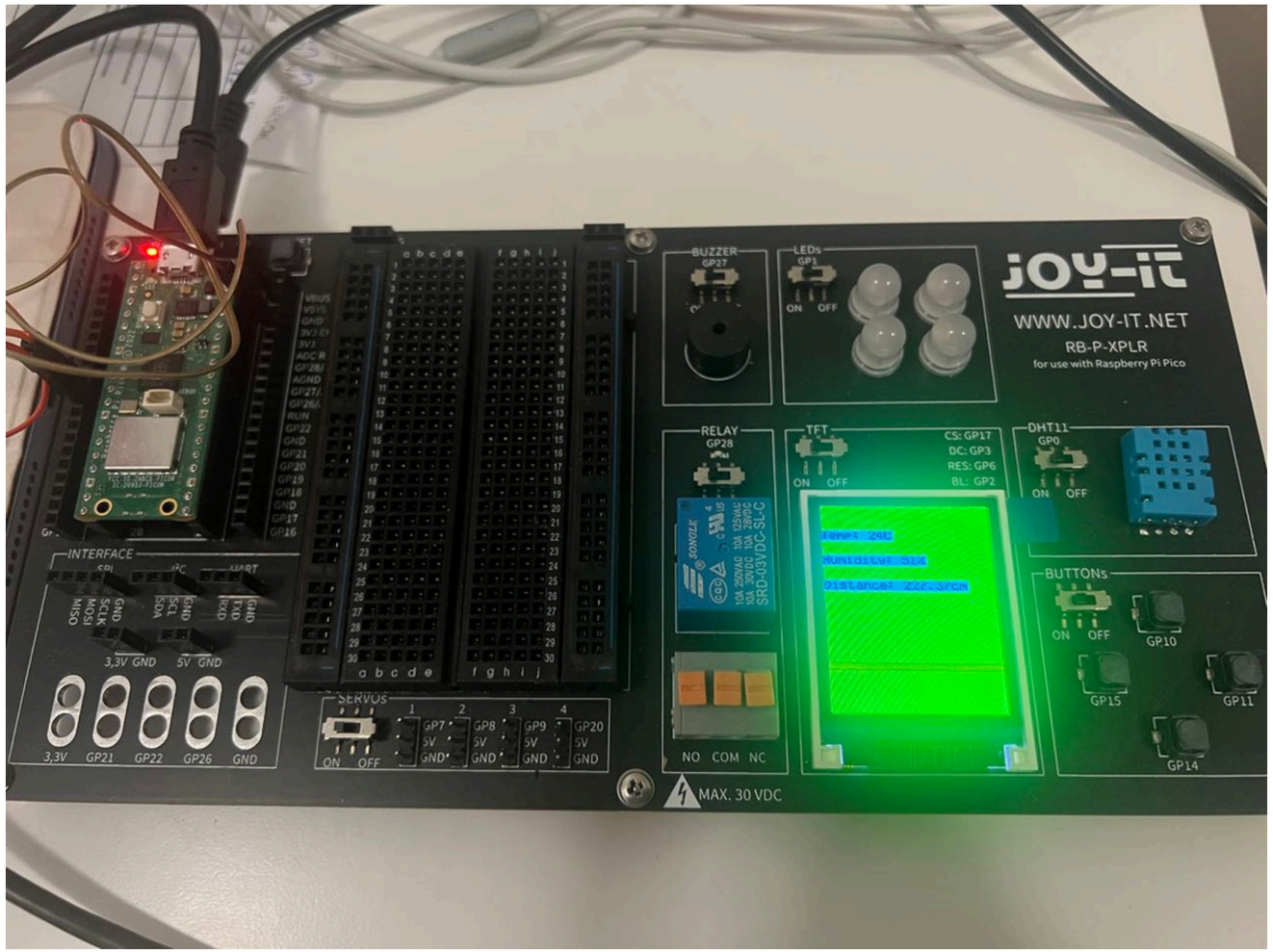
Project Missions

- Use ultrasonic sensors or other sensors to monitor the real time dynamics across cabins, saunas, swimming pools, and outdoor areas in a resort.
- The system will continuously collect sensor data, in future to predict potential dangers, perform predictive maintenance or early warning.
- Provide managers with real-time data visualization, safety alarm prompts, and historical data analysis reports through the Web.
- Production-ready IoT platform with cutting-edge technology allowing for scalability and maintainability.

