IOT AND TELEGRAM BASED BIRD PEST REPELLENT SYSTEM FOR RICE PLANTS

YOHANES BIMA WASKITO NUGROHO
Computer Engineering Study Program, Faculty of Science and Technology,
University of Technology Yogyakarta
Jl. Ringroad Utara Jombor Sleman Yogyakarta
E-mail : yohanesbimawaskitonugroho28@gmail.com

ABSTRACT

Rice farmers often face crop failure and crop damage due to bird pest attacks. Manual pest repellent methods, such as pulling ropes attached to paper or cans, are ineffective and burden farmers' labor. This research aims to develop an efficient and effective Internet of Things (IoT) and Telegram-based bird repellent system to address these issues. This research method uses Research and Development (R&D) with several stages: problem identification, system design, implementation, testing, and analysis of results. This system uses a PIR sensor for motion detection and an HC-SR04 ultrasonic sensor for distance detection (<17). Actuators in the form of a buzzer and SG90 servo are activated to repel pests. Integration with the Telegram application via the HTTP protocol allows remote monitoring and control. Test results show that this system successfully detects pest movement (1-15 cm) and distance (1-17 cm) with a fast response (1-9 seconds). The actuators responded effectively, and Telegram communication worked well for control ("SYSTEM ON"/"SYSTEM OFF") and real-time notifications (1-4 seconds), even from a distance of 10-15 meters. This system has been proven to reduce manual workload for farmers and increase the efficiency of bird control in rice fields, making it a practical and effective solution compared to manual methods.

Keywords*: IoT, bird control, PIR sensor, ultrasonic sensor, Telegram.*