



PLANT LEAF DISEASE DETECTION

P R E S E N T A T I O N
B Y G R O U P 8



OUR TEAM



Zipporah Muriithi



Vincent Toroitich



Royal Mbugua



Marion Mengich

Business Understanding

Introduction

Objective:

To develop a system that can automatically identify plant leaf diseases (for corn, tomato, and potato) from images, helping farmers detect diseases early and improve crop yield.

Why It Matters:

- Early detection reduces crop loss.
- Supports agricultural productivity.
- Saves time and resources for farmers and agricultural officers.



Problem Statement



Farmers often struggle to identify plant diseases early enough to prevent damage. Manual methods are slow and prone to errors

Our Goal:

To develop a simple, accurate, and efficient image-based system for early detection of plant leaf diseases.



Objectives

Main Objective

To build a reliable model that classifies plant leaf images as healthy or diseased.

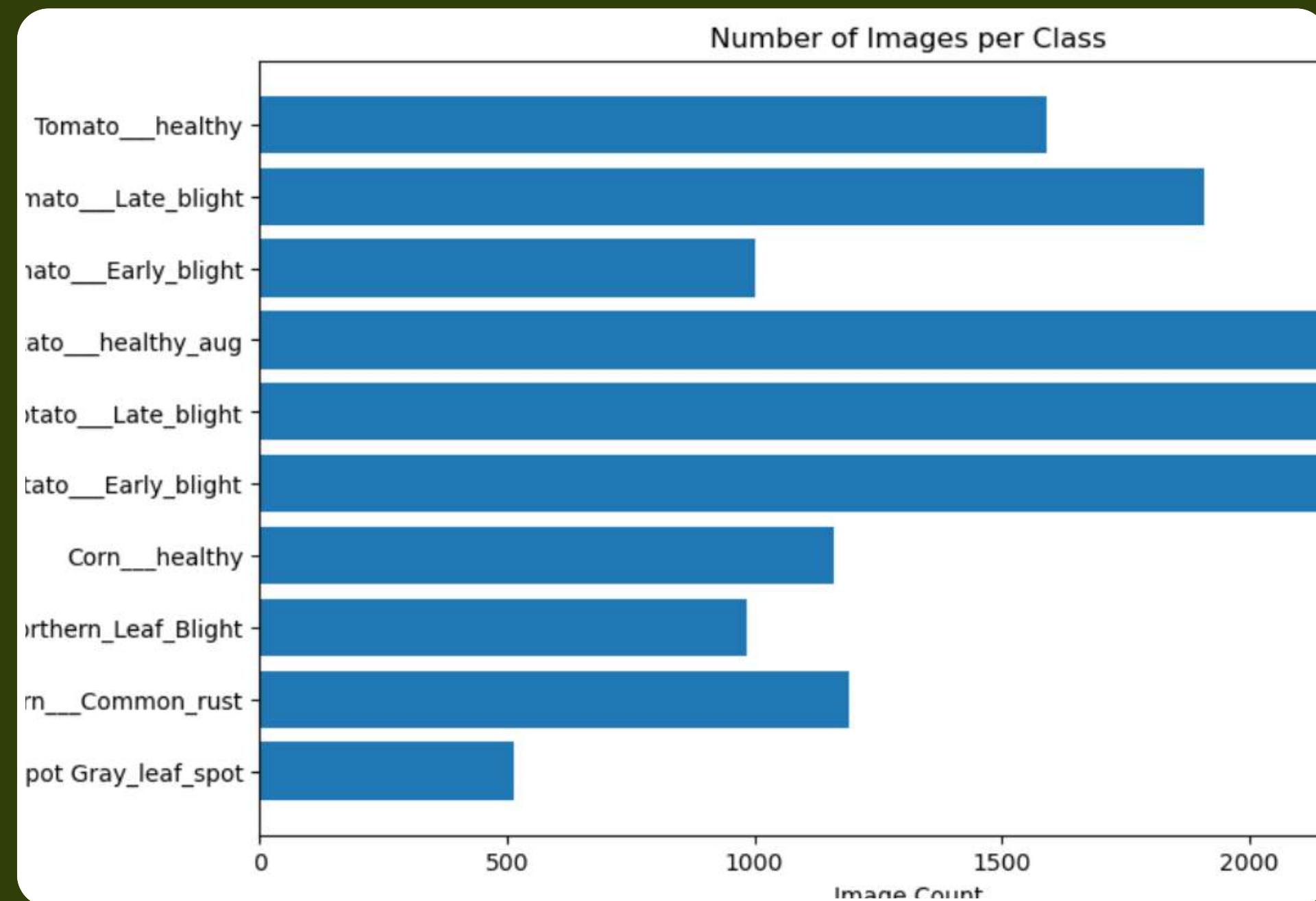
Specific Objectives

- Identify and classify diseases in corn, tomato, and potato leaves.
- Improve accuracy and reduce misdiagnosis.
- Support farmers and agricultural officers in timely interventions.



Dataset Overview

- Dataset contains images of corn, tomato, and potato leaves (healthy and diseased).
- Total of 10 classes after cleaning and balancing.
- Images were preprocessed and resized for training.



