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

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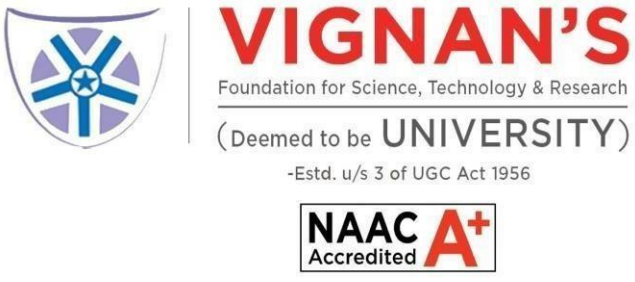

DEPARTMENT OF IT & CA

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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 **B. Gowtham Sai (191FA07098), T. Sai Swaroop (191FA07126), B. Bhanu Prakash(191FA07132)** 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.**

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TABLE OF CONTENTS

Topics	Page No
Declaration	i
Acknowledgements	ii
Abstract	iii
1. Introduction	
1.1 Plant Leaf Disease	2
1.2 Need of Plant Leaf Disease Detection	3
1.3 Technologies Behind Disease Detection	4
1.4 Machine Learning	5
1.5 Machine Learning Techiques	7
1.6 Why Deep Learning	8
1.7 Convolutional Neural Network	11
1.8 Image Classification Techniques	12
1.9 Motivation, Objectives and Scope of the work	15
1.10 Organization of Report	17
2. Literature Survey	
2.1 Tomato Leaf Disease Detection Using Deep Learning	19
2.2 Reviewing Important Aspects of Plant Leaf Disease Detection and Classification	19
2.3 Plant Pathology Disease Detection in Apple Leaves Using CNN	20
2.4 Plant Leaf Disease Detection and Classification based On CNN	20
2.5 Plant Leaf Detection and Disease Recognition Using Deep Learning	21

2.6 Classification of Plant Leaf and Disease Using ML 21
2.7 Detection of plants Disease from Unhealthy Plant Leaves Using ML 22
2.8 Detection of Unhealthy Region of Plant Leaves Using Image Processing 23
2.9 Application Research of Plant Leaf Pests and Disease Base On Unsupervised Learning 23
2.10 Rose Plant Leaves Disease Detection Using CNN 24
2.11 Plant Leaf Disease Detection Using Deep Learning 25
2.12 Plant Disease Detection and Classification Using Deep Learning ConvNets 25
2.13 Machine Learning for Plant Leaf Disease Detection and Classification 26
2.14 Plant Leaf Disease Classification and Detection System Using Machine Learning 26
2.15 Identification of Plant Leaf Disease Using Machine Learning Algorithms 27
3. Plant Leaf Disease Detection
3.1 About Model and Learning 29
3.2 Overview of Existing Work 32
3.3 Selection of Classifiers 37
3.4 Proposed System 41
3.5 Experiment Analysis 42
3.6 Baseline Results 46
4. Results
4.1 Results of a Web Application 50
5. Conclusion
5.1 Summary 53
5.2 Conclusion 54
5.3 Future Work and Extension 55
5.4 References 56

TABLE FOR FIGURES

Topics	Page No.
Figure 1.1 Disease of a Plant	2
Figure 1.2 Agriculture Losses Comparison	4
Figure 1.3 Difference Between AL, ML and DL	6
Figure 1.4 Types of Machine Learning	7
Figure 1.5 Convolutional Neural Networks Architecture	9
Figure 1.6 Image Classification	12
Figure 3.1 Block Diagram of Image Classifier	30
Figure 3.2 Samples Images from Datasets	31
Figure 3.3 Image after Preprocessing	31
Figure 3.4 Image Converted to HSV Color Space	32
Figure 3.5 Images After K Means Clustering	32
Figure 3.6 Images After Removal of Background	33
Figure 3.7 Operation of Convolution Layer without Padding	35
Figure 3.8 Operation of Convolution Layerwith Padding	36
Figure 3.9 Pooling Operation	36
Figure 3.10 Naive inception module	37
Figure 3.11 Statistics of PlantDoc Dataset	40
Figure 3.12 Data Collection	41
Figure 3.13 Training Vs Validation Accuracy	45
Figure 4.1 Home Page	47
Figure 4.2 Selection of Images from a Datasets	47
Figure 4.3 Result and Analyze of a plant	48

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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**

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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.