

Real-Time River Water Pollution Detection

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Abstract: *Water pollution in rivers poses serious threats to public health, biodiversity, and ecological balance. Traditional water quality assessment techniques rely on laboratory-based testing, which is time-consuming and costly. This paper presents a real-time river water pollution detection system using ensemble machine learning models including Random Forest, Support Vector Machine, and Long Short-Term Memory networks. A custom Water Quality Index is computed, and majority voting improves prediction reliability. The system is deployed using Streamlit for real-time monitoring. Experimental results show an overall accuracy of 96.85%, demonstrating robustness and scalability.*

Keywords: Machine Learning, Random Forest, Support Vector Machine, LSTM, Ensemble Learning, Real-Time Monitoring