Project Scope



Ultrasonicsensor and Temperature/ humidity sensor



Sensors

Actual Implementation

✅Temperature - Monitor excessive heat in saunas (shutdown if unsafe temperatures are reached).
✅ Humidity Sensor - Detect high humidity in saunas and optimize ventilation.
✅ Ultrasonic Sensors (Distance & Level Monitoring) - Track open/close status of sauna doors.

Dummy Data for Demostration

✅ Air Quality Sensor - Ensure guest safety in enclosed spaces like saunas.
✅ Gas Sensor - Detect harmful gas leaks (CO, propane, methane) in cabins and kitchens.
✅ Emergency Sensor - Trigger alerts for fire, gas leaks, or other emergencies.
✅ Light Intensity Sensor - Optimize energy savings by dimming lights when not needed.
✅ Vibration Sensor - Detect tampering or forced entry at resort entrances.
✅ Noise Level Sensor - Ensure quiet hours compliance for a better guest experience.
✅ Water Level Sensor - Monitor water levels in swimming pools, hot tubs, and saunas to prevent overflow.
✅ Water Flow Sensor - Detect leaks in water pipes and alert maintenance.
✅ Population Sensor - Prevent overcrowding in pools, saunas, and lounges for safety and comfort.

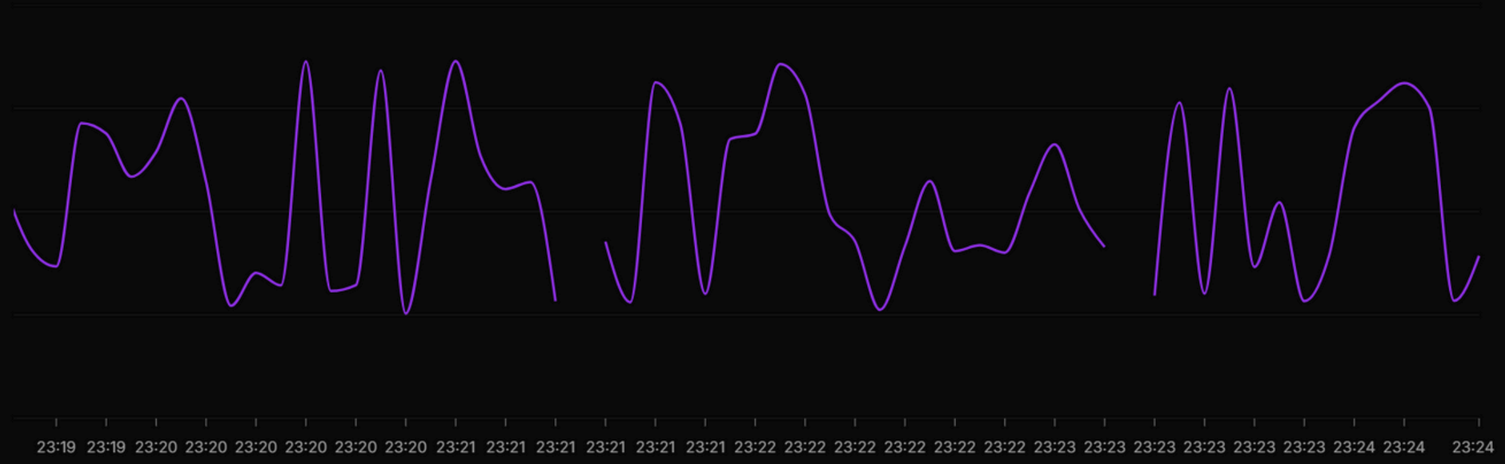
Comprehensive Monitoring Dashboard

Visualize trends, compare performance, and stay informed with intuitive charts and graphs designed for actionable insights

Temperature Monitoring Graph

Real-time temperature from multiple sensors

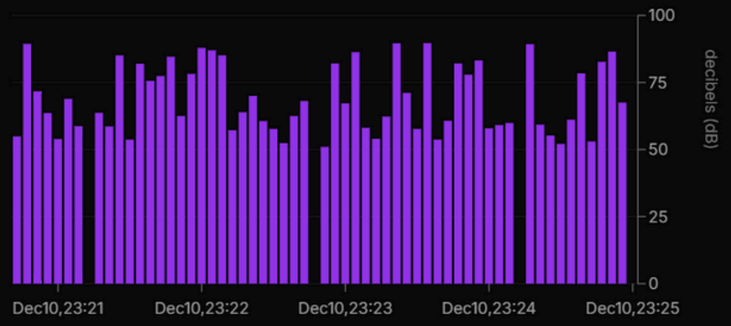
5m



Noise Level Tracking Chart

Live noise level data across different areas to maintain operational safety and comply with noise regulations.

