A MOBILE-BASED SYSTEM FOR DETECTING PLANT LEAF DISEASES USING DEEP LEARNING

PROJECT REPORT

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BONAFIDE CERTIFICATE

This is to certify that the project work entitled "**A MOBILE-BASED SYSTEM FOR DETECTING PLANT LEAF DISEASES USING DEEP LEARNING"** is a Bonafide work done by **VISHNU J [REGISTER NO.:21UBCA048]** in partial fulfillment of the requirement, for the award of Bachelor of Computer Application by Pondicherry University during the academic year 2023 -24

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INTERNAL EXAMINER **EXTERNAL EXAMINER**

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ABSTRACT

In an era characterized by technological advancements, the agricultural sector is witnessing a transformative wave with the integration of artificial intelligence. This project endeavors to contribute to this paradigm shift by introducing a mobile-based system designed for the detection of plant leaf diseases using deep learning. As agriculture plays a pivotal role in global food security, the timely identification and management of plant diseases stand as crucial factors in ensuring sustainable crop production. The intersection of mobile technology and deep learning presents an innovative solution to empower farmers and agricultural practitioners with a user-friendly and efficient tool for disease detection.

The prevailing landscape of plant disease detection systems predominantly relies on image processing and basic machine learning techniques for disease identification. These systems typically involve users manually capturing images of diseased plant leaves and uploading them onto a platform. However, existing solutions encounter limitations in accuracy, especially in classifying a wide spectrum of diseases and providing comprehensive treatment recommendations. This project critically evaluates the shortcomings of current approaches, emphasizing the need for a more sophisticated system capable of accurate disease diagnosis across multiple crop species, accessible databases, and actionable recommendations.

In response to the limitations identified in the existing systems, our proposed mobile-based system leverages Convolutional Neural Networks (CNNs) as a deep learning engine for the automated diagnosis of plant leaf diseases. With a dataset containing 96,206 images of healthy and infected plants across 38 disease categories, our system employs advanced image processing techniques for effective feature extraction and disease classification. The user interface is developed as an Android mobile app, allowing farmers to capture images of infected plant leaves and receive real-time disease identification along with confidence percentages. The advantages of our work lie in its potential to significantly enhance disease identification accuracy, provide accessible information for multiple crop species, and empower farmers with timely and precise treatment recommendations, thereby contributing to increased crop yield and global food security.

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

CNN	Convolutional Neural Network
API	Application Programming Interface
IDE	Integrated Development Environment
SDK	Software Development Kit
ML	Machine Learning
AI	Artificial Intelligence
UI	User Interface
CPU	Central Processing Unit
GPU	Graphics Processing Unit
RAM	Random Access Memory
IoT	Internet of Things
JVM	Java Virtual Machine
OOP	Object-Oriented Programming
DFD	Data Flow Diagram
UX	User Experience
XML	Extensible Markup Language
HTML	Hypertext Markup Language