Implementation of an Internet of Things-Based Automatic Fish Feeding Device with Feed Level and Water Temperature Monitoring in Fish Ponds

Renggo Ferdiyanto
Computer Engineering Study Program, Faculty of Science & Technology
University of Technology Yogyakarta
Jl. Ringroad Utara Jombor Sleman Yogyakarta
E-mail: renggofrdyan@gmail.com

ABSTRACT

The fisheries sector is a primary livelihood for many Indonesians, with fish being a highly sought-after commodity. This high demand has driven the development of fish farming as a promising business opportunity. Feeding plays a crucial role in aquaculture, as irregular feeding can disrupt fish growth and health and increase operational costs. This research aims to develop an Internet of Things (IoT)-based automatic fish feeding system, equipped with real-time feed level and water temperature monitoring features, to make the fish farming process more practical and manageable. The system was developed through experimental hardware and software engineering at the Yogyakarta Fisheries Academy. The main components used include an ESP32 microcontroller as the main controller, a DS18B20 temperature sensor to monitor water temperature, an infrared sensor to detect remaining feed, and a servo motor and a DC motor to drive the feeding. Monitoring data is sent to Firebase and displayed through an Android application created using MIT App Inventor. This system supports both automatic and manual feeding, as well as remote monitoring for users, simplifying fish farming management in various conditions.

Keywords*: Fish Farming, Feed Level Detection, ESP32, Firebase, Internet of Things (IoT), MIT App Inventor, Water Temperature Monitoring, Automatic Fish Feeding, DS18B20 Sensor, Infrared Sensor.*