

Plant Leaf Disease Detection Using ML

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Motivation



Agriculture is the backbone of Bangladesh's economy, and farming provides a means of livelihood for the vast majority of this country's people. Plant diseases can cause considerable agricultural production losses, resulting in food shortages and higher food costs. Disease prevention promotes a steady food supply and contributes to population food security. Plant diseases can cause significant economic losses due to decreased crop output, mediocre quality products, and increased disease control spending. Farmers may boost their revenue and contribute to the country's economic prosperity by reducing diseases.



Brief about the project

The project aims to develop an automated system for plant leaf disease detection using machine learning techniques

Expected outcome:

- Accurate identification of different plant leaf diseases.
- Real-time detection and classification of diseases to aid in timely intervention and prevent crop damage.
- User-friendly interface for farmers or gardeners to upload leaf images and receive disease diagnosis and treatment recommendations.

Methodology

Image Data Collection

Gather a diverse dataset of plant leaf images, containing both healthy and diseased samples

Feature Extraction

Extract relevant features from the leaf images using techniques like Convolutional Neural Networks (CNNs) and transfer learning

Model Evaluation

Assess the model's performance using metrics like accuracy, precision, recall, and F1-score

Pre-processing

Perform image preprocessing techniques to enhance the quality of the dataset and remove noise

Model Selection

Choose and train appropriate machine learning models for leaf disease classification

Deployment

Create a user-friendly web or mobile application for disease detection and recommendation





Feature List

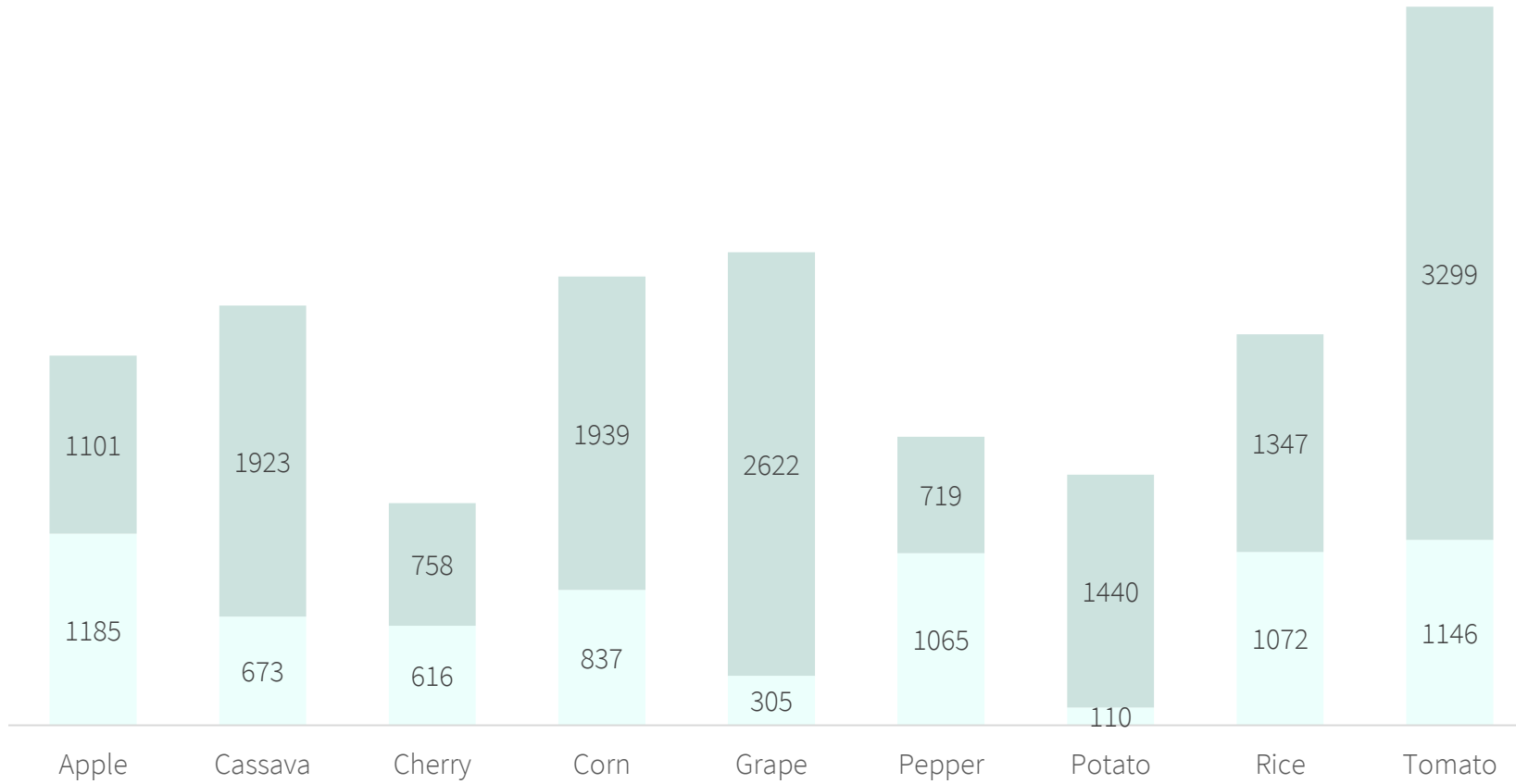
- Upload Pictures and Identify Diseases
- Search the Database to learn more about the Diseases



