

## **ABSTRACT**

*KawalTani.id is an IoT-based platform designed to support agricultural extension officers in monitoring paddy fields. However, a key challenge was identified among officers at BPP Karang Tengah, Cianjur, who faced difficulties interpreting technical data, such as graphs and tables, presented on the dashboard. To address this gap, this project aimed to develop the backend for an interactive chatbot feature capable of providing accurate data explanations and recommendations. The system was developed using the Scrum methodology, with the Laravel framework for the backend, MySQL as the database, and powered by OpenAI's GPT-3.5-turbo model, which was optimized through a fine-tuning technique that achieved a training accuracy of 73.3%. The result of this development is a set of functionalities allowing users to initiate conversations, view history, rename titles, and delete chats, with the backend code quality verified using the white-box testing method with the Basis Path technique. It is concluded that the chatbot feature was successfully implemented, proving capable of assisting extension officers by translating complex sensor data into user-friendly information and thereby achieving the project's primary objective.*

**Keywords:** *Chatbot, Laravel, OpenAI, Fine-Tuning, Agriculture, White Box Testing*