IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 16, May 2023

A Deep CNN Approach for Plant Disease Detection

Prof. Prathmesh[1], Rohan[2], Sahil[3], Samarth[4], Prasad[5]
Project Guide(CS), Department of Computer Engineering[1,]
Students, Department of Computer Engineering[2,3,4,5]
NBN Sinhgad School of Engineering, Pune, India

Abstract: *Visual inspection by experts and biological examinations are the traditional methods used for diagnosing plant diseases, but they can be expensive and time-consuming. To address this issue, researchers have developed computer-based methodologies that use deep learning systems based on artificial neural networks to detect plant diseases using leaf images. One commonly used technique is the application of convolutional neural networks (CNNs), such as the ResNet architecture, which is trained on an augmented dataset containing images of healthy and diseased leaves. This deep learning technique has shown to be effective for various object detection problems, including plant disease detection. The model is capable of classifying images into two categories: disease-free and diseased. To compare the performances of different methods, the implementation was conducted using Anaconda 2019.10..*

Keywords: Plant disease detection, Deep Learning, CNN, Data Augmentation

REFERENCES

[1] S. P. Mohanty, D. P. Hughes, and M. Salathé, "Using Deep Learning for Image-Based Plant Disease Detection," Frontiers in Plant Science, European Conference on Computer Vision, 2016.
[2] H. Cap, K. Suwa, E. Fujita , S. Kagiwada, H. Uga and H. Iyatomi : A Deep Learning Approach for on-site Plant Leaf Detection. European Conference on Computer Vision, 2018.
[3] A. P. Adewale Owolawi and T. Mapayi: Deep Learning Based on NASNet for Plant Disease Recognition Using Leave Images. European Conference on Computer Vision, 2019.
[4] M. Zisserman and Nilsback; Automated flower classification over a large number of classes. European Conference on Computer Vision, pages 722– 729, 2008.
[5] S. P. Mohanty, D. P. Hughes, and M. Salathé: "Using Deep Learning for Image-Based Plant Disease Detection," Frontiers in Plant Science, European Conference on Computer Vision, 2016.
[6] G. Wang, Y. Sun, and J. Wang, "Automatic Image-Based Plant Disease Severity Estimation Using Deep Learning," Computational Intelligence and Neuroscience, pp. 1-8, 2017.
[7] E. Fujita, Y. Kawasaki, H. Uga, S. Kagiwada, and H. Iyatomi, "Basic Investigation on a Robust and Practical Plant Diagnostic System," IEEE Proc. on Machine Learning and Applications, pp. 989-992, 2016.
[8] S. Sladojevic, M. Arsenovic, A. Anderla, D. Culibrk, and D. Stefanovic, "Deep Neural Networks Based Recognition of Plant Diseases by Leaf Image Classification," Computational Intelligence and Neuroscience, vol. 2016, pp. 1-11, 2016.
[9] K. Zisserman and Simonyan: Very deep convolutional networks for large-scale image recognition. European Conference on Computer Vision,2014.
[10] Vanhoucke and V. Rabinovich: Going deeper with convolutions. Conference on Computer Vision and Pattern Recognition, pages 1–9 2015.
[11] C. Szegedy and al: Going Deeper with Convolutions. European Conference on Computer Vision, 2014.
[12] P. Pawara, E. Okafor, O. Surinta, L. Schomaker and M. Wiering1: Comparing Local Descriptors and Bags of Visual Words to Deep Convolutional Neural Networks for Plant Recognition. European Conference on Computer Vision, 2017.
[13] He, X. Zhang, S. Ren, J. Sun: Deep Residual Learning for Image Recognition. European Conference on Computer Vision and Pattern Recognition (CVPR), 2016.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 16, May 2023

[14] A. Sutskever , G.E and I. Hinton: Data Augmentation for Plant Classification . European Conference on Computer Vision, September, 2017. 14
[15] A. Krizhevsky, I. Sutskever, and G. E. Hinton: ImageNet classification with deep convolutional neural networks. European Conference on Computer Vision ,3–6 December ,2012.
[16] Rumpf and al: Detection of symptoms of sugar beet diseases. European Conference on Computer Vision and pattern recognition, 2010.
[17] Xie and al : Early detection and monitoring of symptoms of graymold on tomato culture. European Conference on Computer Vision and pattern recognition, 2017.
[18] V. R. Suma, A. Shetty, F. Rishab Tated, S. Rohan, S Pujar and Triveni: CNN based Leaf Disease Identification and Remedy Recommendation System.European Conference on Computer Vision and pattern recognition, 2019.