ABSTRACT

In recent years, coconut tree farmers have faced significant challenges due to a surge in pests and diseases, leading to decreased coconut production and compromised tree health. Addressing these issues requires substantial manpower and financial resources for effective pest and disease detection and management. To tackle this issue, this project proposes integrating artificial intelligence (AI), image recognition technologies, environmental sensors, and the Internet of Things (IoT) for pest and disease identification in coconut trees. The application of deep learning in coconut tree disease recognition offers numerous advantages, including more objective feature extraction and improved research efficiency. By leveraging deep learning algorithms, the proposed system aims to overcome the limitations of traditional methods, such as artificial selection of disease spot features, resulting in more accurate and timely detection of pests and diseases. This approach not only enhances the speed of technology transformation but also ensures more efficient pest control measures. This research discusses current trends and challenges in detecting coconut tree diseases using advanced imaging techniques and deep learning algorithms. By providing insights into the latest advancements in pest and disease detection, this study serves as a valuable resource for researchers and agricultural practitioners alike. Moreover, the proposed system goes beyond detection by notifying farmers of the presence of different pests in coconut trees before they proliferate using the developed mobile application. By accurately pinpointing the location and extent of pests, farmers can deploy pesticides at precise times and locations, reducing the need for excessive agricultural manpower and minimizing environmental damage caused by pesticide overuse. In addition to pest detection, our system also incorporates pesticide recommendation and administration using drones. After identifying pests and diseases, the system recommends the most suitable pesticides to farmers through a user-friendly interface. Drones equipped with recommended pesticides then administer the solution precisely onto affected areas of coconut trees. This integrated approach not only streamlines pest management but also optimizes pesticide usage,

ultimately enhancing agricultural productivity and sustainability while reducing environmental impact.

Index terms: Artificial Intelligence (AI), Internet of Things (IoT), Artificial Intelligence of Things (AIoT), Deep learning, pests and diseases, Unmanned Aerial Vehicle (UAV).