GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR, (C.G.)

Department of Information Technology
School of Studies in Engineering and Technology

B.Tech. - VIII Semester (Session 2022-23)

Project Title

Crop Disease Detection System

Name of Project Members: -

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Project Guide: -

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ABSTRACT OF PROJECT

- Crop Disease Detection System is a tool to help farmers quickly and accurately identify plant disease in their crop.
- Using a combination of image recognition and machine learning algorithms, the system analysis images of plants and plant leaves and compares them to a database of unknown disease symptoms. The system provides a disease name.
- Farmers can detect and treat crop diseases early on with the help of this system, preventing crop loss and increasing crop yields.

INTRODUCTION

- Agriculturist in provincial regions think that it's hard to differentiate the malady which may be available in their harvests. It's not moderate for them to go to agribusiness office and discover what the infection may be.
- Pests and Diseases results in destruction of crops or part of the plant resulting in decreased food production leading to food security.
- In recent times, server based and mobile based approach has been employed for disease identification.
- Several factors of these technologies being high resolution camera, high performance processing and extensive built in accessories are added advantages resulting in automatic disease recognition.
- Modern approaches such as machine learning and deep learning algorithm has been employed to increase the disease recognition rate and accuracy of results.

OBJECTIVE OF PROJECT

- To develop a Crop Disease Detection System that uses image processing and machine learning techniques to accurately identify and diagnose diseases in crops.
- The system will analyse image of crop leaves and use algorithms to detect the type of disease and suggest a solution.
- Goal is to provide farmers with a quick and efficient tool for identifying and addressing crop diseases, which will help in increasing crop yields.

LITERATURE REVIEW

- 1. S. S. Sannakki and V. S. Rajpurohit, proposed a “Classification of Pomegranate Diseases Based on Back Propagation Neural Network” which mainly works on the method of Segment the defected area and color and texture are used as the features. Here they used neural network classifier for the classification. The main advantage is it Converts to L*a*b to extract chromaticity layers of the image and Categorisation is found to be 97.30% accurate. The main disadvantage is that it is used only for the limited crops.
- 1. P. R. Rothe and R. V. Kshirsagar introduced a” Cotton Leaf Disease Identification using Pattern Recognition Techniques” which Uses snake segmentation, here Hu’s moments are used as distinctive attribute. Active contour model used to limit the vitality inside the infection spot, BPNN classifier tackles the numerous class problems. The average classification is found to be 85.52%.

PROPOSED METHODOLOGY

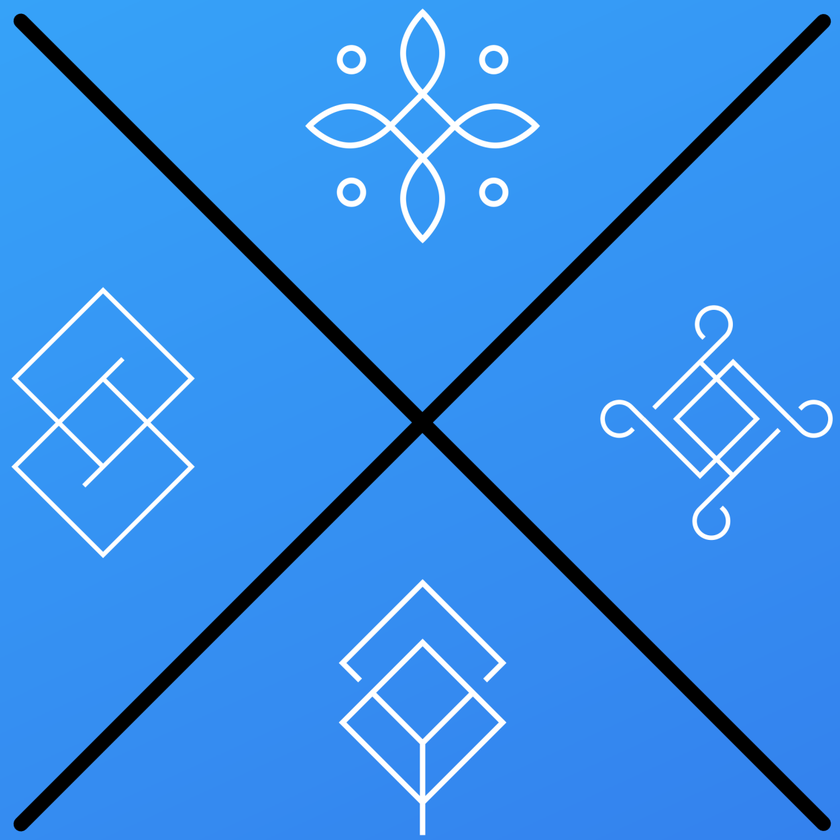
The **protyping model** is a systems development method in which prototype is build, tested, and then reworked as necessary until an acceptance outcome is acheived from from which the complete system or product can be developed.

