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(57) Abstract :
ABSTRACT “Integrating IOT to Ensure Health Safety by Evaluating Physical, Chemical, and Biological Water Quality Parameters for Safe Drinking Water in Rural Communities” [600] Ensuring safe drinking water in rural communities is imperative for public health. Integrating IoT technology offers a promising solution by enabling real-time monitoring of physical, chemical, and biological water quality parameters. This paper proposes a framework for the integration of IoT devices to evaluate water quality in rural areas. Firstly, key parameters affecting water quality are identified, encompassing physical attributes such as pH and turbidity, chemical constituents like heavy metals, and biological contaminants including microbial presence. Next, suitable IoT sensors are selected based on their accuracy, durability, and ability to operate in remote environments. These sensors are deployed strategically across water sources, continuously collecting data which is then transmitted to a central server for analysis. Machine learning algorithms can be employed to detect anomalies and predict water quality trends, enabling timely intervention in case of contamination. Moreover, leveraging IoT connectivity, stakeholders can receive real-time alerts and access water quality information via mobile applications or web interfaces, fostering community engagement and transparency. By integrating IoT technology into water quality management practices, rural communities can proactively safeguard public health and ensure access to safe drinking water.

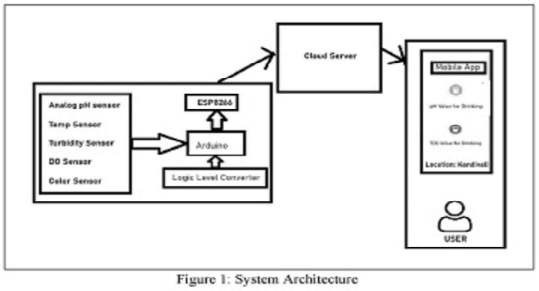

Figure 1: System Architecture

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