

ABSTRAK

Freshwater ornamental fish are a popular aquaculture commodity, but poor water quality due to changes in pH and turbidity levels can cause stress and even fish death. This research aims to design an automatic aquarium water quality monitoring and control system using Internet of Things (IoT) technology. This system utilizes an ESP32 microcontroller, pH sensors, turbidity sensors, and fuzzy logic for decision-making.

The system is designed to read water quality data in real time and automatically control pumps for pH adjustment and water filtration. Furthermore, data is sent to the Blynk application so users can monitor aquarium conditions remotely. Test results show that the pH sensor has an average error of 1.88%, and the turbidity sensor has an error of 6.38%. The system can take automatic actions based on detected water conditions, such as activating the pH Up/Down pump and the filtration pump.

With this system integration, users can save time and effort in aquarium maintenance and improve fish health. This system has proven effective and responsive in maintaining water quality parameters within optimal limits.

Keywords: IoT, Aquarium, pH, Turbidity, ESP32, Fuzzy Logic, Blynk