**Literature Review - DL**

Hall et al. (2015) improved leaf categorisation using deep learning using Convolutional Neural Networks (ConvNets), particularly under challenging circumstances like scaling and rotation. In contrast to conventional techniques that depend on manually generated features, ConvNets can automatically extract appropriate features from photos. Their model performed significantly better when ConvNet features were combined with earlier techniques, demonstrating how deep learning can increase accuracy in challenging picture categorisation tasks.

<https://ieeexplore.ieee.org/abstract/document/7045965>

Kiran et al. (2024) outperformed other models such as the basic CNN (81.4%) and hyperspectral imaging (85%) with their CNN-based model for crop disease identification, achieving a significant accuracy of 91.75%. The model demonstrated good performance when tested on 32,545 crop photos. Training accuracies for healthy peach crops were 92.89%, and for bacterial spots, they were 90.89%. Validation accuracies varied between 87.89% and 90.29%.

<https://ieeexplore.ieee.org/abstract/document/10627795>

Hemalathaa et al. (2022) Using a dataset of 2,940 photos divided into six classes, created a CNN-based model that achieved 98% accuracy in identifying sugarcane leaf diseases. Farmers can now quickly identify diseases through leaf photos due to the model's integration into a smartphone app, which uses the LeNet-5 architecture. The model's efficacy was demonstrated by performance criteria like precision, recall, and F1-score, all of which were higher than 90%.

<https://www.sciencedirect.com/science/article/pii/B9780323852142000033>

Tiwari et al. (2020) created a deep learning model for identifying illnesses of the potato leaf, With 97.8% accuracy. The model was tested on a Plant Village dataset of 2,152 pictures, which included early blight, late blight, and healthy samples. VGG19 was used for feature extraction, and logistic regression was the best classifier. Compared to earlier models, this method exhibits notable improvements and offers a scalable option for early disease identification to increase crop yields.​

<https://ieeexplore.ieee.org/abstract/document/9121067>

David et al. (2021) summarized several deep learning methods regarding the detection of diseases in tomato leaves, considering the economic impacts and limitations of traditional approaches. Then they recommend the use of CNNs, which have reached accuracies of more than 99%, but they also undergo several problems connected with long training. The authors further propose a hybrid CNN-RNN model which will enhance speed and improve the accuracy of the detection, hence could be useful for further research in agricultural applications.

<https://ieeexplore.ieee.org/document/9441714>

C. Dhavale, T. Pawar, A. Singh, S. Pole and K. Sabat, ""Revolutionizing Farming: GAN-Enhanced Imaging, CNN Disease Detection, and LLM Farmer Assistant"," 2024 2nd International Conference on Computer, Communication and Control (IC4), Indore, India, 2024, pp. 1-6, doi: 10.1109/IC457434.2024.10486501. keywords: {Training;Generative AI;Computational modeling;Crops;Transforms;Chatbots;Generative adversarial networks;Crop disease recognition;Generative AI;CNN;Langchain LLaMa Model;chatbot},

<https://ieeexplore-ieee-org.libaccess.sjlibrary.org/document/10486501>

N. Sugitha, K. Kanimozhi and S. K. Shree, "Detection of Plant Disease for Paddy Crop Using an Ensemble of CNNs," 2023 6th International Conference on Recent Trends in Advance Computing (ICRTAC), Chennai, India, 2023, pp. 384-389, doi: 10.1109/ICRTAC59277.2023.10480787. keywords: {Deep learning;Plant diseases;Neural networks;Crops;Stability analysis;Robustness;Safety;Plant Disease Detection;Convolutional Neural Network (CNN);Image Analysis;Neural Network;Image Recognition},

<https://ieeexplore-ieee-org.libaccess.sjlibrary.org/document/10480787>

M. Surusomayajula, V. S. Dhuli, V. C. Dodda, K. Chalasani, S. V. Nimmagadda and T. M. Jammula, "Wheat Plant Disease Detection Using CNN on Real-Time UAV Images," 2023 IEEE 15th International Conference on Computational Intelligence and Communication Networks (CICN), Bangkok, Thailand, 2023, pp. 603-607, doi: 10.1109/CICN59264.2023.10402288. keywords: {Deep learning;Plant diseases;Crops;Food security;Autonomous aerial vehicles;Real-time systems;Convolutional neural networks;Crop disease;Agriculture;CNN;Real-time UAV images},

<https://ieeexplore-ieee-org.libaccess.sjlibrary.org/document/10402288>

C. Shewale, A. Sardeshmukh, P. Shinde, O. Sapkal and S. Shinde, "Intelligent System for Crop Recommendation and Disease Identification," 2024 IEEE 9th International Conference for Convergence in Technology (I2CT), Pune, India, 2024, pp. 1-5, doi: 10.1109/I2CT61223.2024.10544110. keywords: {Technological innovation;Plant diseases;Reviews;Plants (biology);Crops;Soil;Market research;Deep learning;Machine Learning (ML);MobileNet;InceptionV3;Crop recommendation;Disease Detection;Image Processing},

<https://ieeexplore-ieee-org.libaccess.sjlibrary.org/document/10544110>

J. Joshi, M. Aeri, V. Kukreja and R. Sharma, "Enhancing Orange Crop Health: A Hybrid Deep Learning Approach for Precise Multi-Classification of Leaf Diseases," 2024 11th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO), Noida, India, 2024, pp. 1-4, doi: 10.1109/ICRITO61523.2024.10522444. keywords: {Deep learning;Training;Plant diseases;Technological innovation;Crops;Feature extraction;Agriculture;Orange Leaf Disease;Deep Learning Model;Agriculture Security;EfficientNet B3;VGG16},

<https://ieeexplore-ieee-org.libaccess.sjlibrary.org/document/10522444>

​