



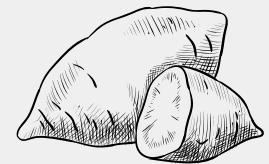
POTATO LEAF DISEASE CLASSIFICATION

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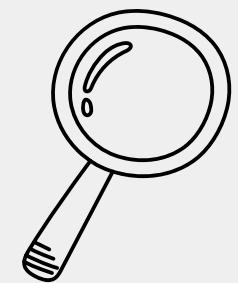
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INTRODUCTION



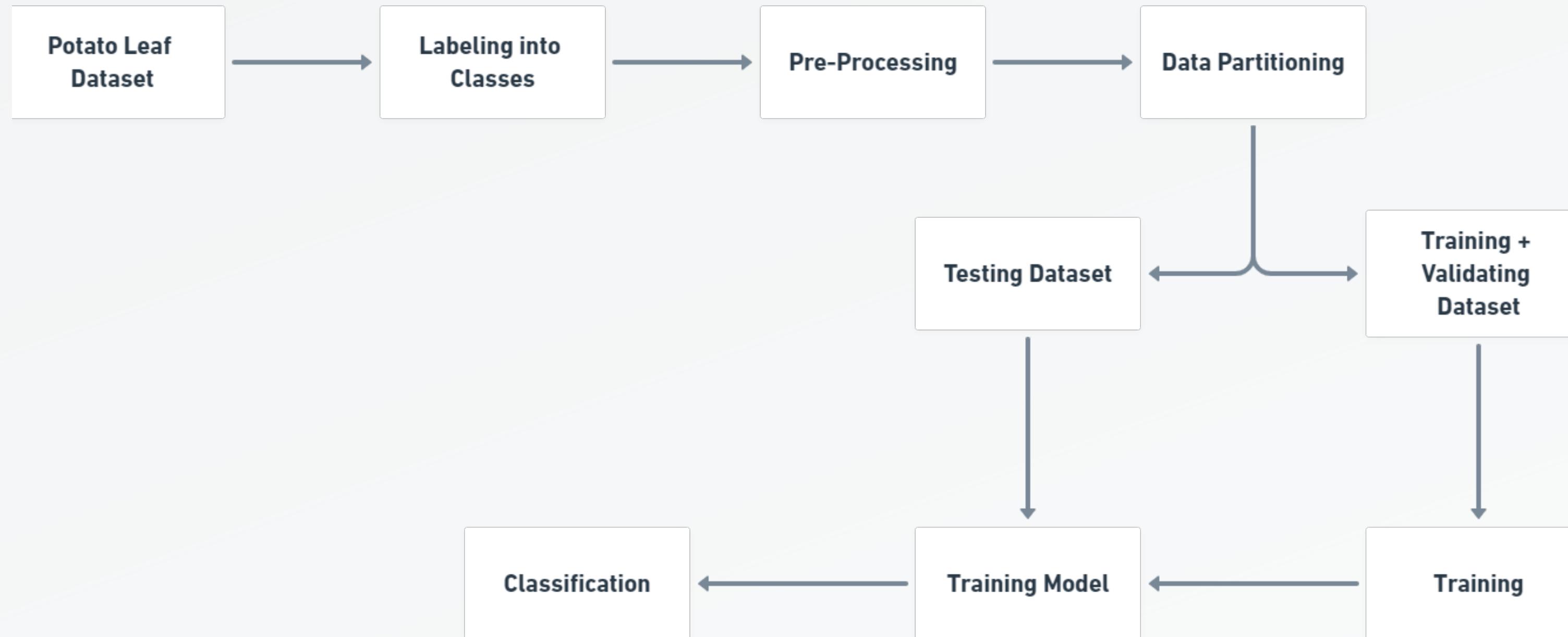
Being the 2nd largest producer in the world, potato plays a major role in the Indian economy. however, potato production is at a risk of fungal diseases like blight.



Detection and classification of these diseases are crucial for effective management and control, as well as for ensuring food security.



FLOW DIAGRAM



ADVANTAGES

COST EFFECTIVE

Traditional methods of disease detection is expensive and time-consuming, often requiring the services of trained professionals.

PRODUCTIVITY

Early detection and diagnosis can help farmers make informed decisions about the use of fertilizers and pesticides, leading to better crop yields and increased productivity.

EFFICIENT MONITORING

Manual inspection of each plant can be time-consuming and labor-intensive. Automated systems can scan large areas of crops quickly and accurately.

DATASET DESCRIPTION

Three classes



Late Blight

Early Blight

Healthy

- The Plant Village Dataset is available on Kaggle, an open-source repository designed for research purposes.

- The number of images in a particular class varies from 152 images to 1000 images. The potato images for our classification problem comprises three classes i.e. Early Blight, Late Blight, and healthy leaf images.



