UNIVERSITY *of* RWANDA

ACEIoT

Hybrid Convolution Neural Network Model For a Quicker Detection of Infested Maize Plants With Fall Armyworms Using UAV-Based Images.

Abstract:

Farian S. Ishengoma

University of Rwanda

PhD Student ,ACEIOT

Visual detection of plants diseases over a large area is time-consuming, and the results are prone to errors due to the subjective nature of human evaluations. Several automatic disease detection techniques that improve detection time and improve accuracy compared to visual methods exist, yet they are not suitable for immediate detection. In this paper, we propose a hybrid convolution neural network (CNN) model to speed up the detection of fall armyworms (faw) infested maize leaves. Specifically, the proposed system combines unmanned aerial vehicle (UAV) technology, to autonomously capture maize leaves, and a hybrid CNN model, which is based on a parallel structure specifically designed to take advantage of the benefits of both individual models, namely VGG16 and InceptionV3. We compare the performance of the proposed model in terms of accuracy and training time to four existing CNN models, namely VGG16, InceptionV3, XceptionNet, and Resnet50. The results show that compared to existing models, the proposed hybrid model reduces the training time by 16% to 44% compared to other models while exhibiting the most superior accuracy of 96.98%.

Seminar date:	Time:	Mode:
Thursday, 30th June 2022	10:00-11:00 am	Virtual