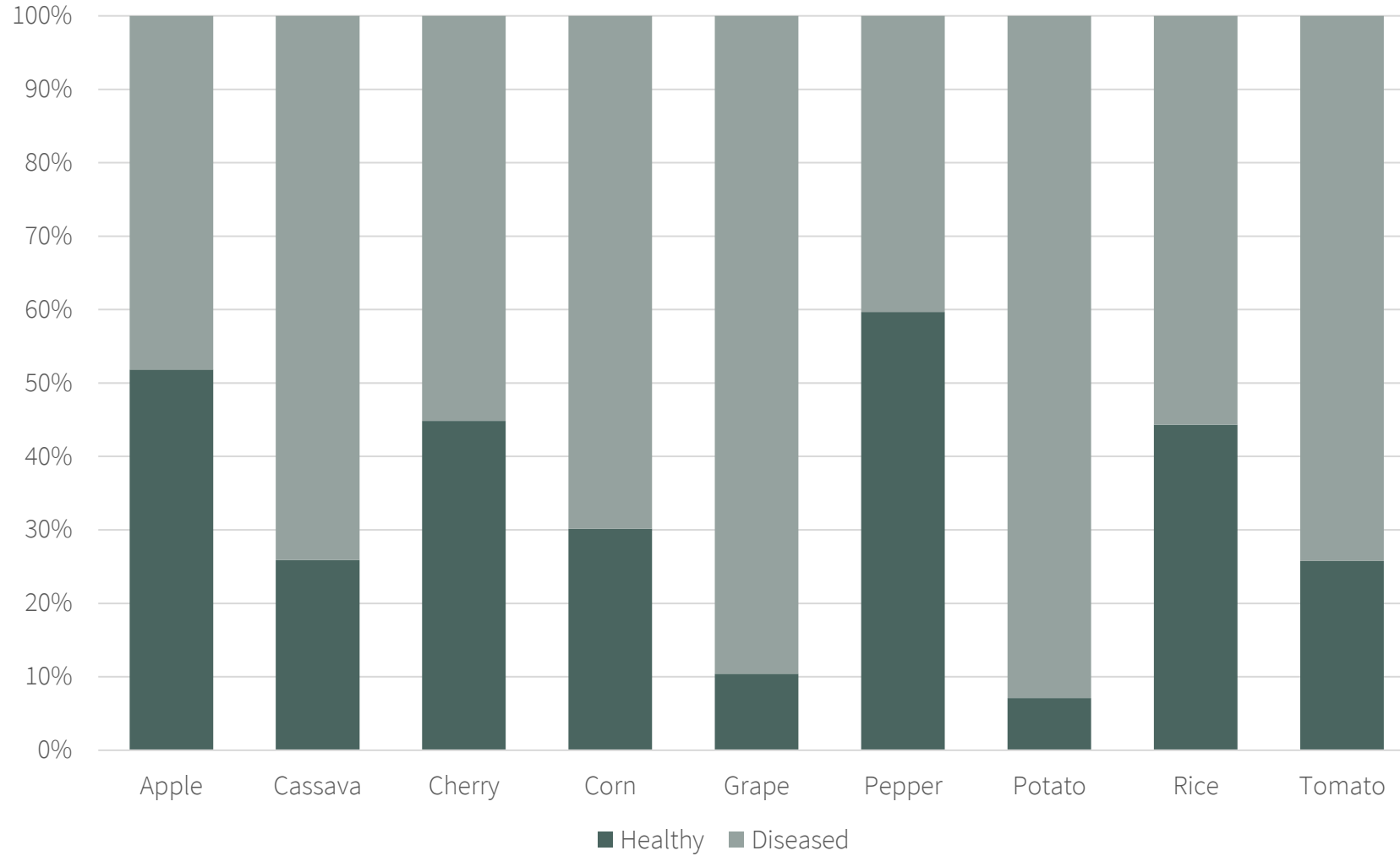
DATASET DETAILS

Data points per Category

Healthy Diseased



Data points per Category (in %)



Dataset split between Healthy and Diseased Leaf

Diseased





15148

Healthy

7009



Dataset Sample

Leaf Image	Plant Name	Healthy / Diseased	Disease Name
	Potato	Diseased	Early Blight
	Rice	Diseased	Brown Spot
	Rice	Healthy	N/A
	Tomato	Diseased	Septoria Leaf Spot

