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Advances in Machine Learning and Big Data Analytics I

ICMLBDA 2023, NIT Arunachal Pradesh, India, May 29-30

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Contents

Plant Disease Detection Using Modern Deep Learning Approach: YOLOv7

Ayan Banerjee, Arkaprava Mazumder, Ayush Kumar Shaw, Udit Narayana Kar, Sovan Bhattacharya, and Chandan Bandyopadhyay

Abstract Agriculture is an essential part of every country's economy. However, it is widely affected by diseases and natural disasters. Natural disasters are inevitable, but in the case of diseases, if they can be detected in their early stages, their growth can be stopped with appropriate measures and action, boosting agricultural yields and reducing crop losses. In this chapter, we attempt to deploy the YOLOv7 model for the automated disease detection of plants. YOLOv7 uses deep neural networks and the Pytorch model to identify and classify items quickly and accurately. The model we have used is already available online, and we have further optimized it to our needs to obtain the highest accuracy. Finally, we trained the model with the perfect batch size and epochs that give an accuracy score of 94%, which is a good score for multiclass real-time detection of diseased plants.

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