



INFORMATICS INSTITUTE OF TECHNOLOGY

In Collaboration with the

UNIVERSITY OF WESTMINSTER

**Deep Learning and Machine Learning  
for the Diagnosis of Paddy Diseases in Sri Lanka**

A dissertation by

**Mr. A.M.A.D Jayawardhana**

Supervised By:

**Ms. Malsha Fernando**

Submitted in partial fulfillment of the requirements for the

BEng (Hons) Software Engineering degree

at the University of Westminster.

**May 2023**

# **Deep Learning and Machine Learning for the Diagnosis of Paddy Diseases in Sri Lanka**

## **Abstract**

In Sri Lanka, rice is renowned for having a lengthy history. Paddy crops are grown all over the nation in practically every area due to their significance as the main food source. The rice harvest can occasionally be severely reduced by illnesses found in paddy plants, which has an impact on the island's annual food supply. This study uses a combination technique of deep learning and machine learning to identify certain important illnesses in rice plants. An ensemble of deep learning feature extractors and an ensemble of machine learning classifiers are used for the diagnosis of paddy diseases. A new combination of deep learning models acts as the feature extractor of this system. A hybrid approach of deep learning and machine learning has been used to reduce the computational cost of a standalone deep learning model. The hybrid approach with ensemble models was tested to have reasonable accuracy and performance compared with a standalone deep learning model. Finally, the system was presented to the users through a smart phone application.

**Key Words-** Deep Learning, Machine Learning, Ensemble Models, Paddy Disease Detection