ACEIoT

UNIVERSITY of RWANDA

College of Science and Technology

Africa Center of Excellence in Internet of Things (ACEIoT)

Research Seminar Presentation

Identification of Maize Leaves Infected by Fall Armyworms Using UAV-based Imagery and Convolutional Neural Networks.

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Abstract:

Precision farming technologies are important for a stable supply of healthy food. Every year farmers harvest a few amounts of crops because of the pests and diseases. Automatic detection of crop health from images helps to increase yield and profit to farmers while reducing input cost and time. In this study, the aim was to precisely detect maize leaves that have been infected by fall armyworms (faw) by using automatic recognition algorithm models based on the convolution neural network (CNN) namely, VGG16, VGG19, InceptionV3 and MobileNetV2. These models were used to investigate the infected maize leaves that were captured using an unmanned aerial vehicle (UAV) remote-sensing technology. The models were simulated with original images and modified images obtained by applying Shi-Tomas corner detection techniques. In both cases, the CNN models we considered outperformed the previously proposed models in terms of accuracy. Besides, the performance of the models trained with modified images has been significantly improved such that the accuracy of VGG16, VGG19, InceptionV3 and MobilenetV2 increased from 96%, 93.08%, 96.75% and 98.25% to 99.92%, 99.67%, 100% and 100%, respectively.

DATE & TIME:

16th April ,2021

10:00 am to 11:00