We follow the following methodology: -

- **Requirement Analysis**
- **Feasibility Study**
- **Create a prototype**
- **Customer review and approval**
- **Design**
- **Coding**
- **Testing**
- **Installation and Maintenance**

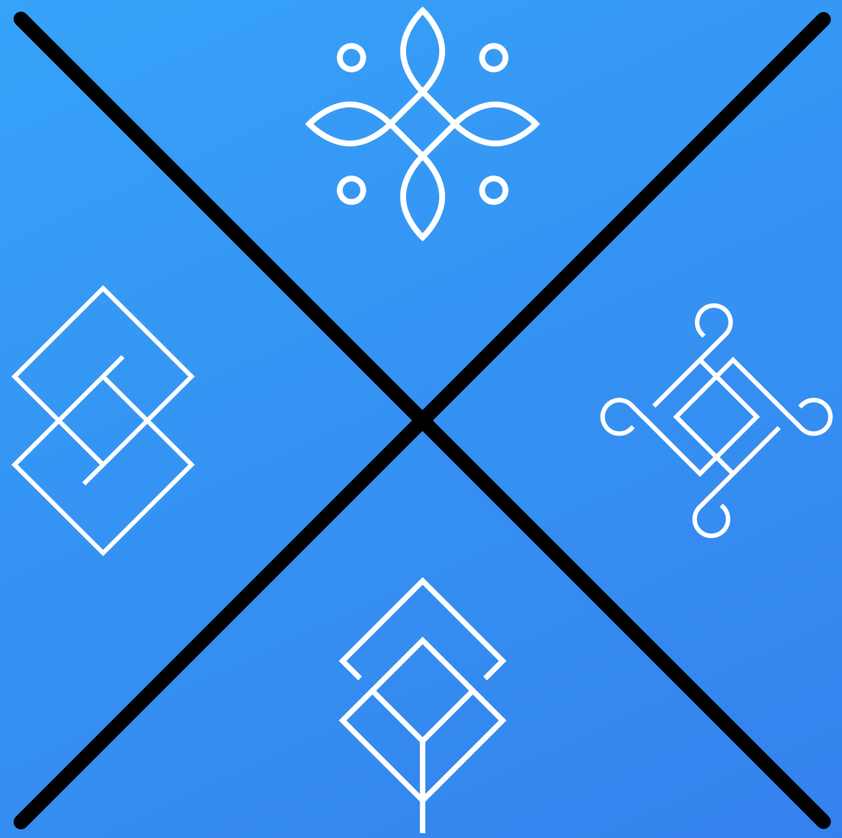
HARDWARE REQUIREMENTS

- Laptop/PC with minimum 8 GB Ram and with a good processing power.
- 4 Gb Memory Space Required for software installations and for project work.

