

# Abstract

Agriculture has a major role in human life to provide a source of food. One of the staple food sources is rice, which is derived from paddy. In the current era there are many technologies that help in the world of agriculture, one of which is Smart Farming which uses IoT (Internet of Things). Various pest detection algorithms have been proposed by previous researchers, however the detection accuracy they produce is generally less than 85%. Besides this, the sensors they use are also less effective for outdoor use. To provide solutions to the above problems, this final project research develops a deep learning-based smart pest detection and repellent tool. The system consists of the HC-SR501 PIR sensor combined with a camera as a pest monitoring device. Deep learning will function as a tool to classify pests based on the images captured by the camera. An ultrasonic wave-based buzzer is also installed in the developed tool. The electronic sound frequency of the buzzer can be adjusted based on the type of pest being monitored. The methods used in this final project research are 1. Literature study on pest detection, 2. Deep Learning algorithm development, 3. Prototype development, 4. Performance testing and analysis. The results of performance testing of the detection algorithm used managed to achieve an average accuracy of 80%. In addition, the developed prototype can also detect and transmit pests.

**Keywords:** Agriculture, Pests, PIR Sensors, Buzzer, Deep Learning