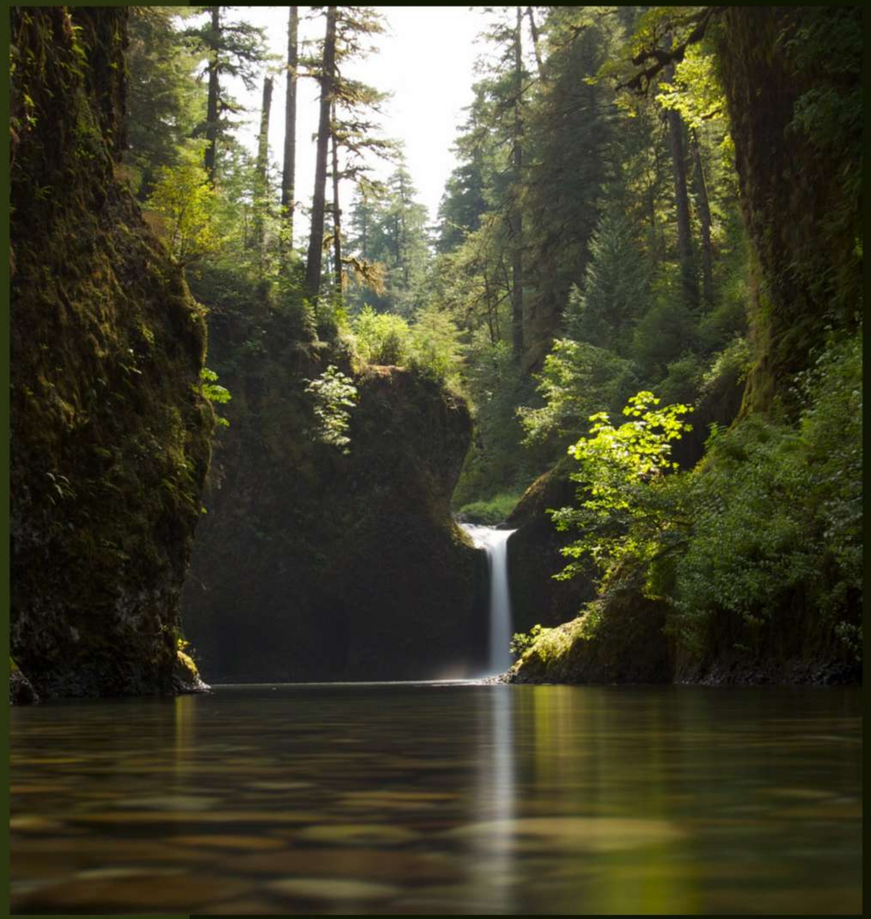
CAPSTONE PROJECT - C241-PS370

PlantDoc (Doctor)

