GM INSTITUTE OF TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Synopsis Presentation on

Deep Learning-Based Mobile and Web App for Multi-Plant Disease Detection and Treatment

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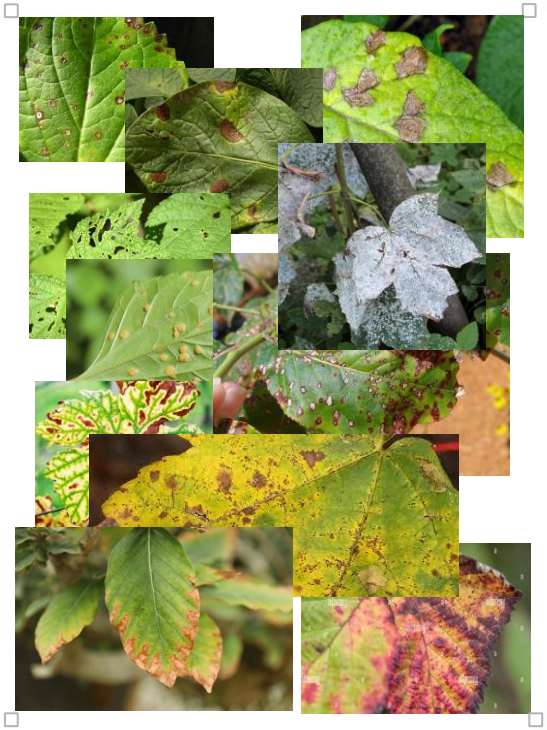
Multi-Plant Disease Detection and Treatment

Deep Learning-Based Mobile and Web App



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INTRODUCTION

This project focuses on developing a deep learning-based solution for early detection of plant leaf diseases to protect crop yield and quality. It will classify diseases in plant leaves and offer treatment recommendations. A mobile and web app will allow users to upload images for disease diagnosis, view treatment options, and purchase suggested products.

INTRODUCTION TO AI, ML, AND DEEP LEARNING

AI

Artificial Intelligence is the broad concept of machines being able to carry out tasks that would normally require human intelligence. AI covers a wide range of activities, from rule-based systems to more advanced techniques like machine learning

ML

Machine Learning is a subset of AI that allows systems to learn from data and improve their performance over time without being explicitly programmed. ML algorithms analyze patterns in data to make predictions or decisions.

DEEP LEARNING

Deep Learning is a further subset of ML that uses neural networks with many layers (hence "deep") to model complex patterns in data. It is particularly effective for tasks such as image and speech recognition due to its ability to automatically extract features from raw data

Why Use Deep Learning for Plant Disease Detection?

Deep learning, especially Convolutional Neural Networks (CNNs), is ideal for plant disease detection because of its ability to process and learn from image data. CNNs can identify intricate patterns in leaf images to classify diseases with high accuracy. Unlike traditional methods, DL can automatically extract features, making it more powerful for visual data tasks like plant disease classification

OBJECTIVES

MODEL

Build a deep learning model for disease classification.

API

Develop a FastAPI backend for mobile and web.

INFO

Provide disease details and treatment recommendations.

INTERFACE

Create mobile and web apps for user interaction.

INTEGRATION

Ensure seamless and scalable system integration.

DEPLOYMENT

Deploying to the d Google Cloud or AWS

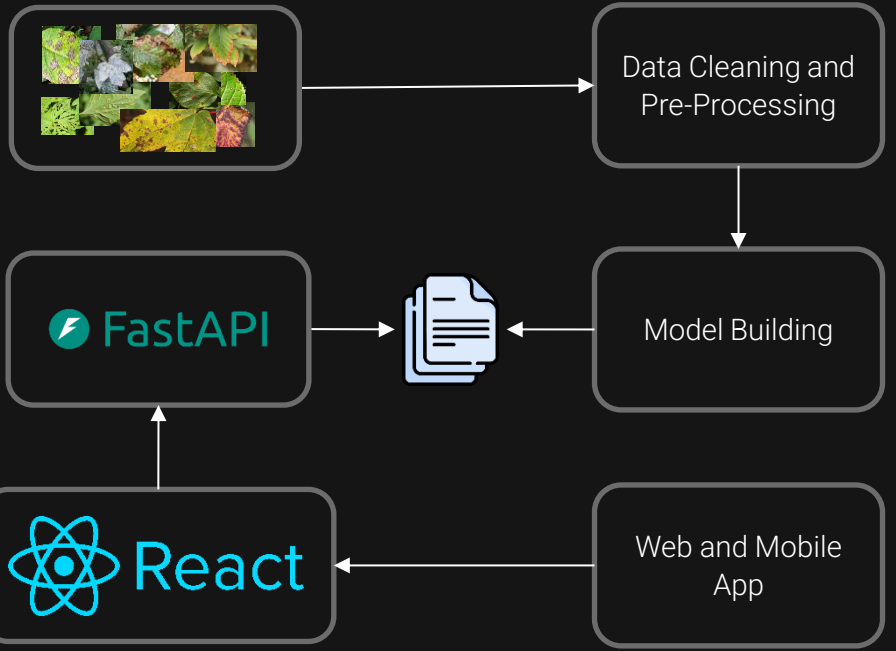
LITERATURE SURVEY

SL. No.	Year	Author	Paper
1	2020	Sue Han Lee et al.	Plant disease characterization based on deep learning
2	2016	Srdjan Sladojevic et al.	Deep Neural Networks Based Recognition of Plant Diseases by Leaf Image Classification
3	2020	Trivedi J et al.	Plant Leaf Disease Detection Using Machine Learning
4	2019	Hussain M et al.	CNN Transfer Learning for Image Classification
5	2016	Mohanty Sharada P et al.	Using Deep Learning for Image-Based Plant Disease Detection

METHEDOLOGY

- Data Collection & Preprocessing
- Algorithms for Plant Disease Classification
- API Development with FastAPI
- Mobile App Development
- Web App Development
- Database
- Deployment

ARCHITECTURE



REQUIREMENTS

SOFTWARE

- FastAPI
- TensorFlow/Keras
- ReactJS
- React Native
- MySQL
- AWS/GCP
- Postman

HARDWARE

- Cloud GPU for model training
- Android/iOS devices for deployment

Applications

Agriculture and Farming

Agri tech Solutions

E-Commerce

Educational Tool

REFERENCES

1. Ebrahim Hirani, Varun Magotra, Jainam Jain, Pramod Bide, **“Plant Disease Detection Using Deep Learning”**, IEEE 2021 6th International Conference for Convergence in Technology (I2CT)
2. Preview project work **“Potato Disease Classification”**
3. **Dataset:** PlantVillage Dataset

THANK YOU