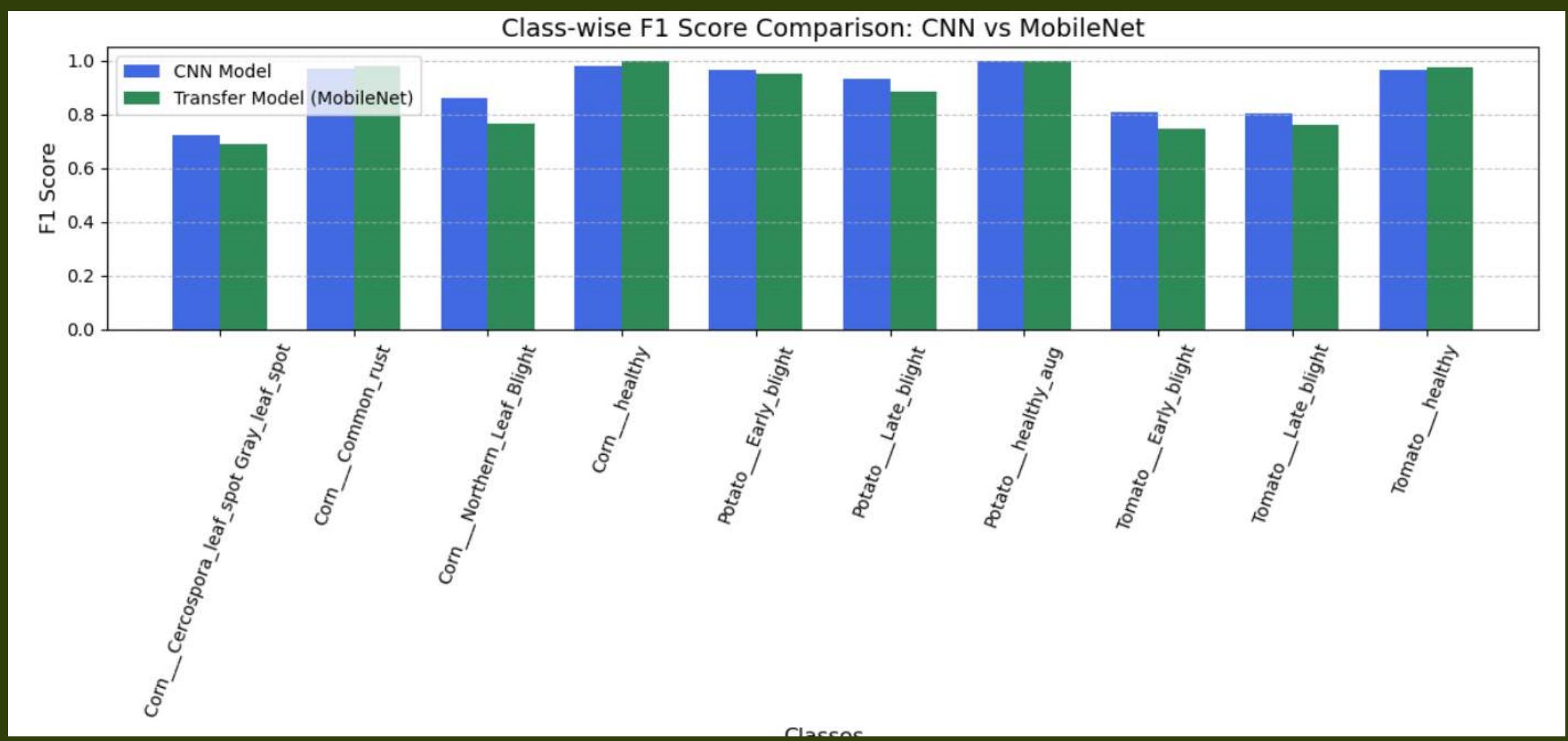
Key Findings



- The dataset contained over 15,000 images before augmentation and 25000 after across 10 classes.
- Potato classes had the most samples, while some corn and tomato classes were fewer.
- The trained model achieved an accuracy of about 90%.
- Most errors occurred in diseases with similar visual symptoms.