Technology Stack

Frontend

React JS

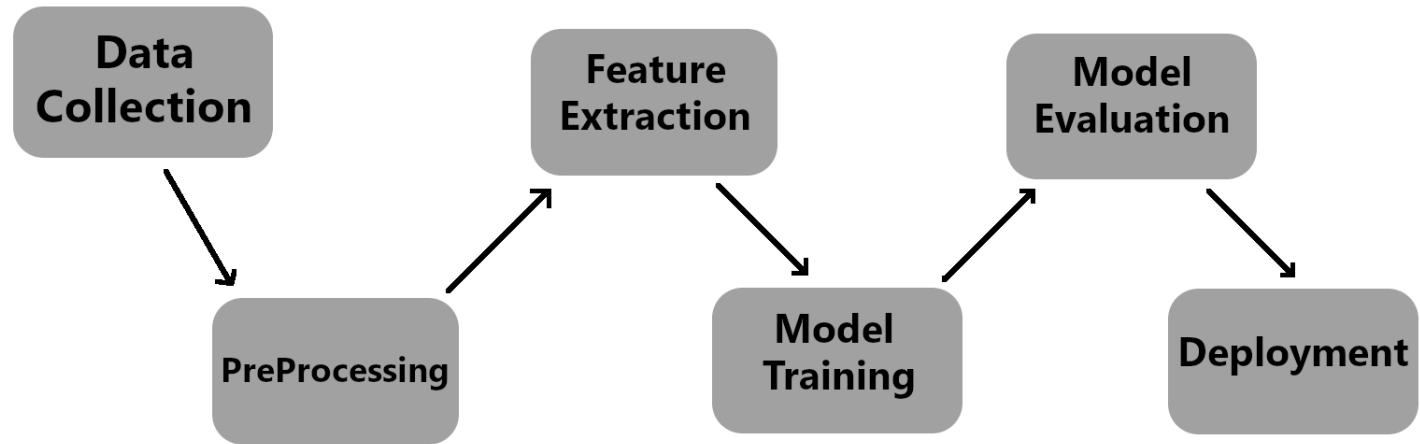
Backend

TF Serving
Fast API

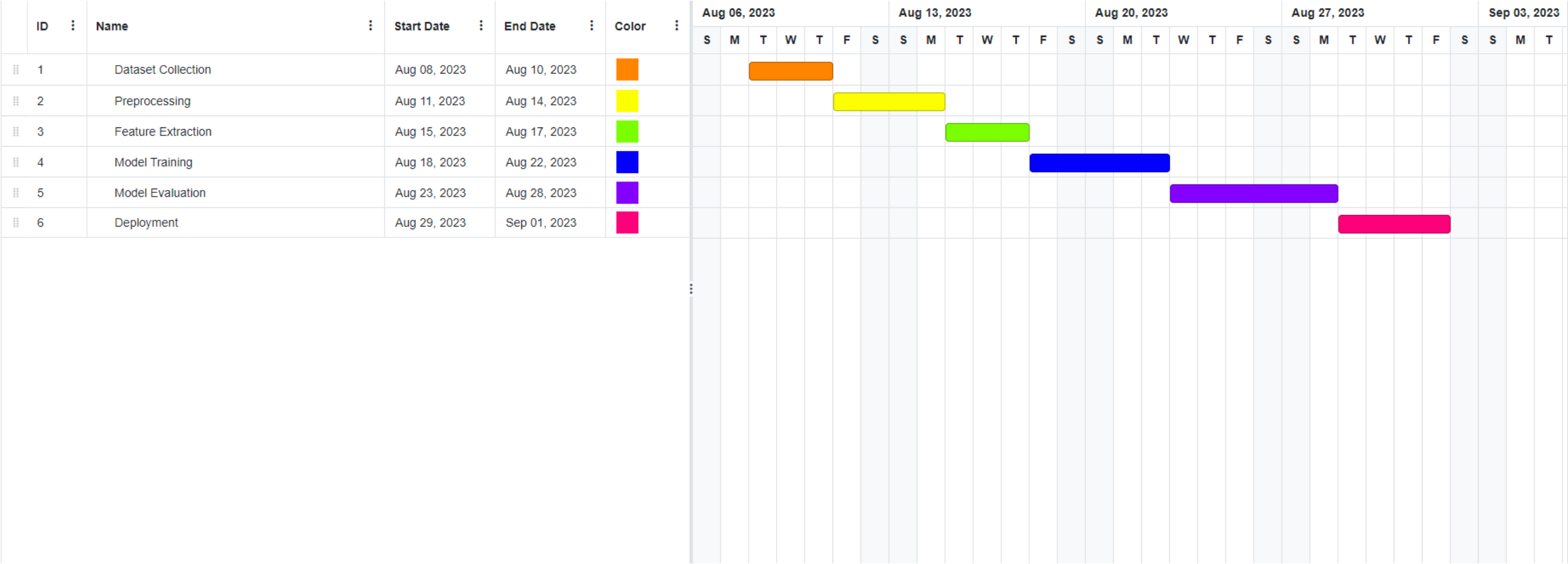
Model Building

TensorFlow
Convolutional Neural Networks (CNN)
Data Augmentation

Flow Diagram



GANTT CHART



Meet the team



Ahmed Sadman

Md Nabil Hasan

Tashin Mahmud Khan

The work distribution can be adjusted based on the
expertise and availability of team members



Thank you