

Mini - Project Report

“AGRI-HORTI VISION”

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Introduction

AgriHorti Vision is an AI-powered crop disease detection and management web application that enables farmers and agricultural researchers to identify plant diseases by simply uploading an image of the affected crop. With the rise in agricultural challenges due to climate change, pests, and lack of immediate expert help, AgriHorti Vision serves as a real-time solution that bridges the gap between technology and grassroots farming.

Built using modern web technologies, TensorFlow.js, and trained with Teachable Machine, the platform is entirely browser-based. It enables offline capabilities, making it highly accessible for rural areas with limited connectivity. The application not only diagnoses diseases but also provides treatment options, preventive care, and stores a report history for users to track past cases. It is optimized for performance on both mobile and desktop devices and designed with simplicity in mind to ensure ease of use.

Objective

Develop a lightweight web platform that can detect and report crop diseases based on images.

- Empower farmers with timely and accurate information to take preventive or corrective action.
- Store and track crop disease history for pattern recognition and analysis.
- Promote organic and low-cost treatment methods.
- Offer downloadable reports for sharing with local agricultural officers or for print reference.

Problem Statement

In many parts of rural India and developing nations, farmers lack access to immediate agricultural consultancy services. Due to this, many plant diseases go unnoticed or are misdiagnosed, leading to reduced yield, economic loss, and sometimes irreversible damage.

The absence of affordable and scalable digital solutions in local languages creates a knowledge barrier. While expert services are available in urban settings, farmers often depend on word-of-mouth advice or trial-and-error methods. AgriHorti Vision is built to solve this problem using a machine-learning-powered, easy-to-use interface that helps identify diseases accurately and recommend actionable solutions, even offline

Features

- AI-Based Disease Detection using a trained Teachable Machine model with TensorFlow.js.
- Simple and intuitive image upload feature.
- Disease-specific report generation with symptoms, treatment, medicine suggestions, and precautions.
- PDF report download for offline usage.
- Report history maintained in browser storage.
- Responsive design supporting desktops and mobile phones.
- Offline-first architecture once model is loaded.

Technologies Used

Frontend : HTML5, CSS3, JavaScript

AI Model : TensorFlow.js, Teachable Machine

API Used : html2pdf.js, LocalStorage API

Tools : Netlify, GitHub

Dataset and Model Training

Dataset composed of around 700 images collected from public datasets and manually labeled.

Diseases included: Canker, Apple Scab, Leaf Spot, Bacterial Wilt, Rust, Powdery Mildew, Leaf Blight.

Model trained on Google Teachable Machine and exported as model.json, metadata.json, weights.bin.

Tested with ~90% accuracy on new sample images.

System Architecture

1. User uploads image.
2. Image is processed in browser using TensorFlow.js.
3. Model predicts the class (disease).
4. Matched info shown from disease DB.
5. Report displayed and saved.
6. Report can be downloaded or viewed in history

User Interface (UI)

- index.html: welcome page
- analyze.html: upload image + preview
- report.html: shows results
- history.html: lists past reports
- Bottom nav: persistent across pages

Deployment

- Hosted on Netlify via GitHub auto-deploy
- Static build with no server needed.
- Can work offline once loaded.
- CI/CD with GitHub commit trigger.

Challenges Faced

- Model size issue for GitHub (solved via compression).
- TensorFlow async issues.
- Responsive CSS challenges.
- PDF rendering required DOM cleanup.

Future Scope

- Multi-language support
- Crop + pest detection
- Weather-based advice
- Cloud sync of user reports
- Flutter app for mobile users
- Government data integration

Conclusion

AgriHorti Vision bridges the digital divide in agriculture using AI. With a scalable frontend-only architecture, it provides instant disease analysis, helpful treatments, and local data storage — making it perfect for rural and underserved farming communities.

Snippets



Welcome to AgriHorti Vision

Smart Crop Disease Detection Platform

Start Analyzing Crops

Home Page

Past Disease Analysis

Leaf Blight - 4/30/2025, 2:07:04 AM

History Screen

Disease Reports

Disease: Leaf Blight

Date: 4/30/2025, 2:07:04 AM

Symptoms: Irregular brown lesions on leaves, premature leaf drop.

Treatment: Use copper-based fungicides, prune infected parts.

Future Treatment: Timely fungicide application before disease onset.

Care Instructions: Maintain field hygiene, proper fertilization.

Medicines: Copper oxychloride, Mancozeb.

Precautions: Avoid working in wet fields to prevent spread.

Download as PDF

Reports Page