DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Course Code & Name : **20CS7503 & DESIGN PROJECT 3**

Year / Semester : **IV / VII**

Section : **B**

Batch Number : **18**

Title of the Project : **DEEP LEARNING BASED DETECTION AND**

CLASSIFICATION OF LEAVES

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ABSTRACT

Deep learning-based system for accurate detection and classification of leaf diseases begins with collecting and preprocessing leaf images to improve data quality. Techniques such as normalization, resizing, and augmentation enhance model performance. A convolutional neural network (CNN) is used to automatically extract key visual features. These features include leaf texture, shape, color, and disease-related patterns. A segmentation-based detection module isolates the leaf region from the background. Only the extracted region of interest (ROI) is used for further analysis. The classification module identifies whether a leaf is healthy or diseased. In addition, it categorizes the disease type for more precise diagnosis. Transfer learning improves accuracy and reduces training time.

Keywords: Leaf Disease Detection, Deep Learning, CNN, Image Preprocessing, Segmentation, ROI Extraction, Plant Disease Classification, Transfer Learning, Real-Time Monitoring, Accuracy Metrics, Precision, Recall, F1-Score, Agricultural Automation.