5m



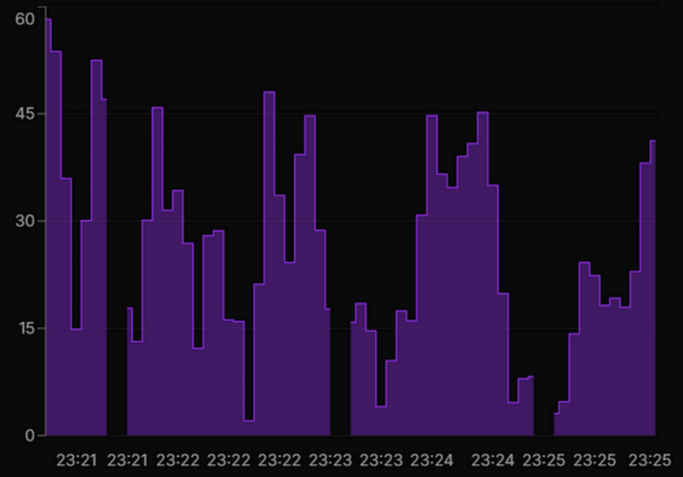
Measured in Decibels (dB)

Optimal Noise Range: 50-85 dB

Water Flow Analysis

Monitoring water flow rates in real time to ensure efficient usage and leak detection (liters/min)

5m



Humidity Monitoring Graph

Real-time humidity levels across different areas

Hazardous Gas Distribution

Real-time monitoring of gas levels across multiple zones

Air Quality Measurements

Showing the Air quality Area Chart for an hour

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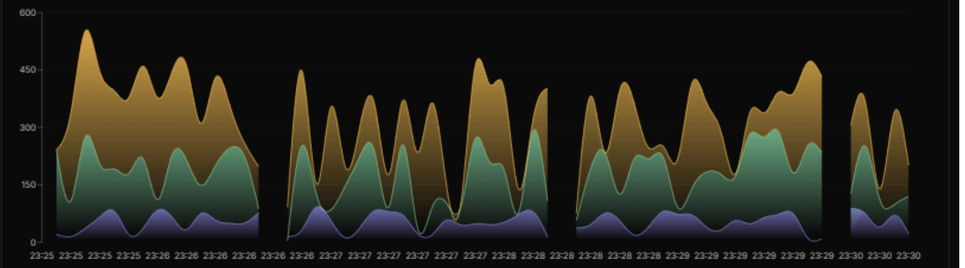
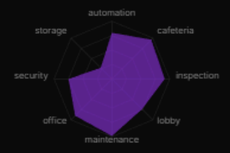
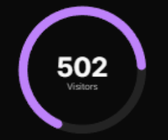




Population distribution in Warehouse Zone

December 10 at 23:30

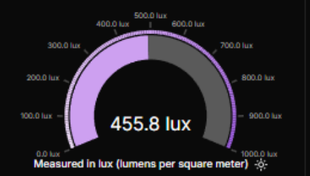


Showing total population in Warehouse

December 10 at 23:30

Light Intensity Indicator

Real time light intensity inside warehouse

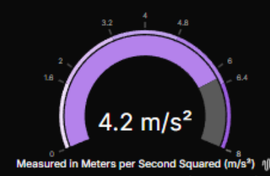


Measured in lux (lumens per square meter)

Optimal Range: 300-800 lux

Vibration Sensor

Real-time vibration for production area



Measured in Meters per Second Squared (m/s²)

Optimal Range between 1.5 m/s² and 3.0 m/s²

Emergency Status Indicator

Showing the tendency for fire alert

Fire Alert system detection

Integrated fire Alarm system

Tech Stack

GitHub Actions