Early Detection of Plant Diseases Through Leaf Analysis

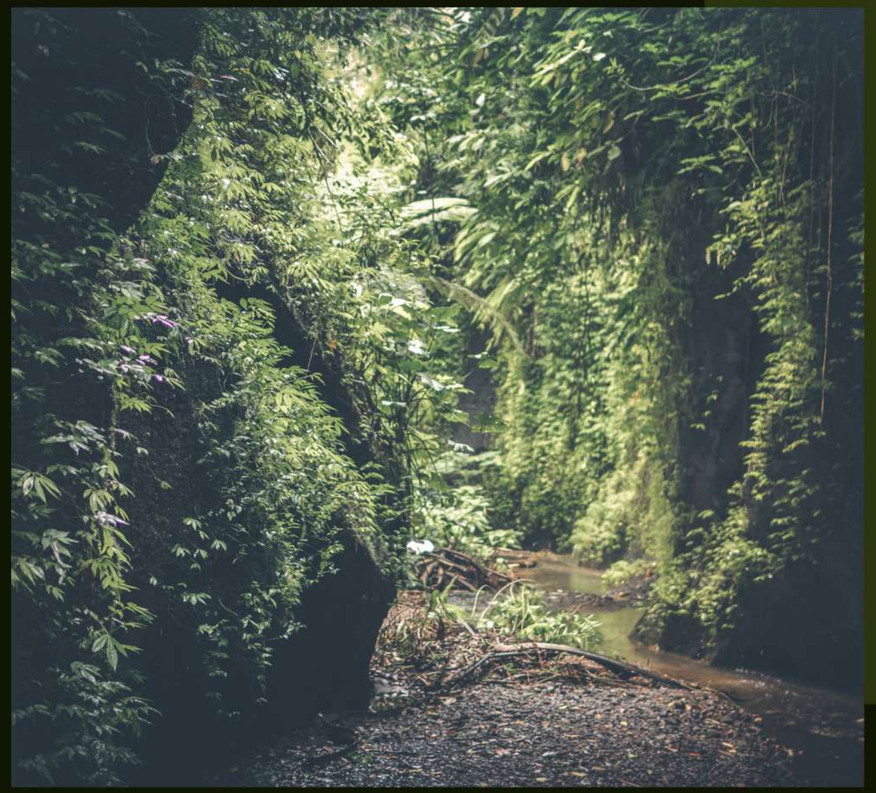


Members

1. Arga Rizqi Saputra - C118D4KY0400 - Cloud Computing
2. Ahmad Zaki Na'Ali - C118D4KY0858 - Cloud Computing
3. Adira Rahmana Akbar - M200D4KY1664 - Machine Learning
4. Annisa Kumala Dewi - M200D4KX1662 - Machine Learning
5. Humaidi Fikri - M342D4KY1968 - Machine Learning
6. Fauzan Fuadi Pasaribu - A118D4KY4165 - Mobile Development

Background

The creation of PlantDoc stems from the convergence of several factors; the increasing interest in gardening, the challenges faced by gardeners in maintaining plant health, and advancements in technology that provide new solutions for these challenges. Gardening has seen a significant resurgence in recent years, driven by multiple trends like Urbanization, Sustainability, Mental and Physical Health. Despite its many benefits, gardening comes with its own set of challenges; Plant Identification, Disease and Pest Management, Lack of Expertise



Reason

Problem Statement:

- Plant diseases severely impact vegetable harvest yield and quality.
- Significant financial losses

Solution:

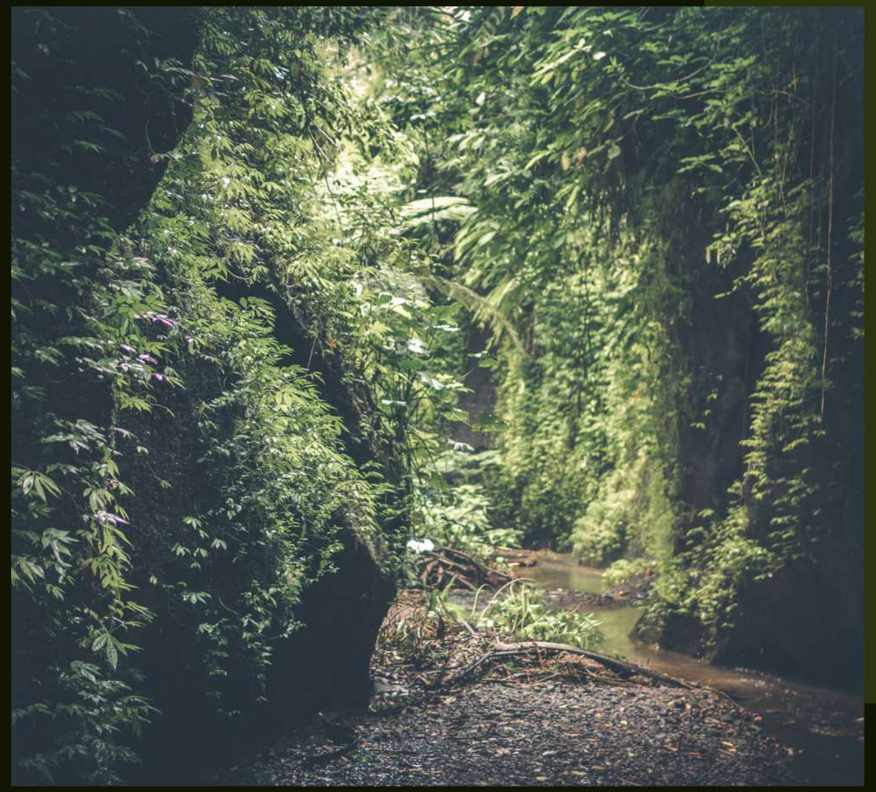
- PlantDoc provides early and accurate identification of plant diseases through leaf analysis.
- Reduces harvest losses through timely detection and intervention.

Technology:

- Utilizes machine learning and image processing to analyze leaf conditions.
- Rapid and efficient disease detection from leaf images.

Benefits:

- Enables prompt preventive or remedial actions.
- Maintains high crop quality and market prices.

