

Design and Implementation of Multi Variable Sensor Based Automatic Fishing Equipment Using the Kalman Filter Method with Website Based Real-time Monitoring

Rani Purbaningtyas, S.Kom., MT. (Supervisor Lecturer)

Ahmad Affandi

Study Program of Informatics Engineering

Department of Information Technology

ABSTRACT

This research aims to design and implement an automatic fishing system based on multi-variable sensors using the Kalman Filter method with Real-time website-based monitoring. The system utilizes an SW-420 vibration sensor to detect fish strikes and an HX711 Load Cell sensor to measure the weight of the catch. Data from both sensors are processed using a Two-Dimensional Multi-Sensor Linear Kalman Filter to reduce noise and improve reading stability. The system is controlled by an ESP32 microcontroller that transmits data to Firebase for Real-time monitoring through a website. The development method used in this study is the Software Development Life Cycle (SDLC) with the Waterfall model. The results show that the Kalman Filter produces more stable sensor data than raw readings, thereby improving the accuracy of fish strike detection and catch weight measurement. In addition, the monitoring website successfully displays equipment status and catch information in real time. Therefore, the developed system supports more effective fishing activities through the integration of Internet of Things (IoT) technology, multi-variable sensors, and the Kalman Filter method.

Keywords: Automatic Fishing System, Kalman Filter, ESP32, Load Cell, Vibration Sensor, Internet of Things, Real-time Monitoring.