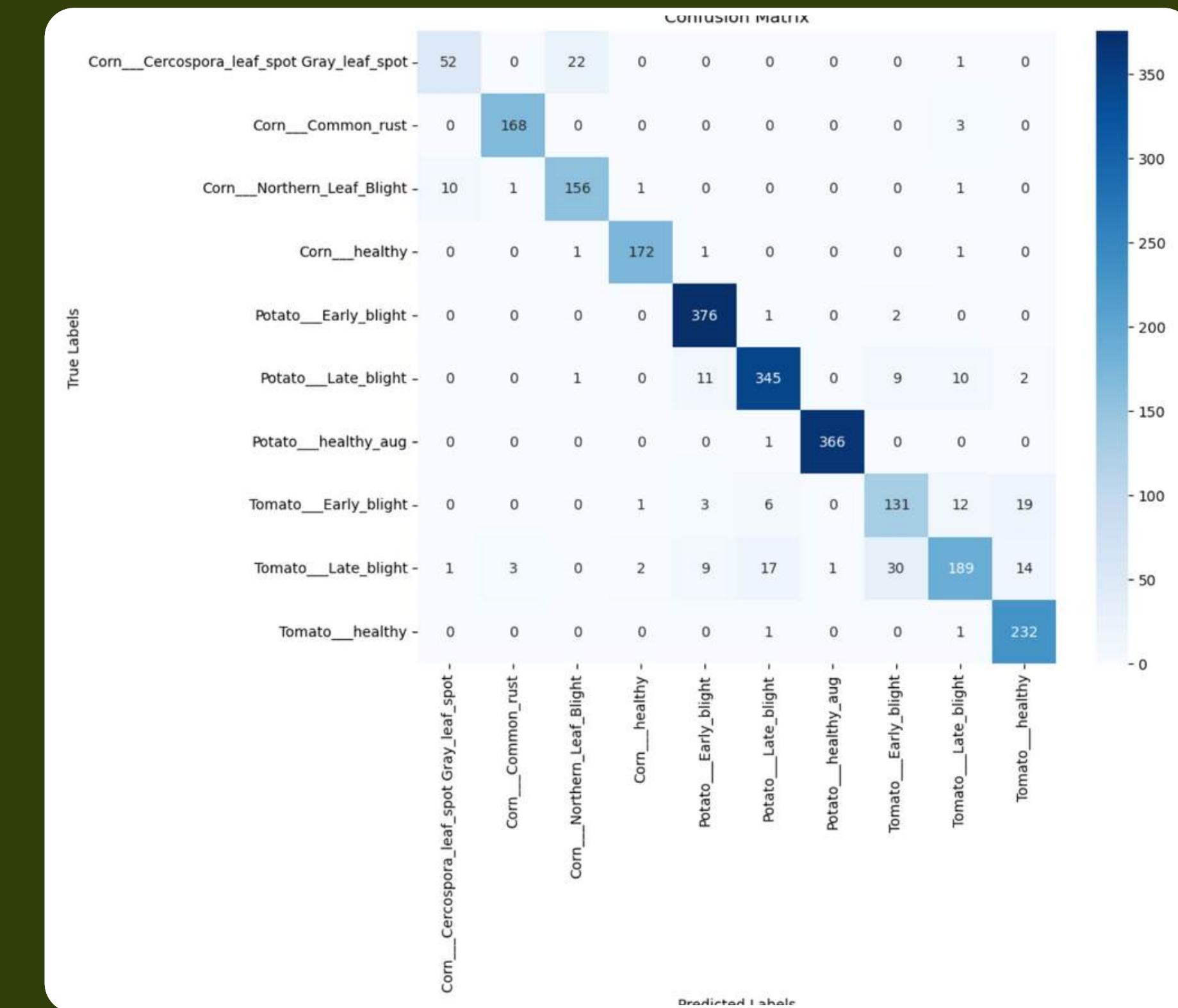
Model Overview

- We used a Convolutional Neural Network (CNN) to identify patterns in leaf images.
- The model was trained using 70% training, 15% validation, and 15% testing data.
- It achieved an accuracy of ~90% during testing.



Evaluation results

- Overall accuracy: 90–93%
- The model performs well in distinguishing most diseases.
- Some confusion observed between similar-looking tomato diseases.



Next Steps



Continue improving the model's accuracy using advanced AI architectures and a larger, balanced dataset.