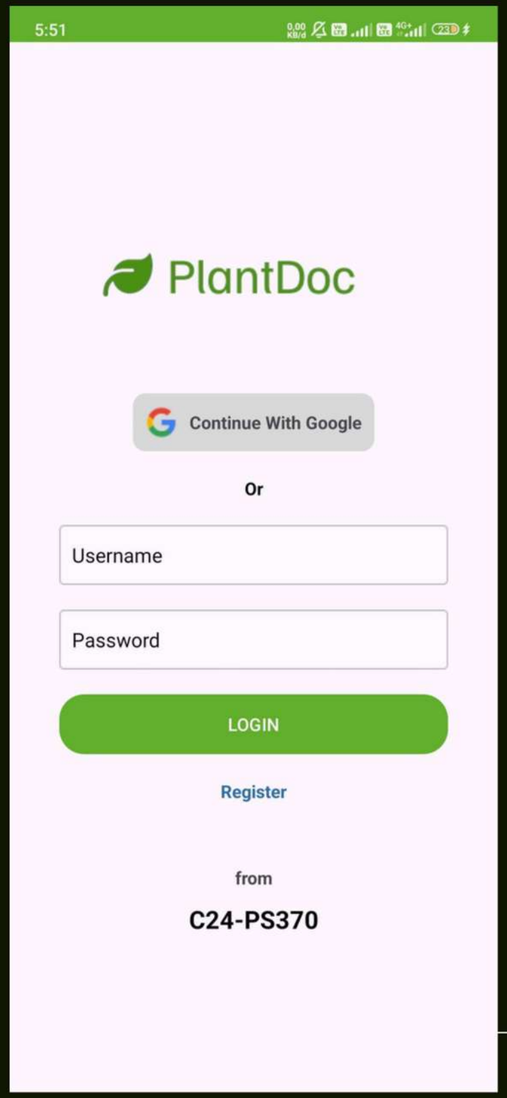


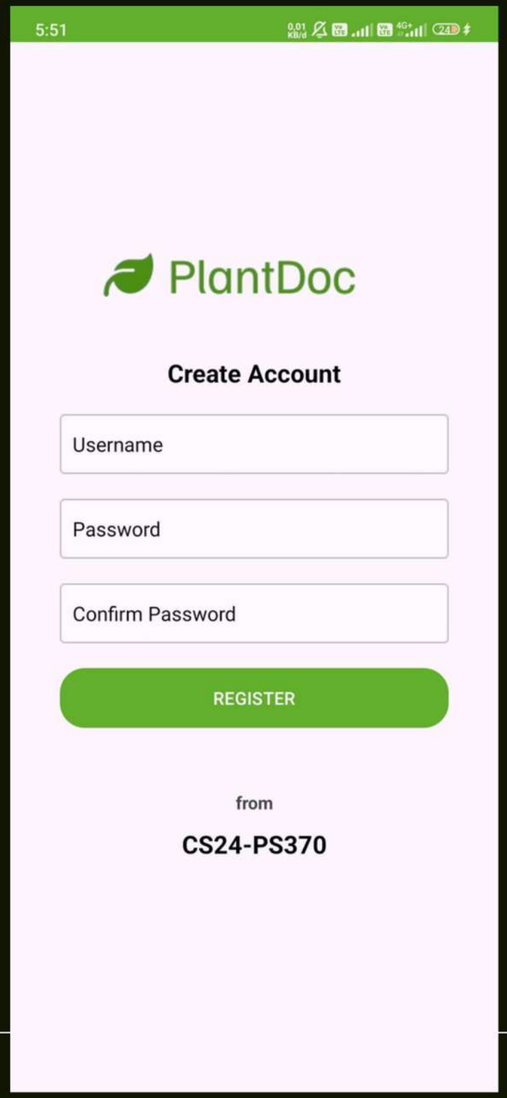
Competitor

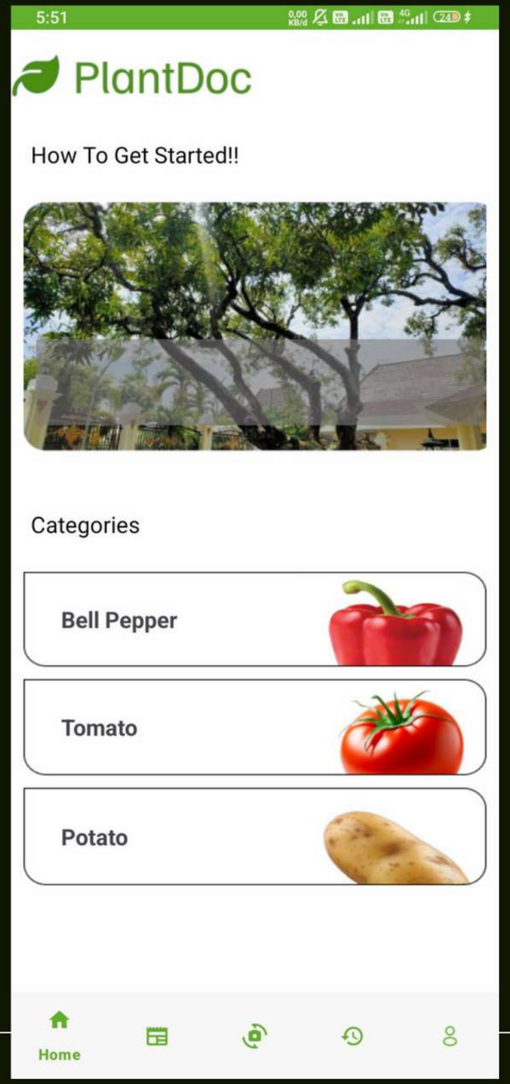
Comparison

Tumaina App	PlantDoc
Doesn’t have news article feature	Having news article feature
