

ABSTRAK

“RANCANG BANGUN *SMART FISH FEEDER* BERBASIS *IOT* DENGAN SISTEM ADAPTIF BERDASARKAN KETINGGIAN AIR DAN KUALITAS AIR PADA KERAMBA JARING TETAP”

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Tugas akhir ini membahas perancangan dan implementasi *Smart Fish Feeder* berbasis *Internet of things* (IoT) dengan sistem pemberian pakan adaptif pada budidaya ikan patin di keramba jaring tetap. Sistem mengotomatisasi pemberian pakan sekaligus memantau suhu, ketinggian, dan kekeruhan air secara *real-time* menggunakan sensor DS18B20, HC-SR04, dan *turbidity*, dengan Arduino Uno R3 sebagai pengendali utama, motor servo MG90S sebagai aktuator, LCD 2004A I2C sebagai monitoring lokal, dan NodeMCU ESP8266 untuk komunikasi ke aplikasi Blynk. Selain pemberian pakan terjadwal, sistem menyesuaikan takaran pakan berdasarkan kondisi ketinggian dan kekeruhan air melalui tiga status: NORMAL, REDUCED, dan OFF. Hasil pengujian menunjukkan seluruh sensor, motor servo, dan komunikasi IoT berfungsi dengan baik, serta sistem mampu menyesuaikan jumlah pakan dengan selisih rata-rata 46,8% antara kondisi NORMAL dan REDUCED. Dengan demikian, *Smart Fish Feeder* ini dapat membantu mengurangi pemborosan pakan berdasarkan kondisi lingkungan keramba jaring tetap.

Kata Kunci: *Internet of things* (IoT), *Smart Fish Feeder*, Ikan Patin, Arduino Uno R3, NodeMCU ESP8266, Ketinggian Air, Kualitas Air, Sensor *Turbidity*, Keramba Jaring Tetap.

ABSTRACT

“DESIGN AND DEVELOPMENT OF AN *INTERNET OF THINGS* (IoT)-BASED *SMART FISH FEEDER* WITH AN ADAPTIVE SYSTEM BASED ON WATER LEVEL AND WATER QUALITY IN FIXED NET CAGES”

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This final project discusses the design and implementation of an *Internet of things* (IoT)-based *Smart Fish Feeder* with an adaptive feeding system for *Pangasius* cultivation in fixed net cages. The system automates feeding while monitoring water temperature, level, and turbidity in real-time using DS18B20, HC-SR04, and turbidity sensors, with an Arduino Uno R3 as the main controller, an MG90S servo motor as the actuator, an LCD 2004A I2C for local monitoring, and a NodeMCU ESP8266 for communication with the Blynk application. Besides scheduled feeding, the system adjusts the feed amount based on water level and turbidity through three states: NORMAL, REDUCED, and OFF. The testing results show that all sensors, the servo motor, and IoT communication worked properly, and the system was able to adjust the feed amount with an average difference of 46.8% between the NORMAL and REDUCED states. Therefore, the proposed *Smart Fish Feeder* can help reduce feed waste based on the environmental conditions of fixed net cages.

Keywords: Internet of things (IoT), *Smart Fish Feeder*, *Pangasius* Fish, Arduino Uno R3, NodeMCU ESP8266, Water Level, Water Quality, Turbidity Sensor, Fixed Net Cage.