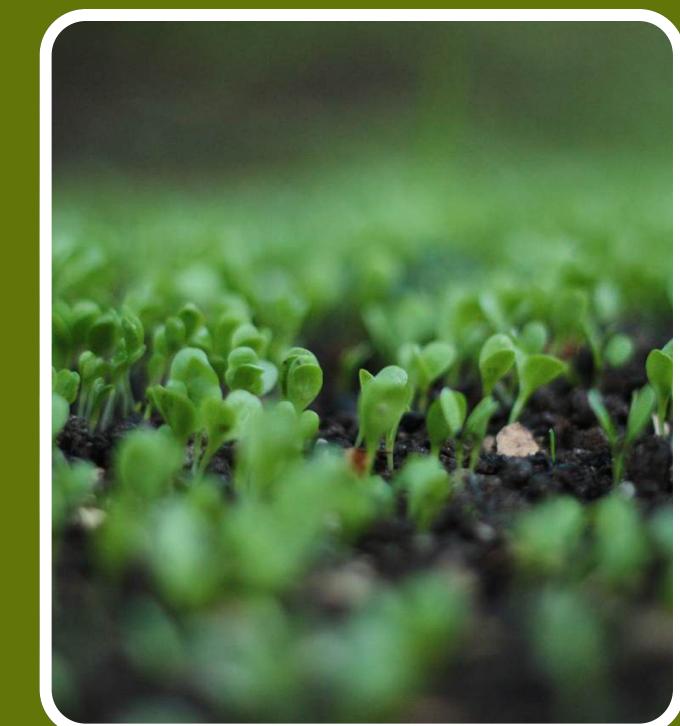
Upgrade the Streamlit web app for better usability and mobile access.

Test the model in real farm conditions to measure practical performance.



Recommendations

- Encourage farmers to adopt AI tools for early disease detection.
- Developers and researchers should expand the dataset and keep retraining the model with new images.
- Agricultural agencies can support this by integrating such tools into farm extension programs.





Thank You!

Presented by Group 8