Only focusing on one plant species (banana)	can identify 3 plants species (pepperbell, tomato, potato)
Using AI to identify Diseases	Using machine learning model

Mockups and Design







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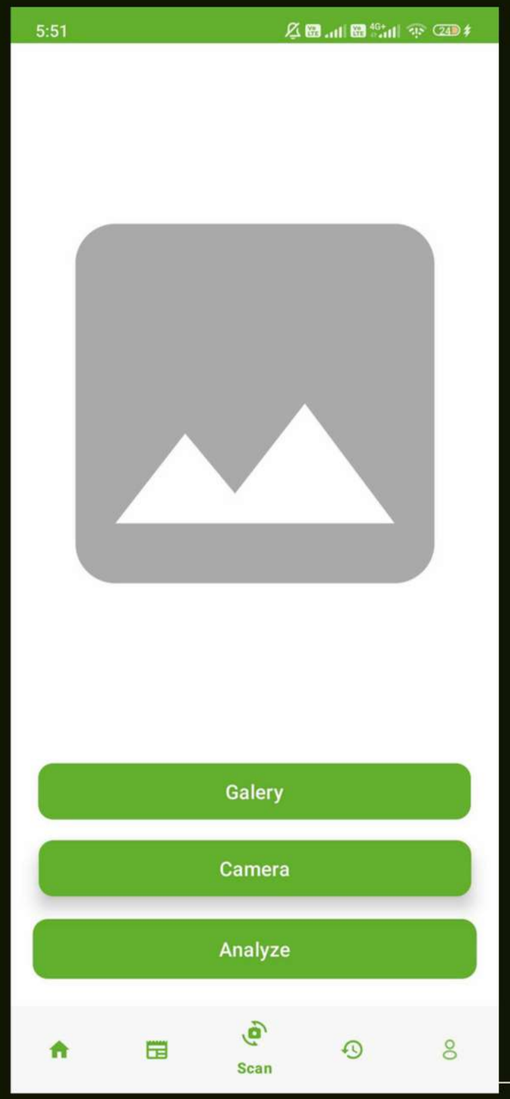

