

Real-Time Water Quality Mapping And Reporting System using IoT and GIS with Enhanced Cybersecurity

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Abstract: *This research aims to develop a real-time water quality mapping and reporting system utilizing IoT sensors and GIS technology, with an emphasis on enhanced cybersecurity. By deploying IoT sensors across various water sources, continuous data collection on water quality parameters such as pH, turbidity, temperature, and pollutant levels is achieved. This data is integrated into a Geographic Information System (GIS) platform, enabling dynamic mapping, visualization, and analysis of water quality in real-time. The study underscores the critical role of cybersecurity in protecting the integrity and confidentiality of the collected data. Advanced security measures, including encryption, secure authentication protocols, and intrusion detection systems, are implemented to safeguard the system against cyber threats. The research highlights the significance of secure, real-time data-driven approaches in the sustainable management and monitoring of water quality.*

Keywords: Real-Time Water Quality Monitoring, IoT Sensors, GIS Integration, Water Quality Mapping, Data Visualization, Enhanced Cybersecurity, Real-Time Data Collection, Water Quality Parameters, Cyber Threat Protection, Data Integrity, Data Confidentiality, Secure Authentication, Encryption, Intrusion Detection Systems, Sustainable Water Management, Environmental Monitoring, Real-Time Analysis, Smart Water Management, IoT and GIS Technologies.