FINAL YEAR PROJECT REPORT

LEAFINSIGHT: A SMART DETECTION OF VEGETABLE DISEASES USING DEEP VISION

In fulfillment of the requirement
For degree of
BS (COMPUTER SCIENCES)

By

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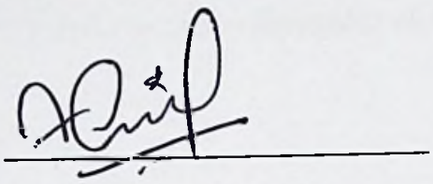
SPRING-2025

DECLARATION

We hereby declare that this project report is based on our original work except for citations and quotations which have been duly acknowledged. We also declare that it has not been previously and concurrently submitted for any other degree or award at Bahria University or other institutions.

Signature: 

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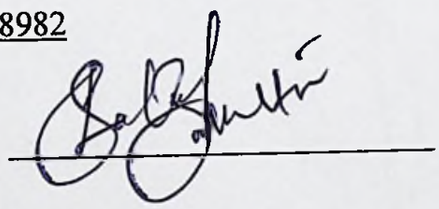
Signature: 

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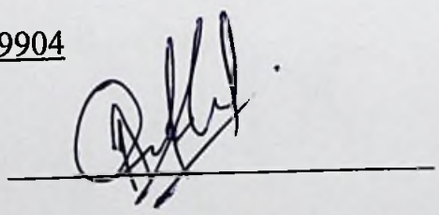
Signature: 

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APPROVAL FOR SUBMISSION

We certify that this project report entitled **"LEAFINSIGHT: A SMART DETECTION OF VEGETABLE DISEASES USING DEEP VISION"** was prepared by **ABDUL SAMAD, SHALAL BAKHTIAR, ANAS AHMED QURESHI** has met the required standard for submission in partial fulfilment of the requirements for the award of **Bachelor of Sciences in Computer Science** at Bahria University.

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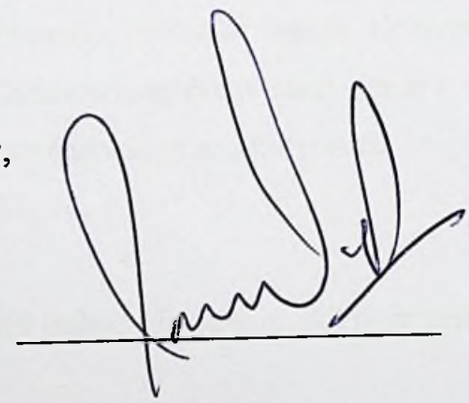
Signature : 

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LEAFINSIGHT: A SMART DETECTION OF VEGETABLE DISEASES USING DEEP VISION

ABSTRACT

In the modern agricultural world, early detection of plant diseases is critical for growing healthy crop and reducing losses. Old and traditional methods to identify a plant disease are often time consuming and requires a expert knowledge, which makes them less accessible to regular farmers and people. This project focuses on the development of a mobile based disease detection system that uses an advanced deep vision techniques to accurately identify diseases in vegetable plants very specifically Potato, Tomato, and Bell Pepper (Capsicum) crops. This system focuses on key leaf diseases, including Late Blight and Early Blight of Potatoes, Tomato Mosaic Virus of Tomatoes, and Bacterial Spot of Bell Peppers. We studied various Convolutional Neural Network (CNN) architectures, like MobileNetV2, VGG16, ResNet50, EfficientNetB0, and InceptionV2 to select model that is suitable for our project and gain good knowledge about the overall model accuracy, efficiency, and behaviour. This deep analysis significantly contributed to our understanding of machine learning and deep vision techniques. Based on our findings, we used MobileNetV2 model which is suitable for mobile application. Our model achieved an accuracy of 95.5%. This allows plant disease detection from many different Environmental conditions. This model communicates with the custom mobile application we developed through fastAPI, which allows users to scan plant leaves for diseases using their smartphone cameras. The mobile app, along with the FastAPI based backend, is deployed on a cloud service to make sure smooth, reliable, and efficient system performance.

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