Plant Life: An Intelligent Mobile Plant Disease Diagnostic System using Deep Learning

Dr. Muthu Senthil B[1], Mummaneni Sravani[2], Konduru Theja Sree[3], Krithik Shri M. P.[4]

Professor, Department of Computer Science and Engineering[1]
Students, Department of Computer Science and Engineering[2,3,4]
SRM Valliammai Engineering College, Chennai, Tamil Nadu, India

Abstract: *Agriculture is an important sector that considerably enhances a nation's economic development. Farmers encounter several obstacles every year in order to produce high-quality crops. Plant diseases are a significant factor in the failure of the harvest. Additionally, pests, specialized illnesses, or natural disasters cause massive crop losses every year. It raises serious concerns about the application of sustainable advanced technologies to agricultural problems. The proposed intelligent system's main job is to detect plant disease using an image captured in the mobile application. It employs the region-based convolution neural network (fast-RCNN) and pre-trained model generation for the set of datasets and captured images. To ensure long-term viability, the mobile app is integrated with cloud services. The proposed system also includes recommendations to help farmers determine whether plant conditions are healthy or unhealthy, as well asthe recommendations to cure disease.*

Keywords: fast R-CNN, plant disease, CNN, Android App

REFERENCES

[1]. Uzhinskiy A, Ososkov G, Goncharov P, Nechaevskiy A. Multifunctional platform and mobile application for plant disease detection. InCEUR Workshop Proc 2019 (Vol. 2507, pp. 110-114).

[2]. Siddiqua A, Kabir MA, Ferdous T, Ali IB,Weston LA. Evaluating plant disease detection mobile applications: Quality and limitations. Agronomy. 2022 Aug 8;12(8):1869.

[3]. Petrellis N. A smart phone image processing application for plant disease diagnosis. In2017 6th international conference on modern circuits and systems technologies (MOCAST) 2017 May 4 (pp. 1-4). IEEE.

[4]. Adedoja AO, Owolawi PA, Mapayi T, Tu C. Intelligent Mobile Plant Disease Diagnostic System Using NASNet-Mobile Deep Learning. IAENG International Journal of Computer Science. 2022 Mar 1;49(1):216-31.

[5]. Sanga S, Mero V, Machuve D, Mwanganda D. Mobile-based deep learning models for banana diseases detection. arXiv preprint arXiv:2004.03718. 2020 Apr 7.

[6]. Nikos Petrellis et al [6] , smart phone image processing application for plant disease diagnosis Mobile Application for Plant Disease Classification Based on Symptom Signatures

[7]. Reza ZN, Nuzhat F, Mahsa NA, Ali MH. Detecting jute plant disease using image processing and machine learning. In2016 3rd International Conference on Electrical Engineering and Information communication Technology (ICEEICT) 2016 Sep 22 (pp. 1-6). IEEE.

[8]. Petrellis N. Mobile application for plant disease classification based on symptom signatures. InProceedings of the 21st Pan-Hellenic Conference on Informatics 2017 Sep 28 (pp. 1-6).

[9]. Siddiqua A, Kabir MA, Ferdous T, Ali IB, Weston LA. Evaluating Plant Disease Detection Mobile Applications: Quality and Limitations.Agronomy 2022, 12, 1869.