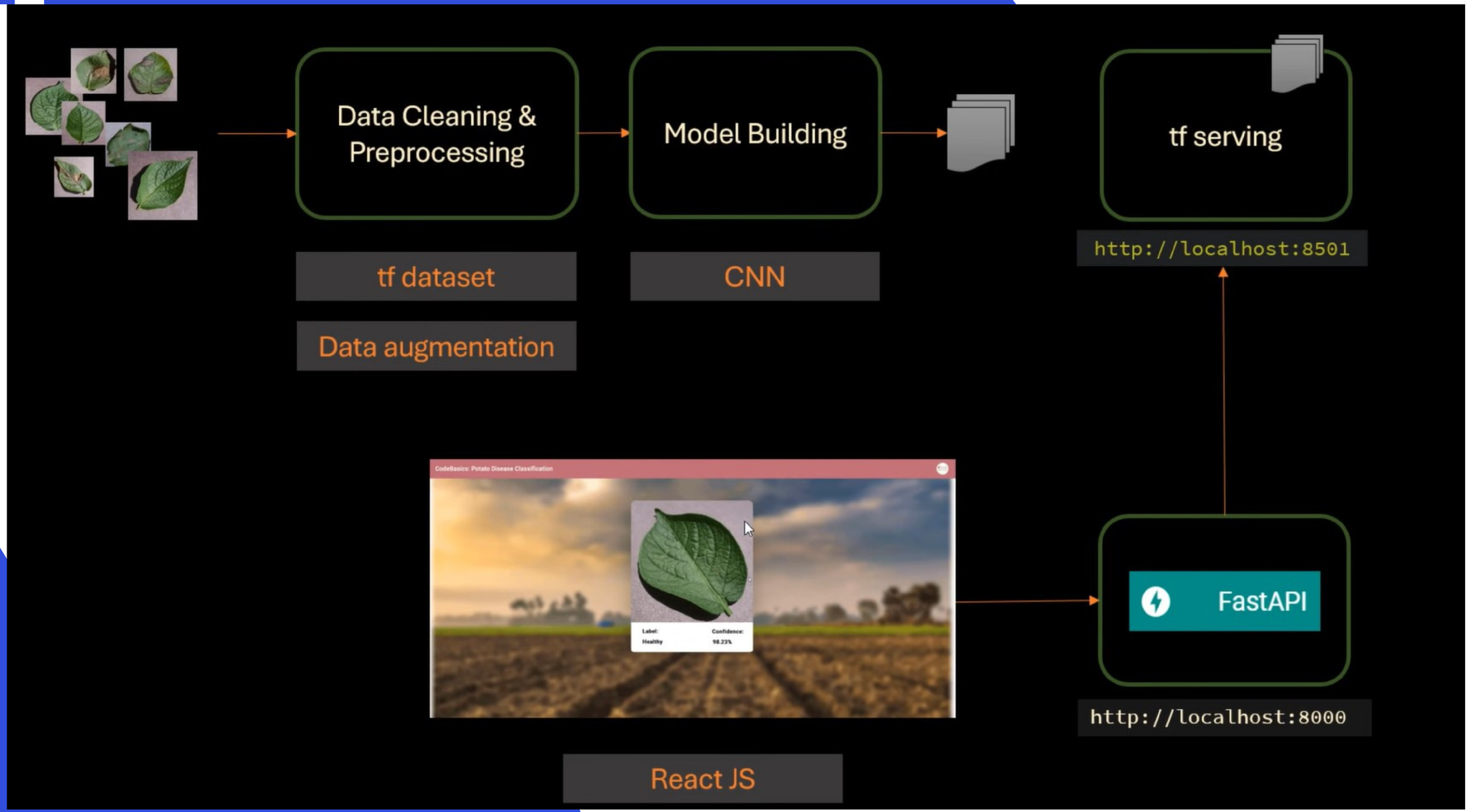


SOFTWARE REQUIREMENTS

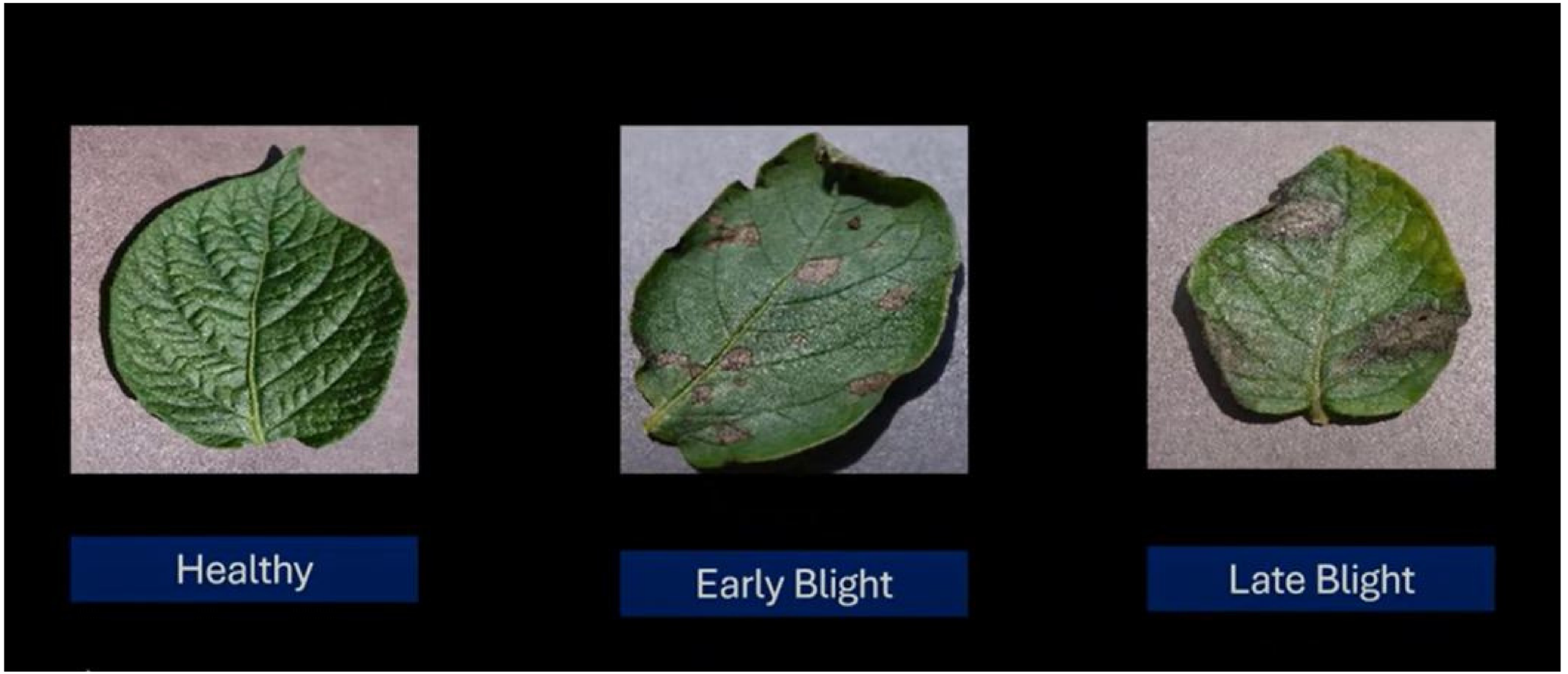
- Software: - VS code, GitHub, Kaggle, Figma, TensorFlow, CNN(Convolutional Neural Network).
- Frontend Technology: - HTML, CSS, JavaScript, ReactJS.
- Backeend Technology: - Python, Deep Learning, Machine Learning, Natual Language Processing (NLP), Firebase.



