Automated Detection of Rice Crop Disorder Using Deep Learning Techniques

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Abstract

Many people worldwide make their living from rice farming, but the crop's quality and yield are at risk from several illnesses. Automated detection systems are essential since traditional manual inspection techniques are time-consuming and prone to mistakes. To facilitate machine learning model training, this research suggests a novel approach that uses a dataset designed specifically for multiclass classification of rice crop diseases. Utilizing their unique architectural advantages, the proposed model combines ResNet50, VGG16, and MobileNetV2 convolutional neural networks through an ensemble technique for reliable disease classification. With 99% accuracy, the integrated model outperforms the individual models, as evidenced by assessment metrics including accuracy, precision, recall, and F1-score. Complete evaluations, including ROC curves and confusion matrices, bolster the model's effectiveness in real-world situations. The precise and effective automated diagnosis this research provides enhances food security and contributes substantially to managing agricultural diseases.

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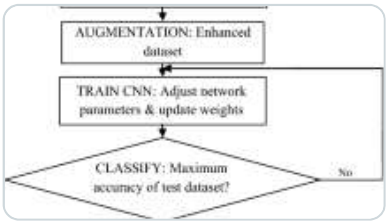

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