AUTOMATIC WATER GATE DESIGN USING AN INTERNET OF THINGS-BASED WATER LEVEL SENSOR

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ABSTRACT

In aquarium maintenance systems, manually controlling water levels can cause ecosystem imbalance due to delayed action when there is an excess or shortage of water. This research aims to design and implement an automatic floodgate system based on ultrasonic sensors and Internet of Things (IoT) technology to monitor and regulate aquarium water levels in real time. Ultrasonic sensors are used to detect the distance between the water surface and the sensor, and then send the data to the Blynk platform via an ESP8266 WiFi module. This system can operate in two modes: automatic and manual, which can be controlled via the Blynk app or Telegram commands. In automatic mode, the system opens or closes the floodgate based on predetermined maximum and minimum water level thresholds. Test results show that the system can respond accurately to changes in water level and notify users via Telegram messages. The level of sensor measurement error was analyzed using a formula for the percentage error compared to manual measurements. With this technology integration, the system can improve aquarium management efficiency and provide a practical and economical solution for home and small-scale users.

Keywords*: Automatic floodgate, aquarium, ultrasonic sensor, Internet of Things (IoT), Blynk, Telegram.*