

# **DETECTION AND CLASSIFICATION OF PLANT LEAF DISEASE USING LOCAL DIRECTIONAL PATTERN AND CNN**

*A project report submitted to Jawaharlal Nehru Technological University-GV in the partial  
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## **BACHELOR OF TECHNOLOGY**

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## **ELECTRONICS AND COMMUNICATION ENGINEERING**

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**AVANTHI INSTITUTE OF ENGINEERING & TECHNOLOGY**

**(Approved by AICTE and Permanently Affiliated to JNTU- GV, AP)**

**(A NAAC A+ Accredited Institution)**

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### CERTIFICATE

This is to certify that the project work entitled "**DETECTION AND CLASSIFICATION OF PLANT LEAF DISEASE USING LOCAL DIRECTIONAL PATTERN AND CNN**" is being submitted for partial fulfilment for the award of Bachelor of Technology in **Electronics & Communication Engineering** is a bonafide work done by P. SAI BHARGAVI(20811A0447), G. TANMAYEESATYA (20811A0425), B. GANGADHAR (20811A0406), K. DARAMALLESH (20811A0433) under the guidance during the academic year 2023-2024 and it has been found suitable for according to the requirements of the university.

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# DETECTION AND CLASSIFICATION OF PLANT LEAF DISEASE USING LOCAL DIRECTIONAL PATTERN AND CNN

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### ABSTRACT

In the quest for advancing agricultural productivity, the detection of plant leaf diseases plays a pivotal role. Traditional methods relying on human expertise are being rapidly supplemented by artificial intelligence and computer vision techniques. This paper introduces a novel descriptor, Local Directional Patterns (LDP), designed to improve feature generation from plant leaves for disease detection in Apple Crop. The LDP descriptor, leveraging Kirsch edge detectors, captures the essential textural and edge information of leaf images, which is crucial for distinguishing between healthy and diseased specimens. The efficacy of LDP is benchmarked against features derived from Convolutional Neural Networks (CNN) and Histogram of Oriented Gradients (HOG), showcasing its robustness with an impressive improvement in overall accuracy. This research not only presents a breakthrough in plant leaf disease detection but also opens avenues for further exploration into the integration of edge-based descriptors with machine learning classifiers. The promising results obtained from the Plant Village dataset underscore the potential of LDP as a reliable tool for the agricultural sector, aiming to enhance crop management and apple yield prediction.