

Prediction of Disease in Tomato Leaves with use of Machine Learning Technique

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Abstract: India's sizable agricultural market provides the perfect conditions for cultivating a variety of products, including the tomato harvest. Detecting the transmission of diseases from unhealthy to healthy plants poses a severe threat to the agricultural industry because, if caught early enough, they can quickly spread and perhaps infest the entire farm. In terms of profit in good forming, early stage crop disease identification and severity monitoring is quite important. K-means clustering with fuzzy logic is used in the proposed study to evaluate the disease-affected region of the leaf and, as a result, assess the severity of the diseases. In this thesis, illnesses are detected using machine learning models for convolutional neural networks (CNN) and K-nearest neighbours (KNN).

Keywords: Convolutional neural networks (CNN), K-nearest neighbours (KNN), K-means Clustering, Fuzzy logic, Severity.

REFERENCES

- [1]. Madhulatha, G. and Ramadevi, O. (2020) _Recognition of Plant Diseases using Convolutional Neural Network_, in 2020 Fourth International Conference on I²SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC). 2020 Fourth International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC), pp. 738–743.
- [2]. Agarwal, M. et al. (2020) ToLeD: Tomato Leaf Disease Detection using Convolution Neural Network_, Procedia Computer Science, 167, pp. 293–301.
- [3]. Hatuwal, B. K., Shakya, A. and Joshi, B. (2020) _Plant Leaf Disease Recognition Using Random Forest, KNN, SVM and CNN_, POLIBITS, 62, p. 7.
- [4]. Suresha, M., Shreekanth, K. N., Thirumalesh, B. V. (2017) _Recognition of diseases in paddy leaves using knn classifier_, in 2017 2nd International Conference for Convergence in Technology (I2CT). 2017 2nd International Conference for Convergence in Technology (I2CT), pp. 663–666.
- [5]. SujanSarkar et al. —Fault Area Detection Using K-means Clustering || , International Journal of Computer Applications, August 2018.
- [6]. Vinutha B Hiremath, SandarshGowda MM —Disease Prediction of Tomato Leaf Using CNN, Deep Learning Techniques”, International Research Journal of Modernization in Engineering Technology and Science, June-2022.
- [7]. Sachin D. Khirade and A. B. Patil. —Plant Disease Detection Using Image Processing. || International Conference on Computing Communication Control and Automation (ICCUBEA), 2015 International Conference on, pp. 768-771. IEEE, 2015.