

## **AQUATECH: A SMART FISH FARMING AUTOMATION AND MONITORING APP**

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### **ABSTRACT**

This research is determined to address a problem of the ‘manual’ monitoring system which renders “low” accuracy on monitoring the water value. The existing practice of manual testing uses a refractometer to check the salinity level device and pond thermometers for testing the water temperature of the fish farm water environment. This also needs extra effort and more workers to monitor regularly (e.g. opening and closing the gate valve to control the level of fresh and saltwater needed to become accurate ‘brackish’ water). On the contrary, this research wants to establish an IOT-Based project in order to attempt solving this existing problem. This research will create a unique system to help monitor and maintain the salinity, temperature and water level of the water with the use of sensors and triggers the relay switches to automatically open and close of the gate valves and operate the motors that depends the parameter desirable range values from the sensors. These sensors and automatic motors also monitor the water environment contact between air and water for a sufficient increase of oxygen concentration in farm water environment. This new IOT-based monitoring system specifically uses Raspberry PI 3B+, NodeMCU Wireless Microcontroller, Sensors (for water level, conductivity, temperature, toxic gases) and Relay Switches, Equipment (i.e. paddle wheel aerator, water pump and pipe valve), Computer and Mobile Phone, Long Range access point/Point-to-Point network to cover the entire fish farming areas for wide ranges wireless connectivity, and USB modem which sends SMS messages to keep the management updated with the current water behavior in the farm.

*Keywords: smart fish farming, monitoring app, refractometer, water environment*