A Report

On

IMAGE BASED PLANT LEAF DISEASE DETECTION USING DEEP LEARNING

Submitted in the partial fulfilment of requirements for
The award of degree of

BACHELOR OF TECHNOLOGY

In

INFORMATION TECHNOLOGY

Submitted By

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VIGNAN'S
Foundation for Science, Technology & Research
(Deemed to be UNIVERSITY)
-Estd. u/s 3 of UGC Act 1956

NAAC A+ Accredited

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2022-2023

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CERTIFICATE

This is to certify that the Socio Centric Project Report entitled **"IMAGE-BASED PLANT DISEASES DETECTION USING DEEP LEARNING"** is being submitted by **Abdul Razak (191FA07051), N. Jyothi Swaroop (191FA07135)** in partial fulfilment for the award of B. Tech Degree in Information Technology at Vignan's Foundation for Science, Technology and Research, deemed to be University. It is a record of bonafide work carried out by them in Department of Information Technology, Vignan's Foundation for Science Technology and Research under the supervision of **B NAGA SUDHEER.**

Signature of Project Guide
(B Naga Sudheer)

Signature of HOD
(Dr. N. Veeranjanyulu)

Signature of External

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DECLARATION

We hereby declare that the Socio Centric Project report entitled **"IMAGE-BASED PLANT DISEASES DETECTION USING DEEP LEARNING"** submitted to the Department of Information Technology, Vignan's Foundation for Science, Technology and Research, deemed to be University. This report is the work done by us in the Department of Information Technology.

Place:

Date: **Signature of Students**

ACKNOWLEDGEMENTS

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With Sincere regards,

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ABSTRACT

Plant diseases are a major threat to farmers, consumers, environment and the global economy. In India alone, 35% of field crops are lost to pathogens and pests causing losses to farmers. Indiscriminate use of pesticides is also a serious health concern as many are toxic and bio magnified. These adverse effects can be avoided by early disease detection, crop surveillance and targeted treatments. Most diseases are diagnosed by agricultural experts by examining external symptoms. However, farmers have limited access to experts. Our project is the first integrated and collaborative platform for automated disease diagnosis, tracking and forecasting. Farmers can instantly and accurately identify diseases and get solutions with a mobile app by photographing affected plant parts. Real-time diagnosis is enabled using the latest Artificial Intelligence (AI) algorithms for Cloud-based image processing. The AI model continuously learns from user uploaded images and expert suggestions to enhance its accuracy. Farmers can also interact with local experts through the platform. For preventive measures, disease density maps with spread forecasting are rendered from a Cloud based repository of geo-tagged images and micro-climactic factors. A web interface allows experts to perform disease analytics with geographical visualizations. In our experiments, the AI model (CNN) was trained with large disease datasets, created with plant images self-collected from many farms over 7 months. Test images were diagnosed using the automated CNN model and the results were validated by plant pathologists. Over 95% disease identification accuracy was achieved. Our solution is a novel, scalable and accessible tool for disease management of diverse agricultural crop plants and can be deployed as a Cloud based service for farmers and experts for ecologically sustainable crop production. Not only as an agricultural economy but also with a large amount of population to feed, it is necessary that leaf diseases in plants are detected at a very early stage and predictive mechanisms to be adopted to make them safe and avoid losses to the agri-based economy.