INFORMATICS INSTITUTE OF TECHNOLOGY

INFORMATICS INSTITUTE OF TECHNOLOGY

In collaboration with

UNIVERSITY OF WESTMINSTER

Sri Lankan Rubber Diseases Detection - Greenify

A dissertation by

Mr. Wehan Withana
W1761296 / 2019349

Supervised by

Mr. Sudharshan Welihinda

Submitted in partial fulfillment of the requirements for the BEng (Hons) in Software Engineering degree at the University of Westminster.

10th May 2023

ABSTRACT

Rubber has a long history of production and exportation in Sri Lanka, where it is a significant earnings agricultural product. It is widely planted throughout the nation's many areas and provides many farmers with a vital source of income. Sri Lanka is one of the top 10 producers worldwide, supplying premium natural rubber to several nations. Tire, shoe, and industrial product manufacturing are just a few industries that employ rubber.

In Sri Lanka, diseases of rubber trees have grown to be a serious problem, reducing both the amount and quality of rubber output. The most common diseases of rubber trees are white root disease, which damages the roots, and the leaves-specific diseases Colletotrichum, Corynespora, and Oidium. The lack of specialists makes it difficult for rubber growers to diagnose and cure these diseases.

The author developed a CNN model with multiple convolutional and max pooling layers, followed by fully connected layers, to identify the above rubber leaf diseases using the categorical cross-entropy loss function. The dataset used for training and evaluation was obtained with the permission of the Rubber Research Institute Sri Lanka. The model's accuracy of above 94% represents an important improvement in identifying and classifying diseases of rubber.

Keywords: Machine learning, CNN, White root disease, image processing