PROTOTYPE OF CATTLE FEED DISTRIBUTION SYSTEM USING ESP32 BASED ON INTERNET OF THINGS (IoT)

Randhika Juliatama Saputra
Electrical Engineering Study Program, Faculty of Science and Technology
University of Technology Yogyakarta
Jl. Siliwangi, Sendangadi, Mlati, Sleman, D.I. Yogyakarta (55285)
E-mail: randhikajuliatamas@gmail.com

ABSTRACT

Cattle farming plays a vital role in supplying animal-based food products in Indonesia. However, efficient feed management remains a major challenge. This study aims to design and develop an automated feed distribution system based on the Internet of Things (IoT) using the ESP32 microcontroller. The system integrates infrared sensors, ultrasonic sensors, DC motors, and servo motors, all controlled via the Blynk IoT application, enabling real-time monitoring and control. Feed distribution is executed according to an automated schedule but can also be triggered manually. Testing was conducted to assess the effectiveness of feed delivery across three cattle pens and to evaluate the accuracy of the sensors and actuators. The results demonstrate a system success rate of 100% across nearly all areas, with feed distribution errors remaining within acceptable tolerance levels. This system effectively improves efficiency and accuracy in feed management while supporting digital transformation in the livestock sector. The study contributes significantly to the development of smart farming concepts in Indonesia, particularly for small to medium-scale cattle farms.

Keywords: automated feed distribution, ESP32, Internet of Things, Blynk, smart farming, cattle farming.