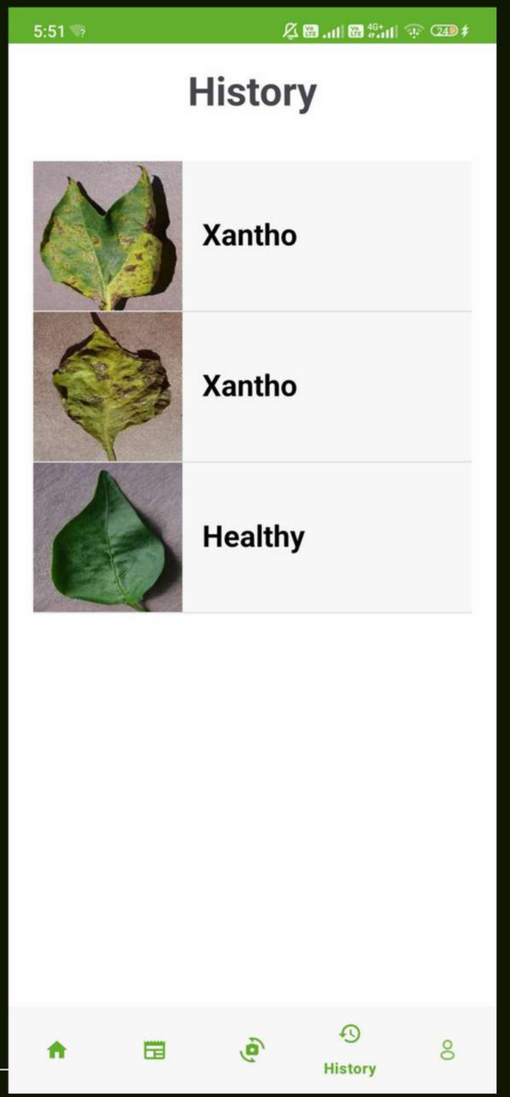

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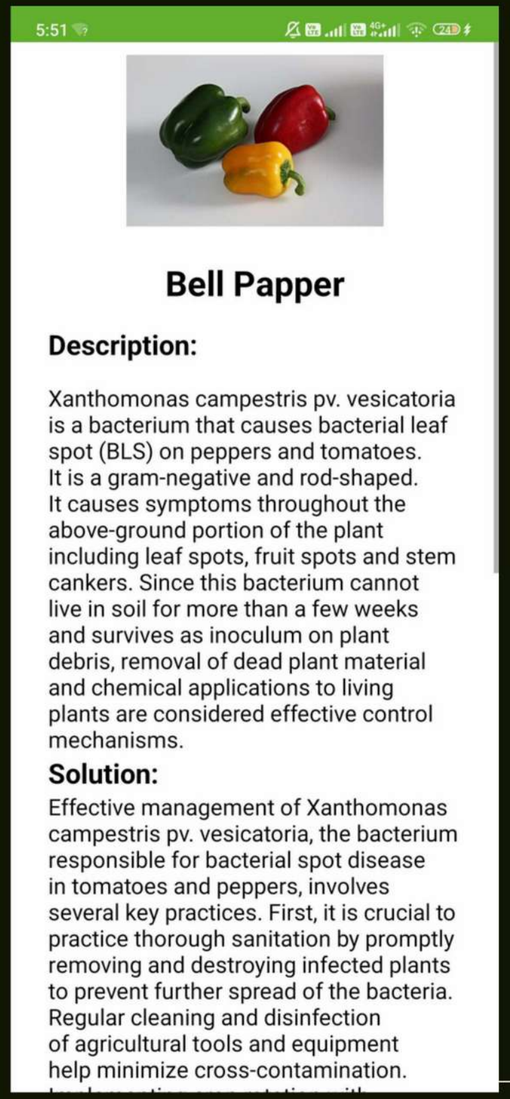
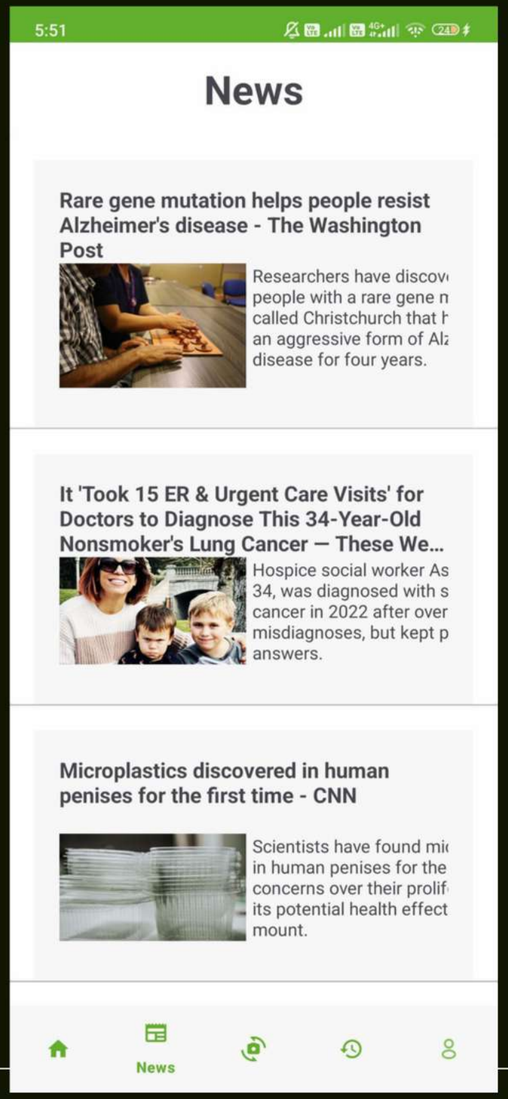
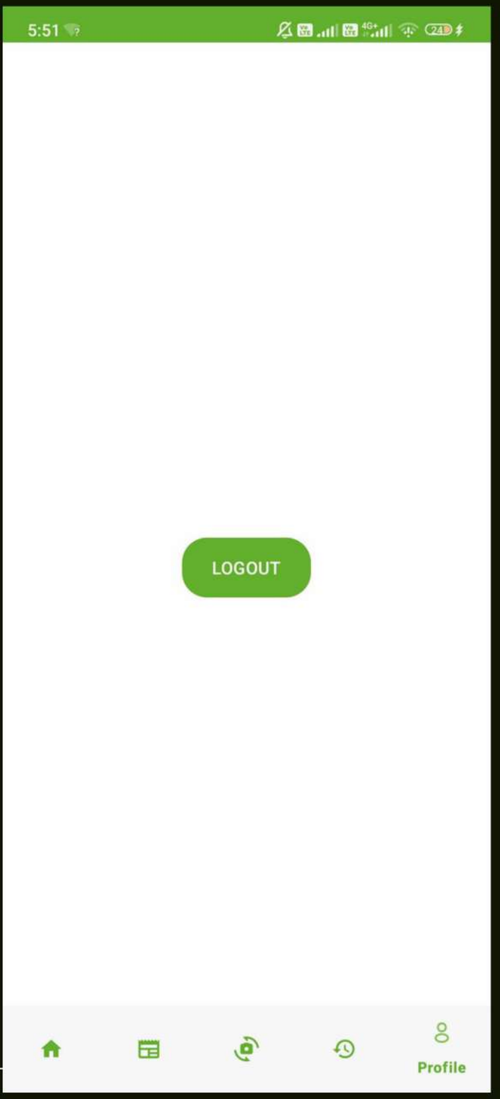
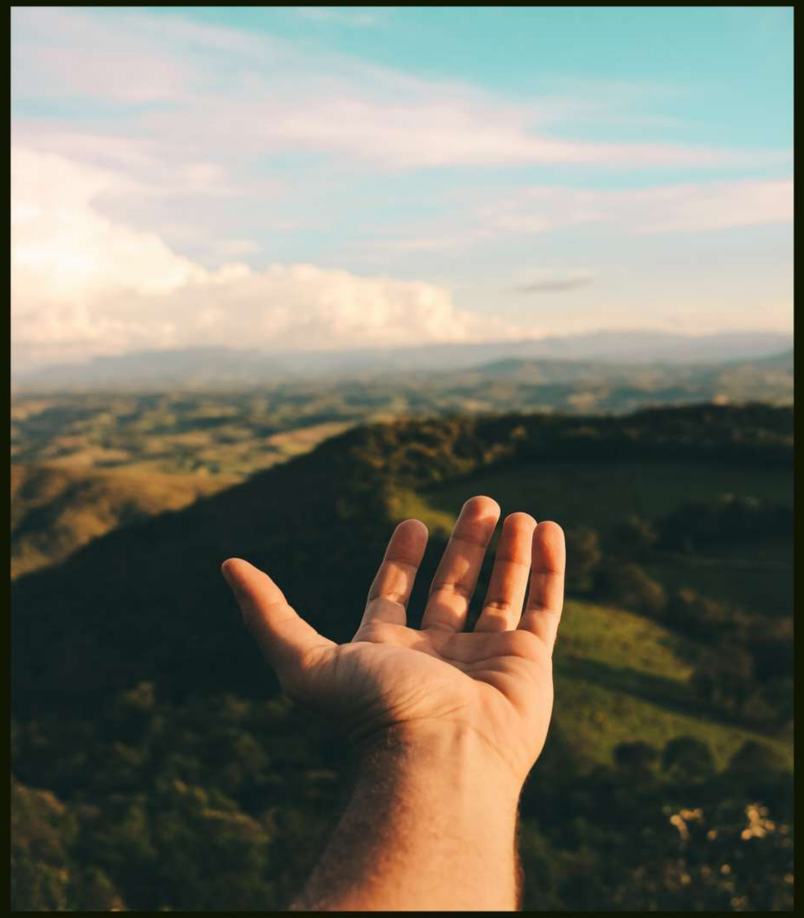








Implementation

Machine Learning

- CNN to develop model for image recognition
- Using Callbacks function to determine how good accuracy

Mobile Development

- Designing the overall UI design then converting it into a wireframe
- Converting the wireframe into an xml layout in android studio
- Connecting the application to an API endpoint for plant desease detection

Cloud Computing

- Creating API for deploying machine model using python framework called fastAPI and deploy it on cloud run.
- Creating backend using Javascript framework called express.js.

