

Title: Tomato Leaf Disease Detection using Deep Learning Techniques

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Author: Dr. Sarojadevi H, Nagamani H S

Problem Mentioned/Solution Obtained:

- The study focuses on identifying tomato plant leaf diseases using machine learning techniques.
- Early disease diagnosis is necessary to reduce future losses in agricultural productivity.
- The study uses Fuzzy Support Vector Machine (Fuzzy-SVM), Convolutional Neural Network (CNN), and Region-based Convolutional Neural Network (R-CNN) algorithms for disease detection.
- Image scaling, color thresholding, flood filling approaches for segmentation, gradient local ternary pattern, and Zernike moments' features are used for training the images.
- The R-CNN-based classifier achieved the highest accuracy of 96.735% compared to other classification approaches.

Algorithm Used/Tools Used/Implemented:

- Fuzzy Support Vector Machine (Fuzzy-SVM)
- Convolutional Neural Network (CNN)
- Region-based Convolutional Neural Network (R-CNN)

Results and Discussion:

The R-CNN-based classifier showed the highest accuracy of 96.735% compared to other classification approaches.

The study successfully demonstrated the effectiveness of deep learning techniques in tomato leaf disease detection.

Knowledge Acquired:

The study highlights the importance of early disease diagnosis in agriculture and the potential of machine learning techniques for accurate disease detection in tomato plants.

Important Reference:

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3. Huang G, Liu Z, Van Der Maaten L, Weinberger KQ. Densely connected convolutional networks. In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, Honolulu, HI, USA, 21–26 July 2017; pp. 4700–4708.
4. Wang, J., Chen, L., Zhang, J., Yuan, Y., Li, M., Zeng, W., 2018. In Chinese Conference on Image and Graphics Technologies, Springer, Cnn transfer learning fo