Real Time Water Quality Analysis Using Machine Learning

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Abstract: *Water quality parameters play a crucial role in our daily lives. The ability to predict water quality can significantly mitigate water pollution and protect public health. An advanced monitoring system that utilizes the Internet of Things (IoT) can automatically assess water conditions by processing sensor data and promptly alerting water analysts when abnormalities are detected. The advent of Machine to Machine Communication has simplified and enhanced the analysis and transmission of this data. This initiative has led to the development of an "Intelligent IoT-based water quality monitoring system" specifically designed for lakes in rural regions. This project aims to develop an integrated system for real-time water quality analysis using IoT-based sensors and machine learning algorithms. The system employsNodeMCU ESP32 microcontroller interfaced with a set of sensors, including a Turbidity sensor, TDS sensor, and pH sensor, to measure water quality parameters. These values are sent to a Firebase Realtime Database, where an Android application fetches and processes them. Alongside these parameters, the user manually inputs additional information such as the water source. A machine learning algorithm is then applied to classify the water as either Good, Better, or Best for drinking*

Keywords: Internet of Things, turbidity, NodeMCU ESP32, TDS sensor, pH sensor, Firebase Realtime Database

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DOI: 10.48175/IJARSCT-25305

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ISSN
2581-9429
IJARSCT