Result

Machine Learning

- Created a three models of vegetables to identify the diseases using CNN
- Accuracy and validation accuracy for each models more than 0,9

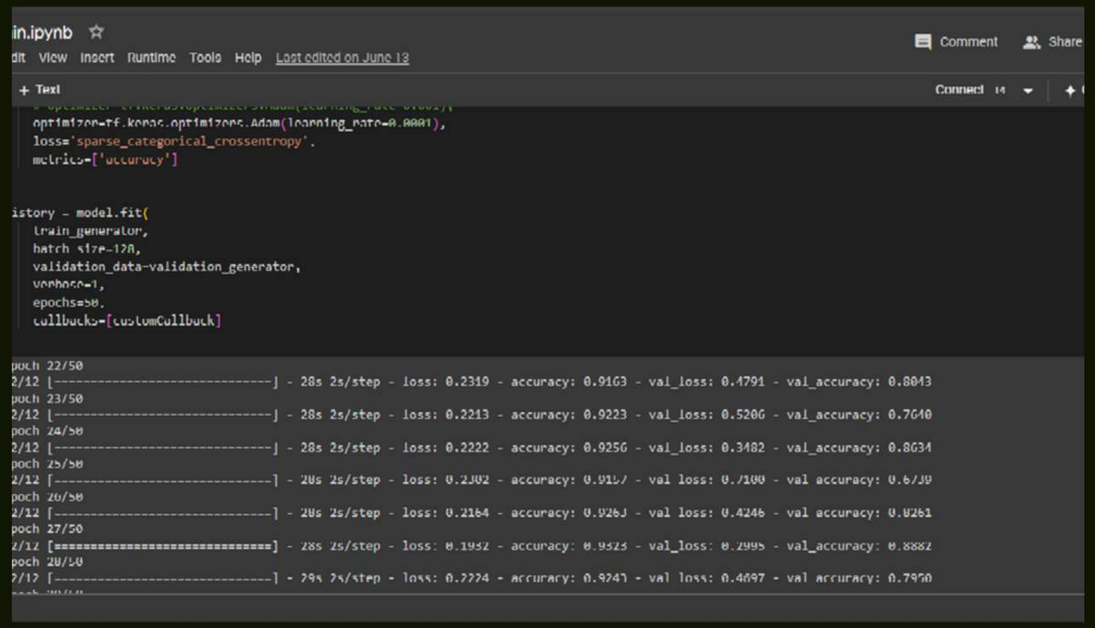
Mobile Development

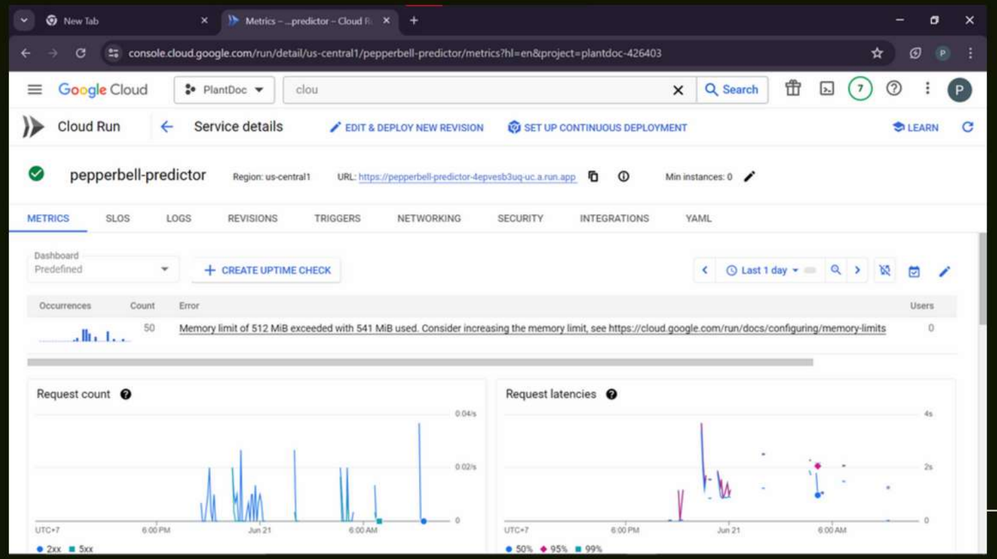
- The user-friendly UI design has been successfully implemented.
- The clear and structured wireframe facilitates usability and time efficiency
- The XML layout interface is easy to modify, and the API endpoint for accurate plant disease detection.