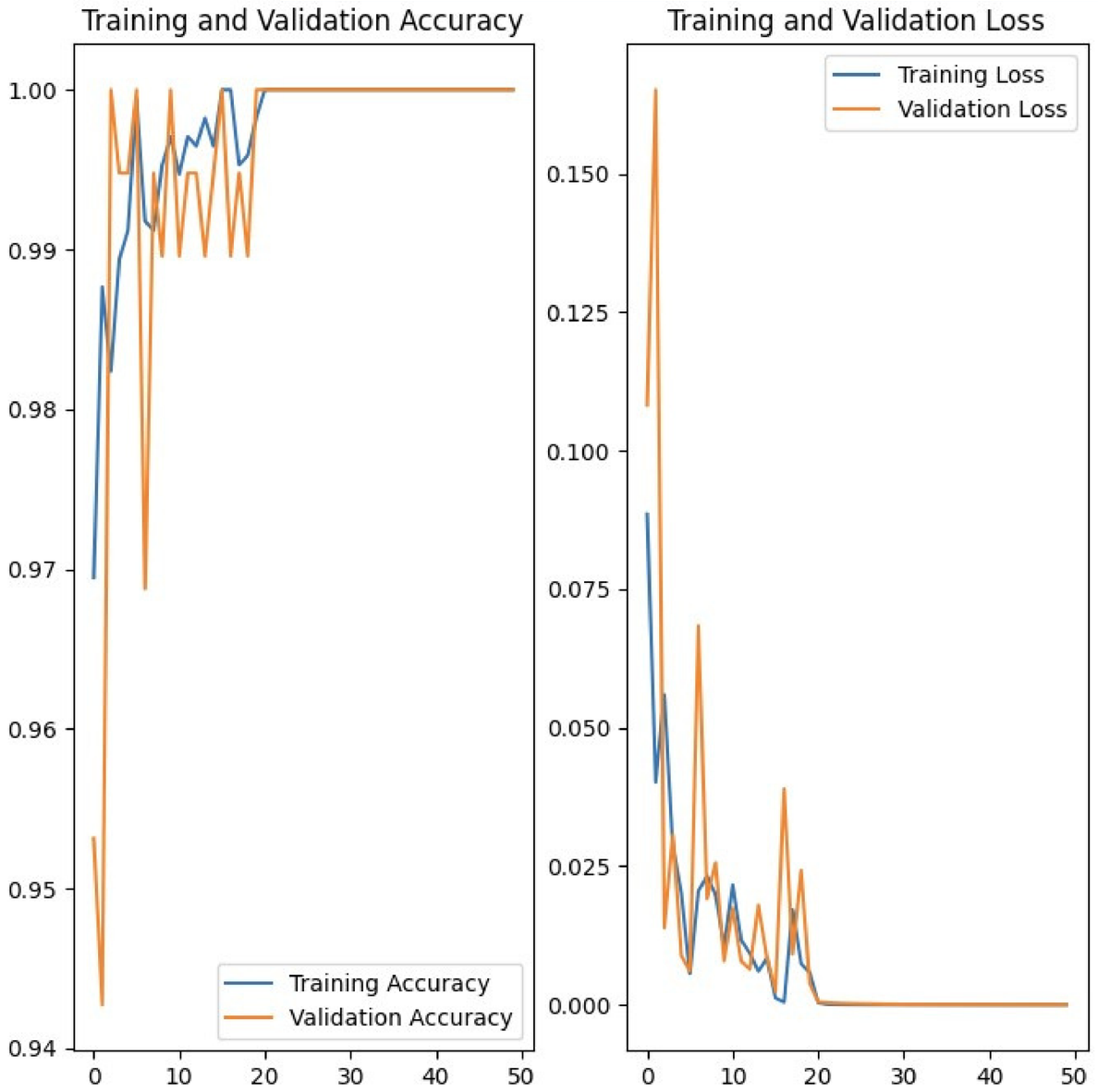
FLOW DIAGRAM



DATASET CLASSES



MODEL ACCURACY GRAPH



OUTPUT


Actual: Potato___Late_blight,
Predicted: Potato___Late_blight.
Confidence: 100.0%
Actual: Potato___Late_blight,
Predicted: Potato___Late_blight.
Confidence: 100.0%
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Predicted: Potato___Late_blight.
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Predicted: Potato___Late_blight.
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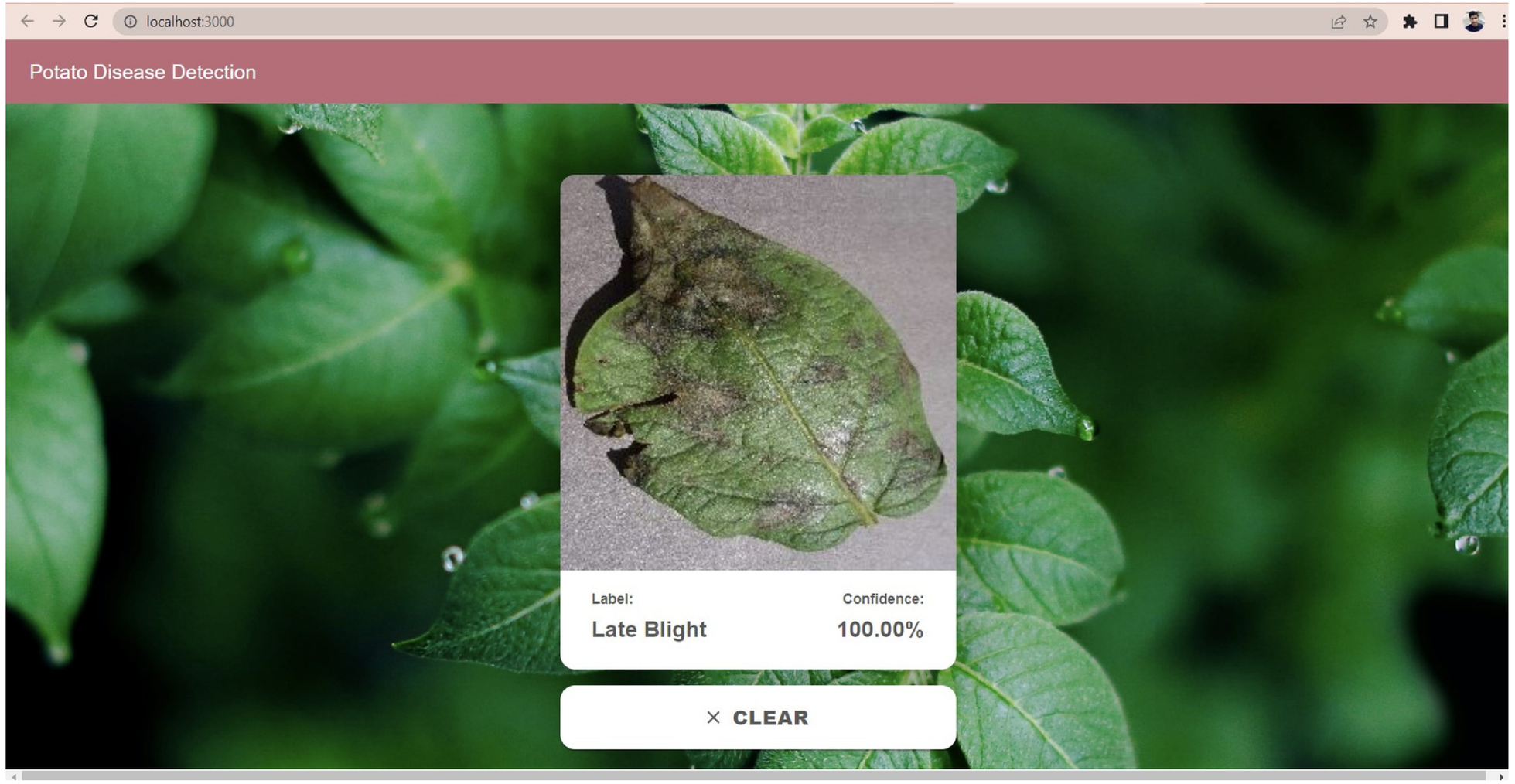
OUTPUT


localhost:3000
Potato Disease Detection
Label:
Late Blight
Confidence:
100.00%
CLEAR

FEASIABILITY STUDY

- The goal of the feasibility study is to get a feel of the problem's extent as well as to solve it. The goal is to find the project that will benefit the organization the greatest.
- The feasibility study has three components:
- ➢ **Technical Feasibility:** A technical feasibility study is conducted to examine whether a project is possible in terms of software, hardware, manpower, and skills to complete. The system is platform neutral because it is written in Python. As a result, users of the system can run on any platform and have average processing capabilities. Because the technology is cutting-edge, the system is also technically possible.
- ➢ **Financial feasibility:** Financial feasibility refers to whether the predicted gain is equal to or greater than the estimated expenditures. It is also known as a cost-benefit analysis.
- ➢ **Operating Feasibility:** The operational feasibility of a given system is a measure of how successfully it handles user problems. Operational feasibility is determined by the project's human resources and entails predicting whether or not the system will be used when it is designed and installed.

APPLICATION OF PROJECT

- Early detection and identification of crop diseases.
- Monitoring of crop health.
- Optimization of crop health by detecting and preventing crop diseases.
- By identifying the presence of pests, the system can help farmers to implement appropriate pest management strategies, reducing the need for harmful pesticides.

FUTURE WORK

- Integration with precision farming technologies to enable targeted treatment and management of disease outbreaks.
- Development of machine learning and AI-based algorithms for accurate and efficient disease detection.
- Use of remote sensing and imagery analysis for early detection and monitoring of disease outbreaks.
- Development of the system to cover a wider range of crops and diseases.
- Development of an expert system to assist farmers and agronomists in disease diagnosis and management.
- In collaboration with research institutions and government organisations for data sharing and validation of results.

THANK YOU