Cloud Computing

- Created API for machine learning and successfully deployed it on cloud run.
- Successfully created backend with javascript framework express.js.

Documentation





- Github Link : https://github.com/FauzanFP12/CS24-PS370.git

Target Market

Age Range

25-60 years

Profession

- Gardener
- farmer
- agricultural worker

roles

- homeowners with garden
- community gardeners
- small-scale farmer

Hobbies

- Gardening
- Landscaping
- Plant Care

Plan a Local Deployment

- Deployment Strategy
  to deploy the PlantDoc app locally.

- Implementation Steps

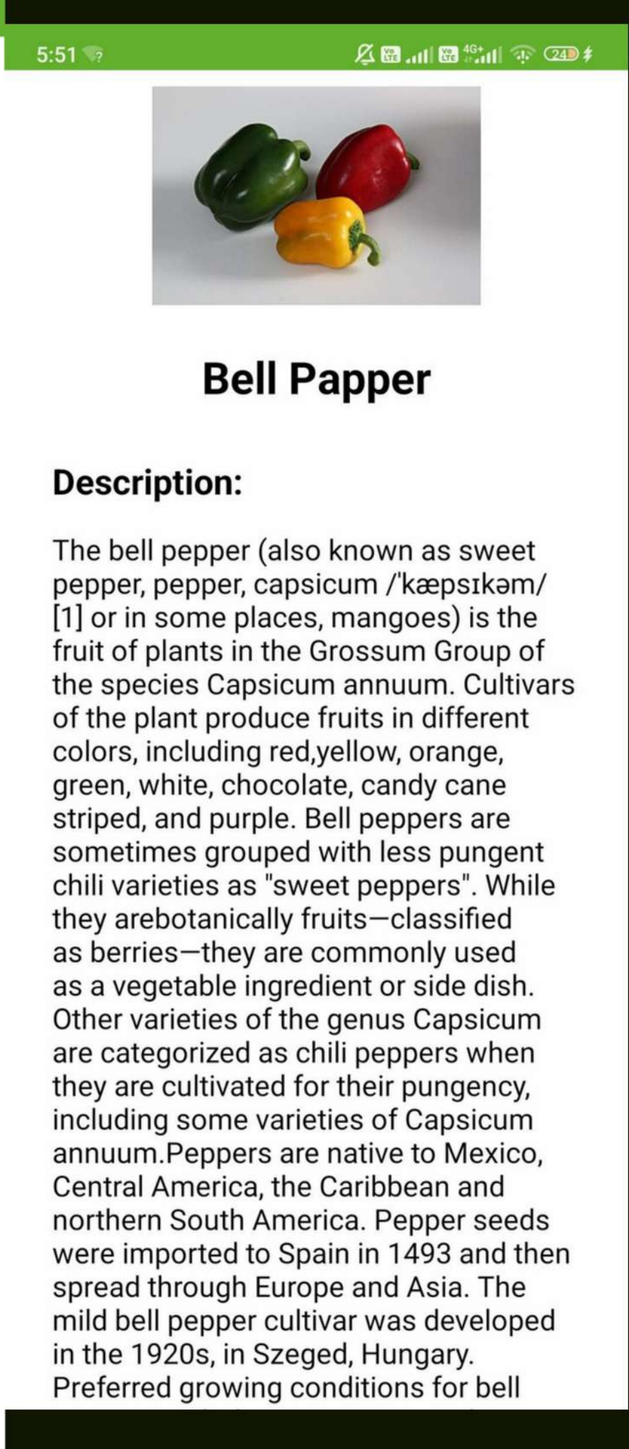
  Setting up the local server

- Future Plan

  Plans for wider deployment and user testing
  Potential collaboration with local agricultural bodies

Solutions: PlantDoc

PlantDoc will assist you in identifying diseases in your plants. Simply take a photo or upload an image, let the machine do its work, and boom! You can find out what disease is affecting your plants. You can also learn about handling methods or medicines available by reading the articles we provide.



Thank You!