LIBRARIES USED

Tensorflow



Scikit-learn



Keras



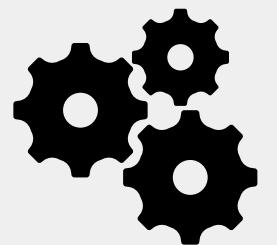
Numpy



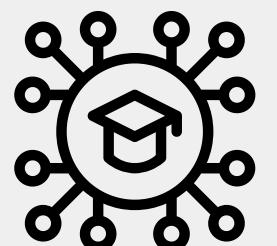
Matplotlib



WHAT IS DEEP LEARNING



Machine learning is a subset of artificial intelligence that focuses on using statistical methods to learn patterns in data and make predictions or decisions based on those patterns.



Deep learning is a subset of machine learning that specifically uses deep neural networks to learn complex representations of data, often achieving state-of-the-art performance on a wide range of tasks.

Artificial Intelligence

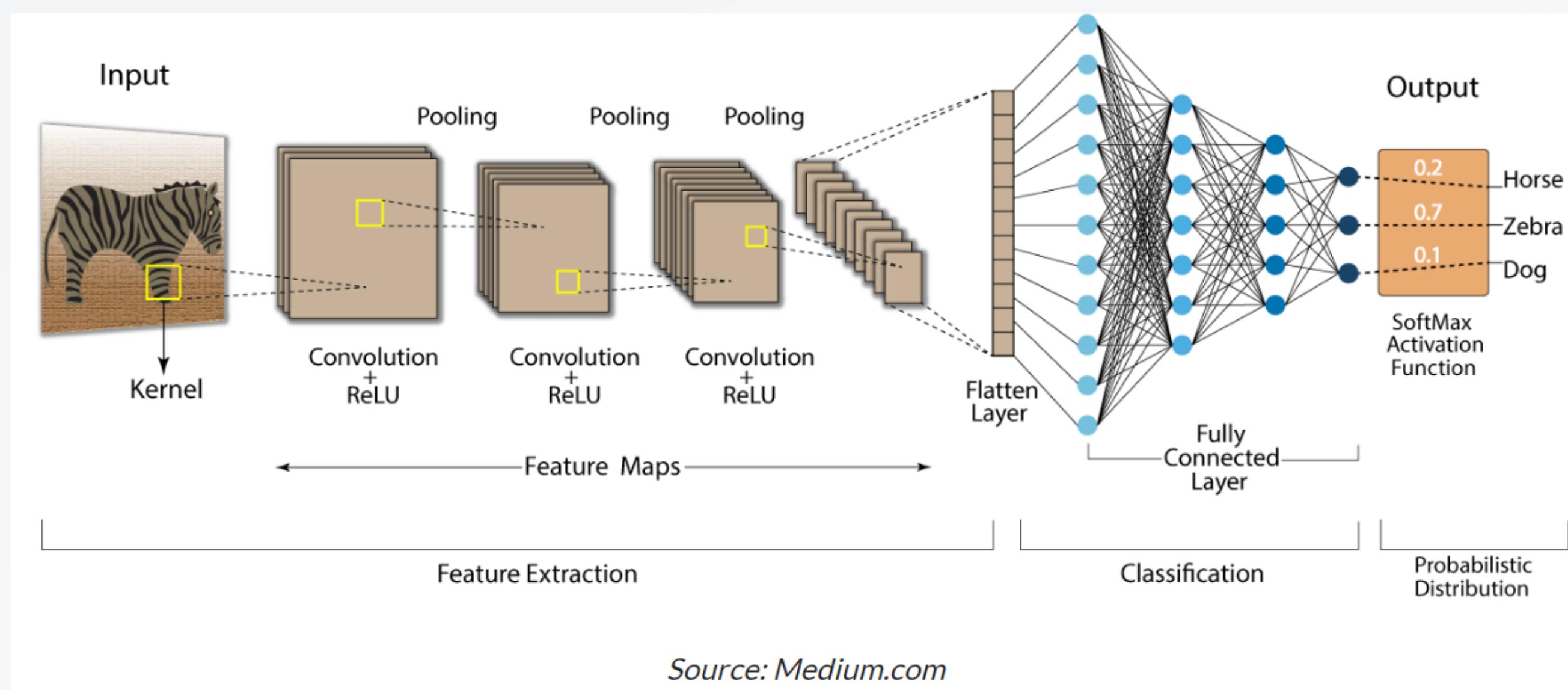
Machine Learning

Deep Learning

CONVOLUTIONAL NEURAL NETWORK

CNN architecture consists of three main types of layers:

- Input
- Hidden
- Fully connected (outer layer)



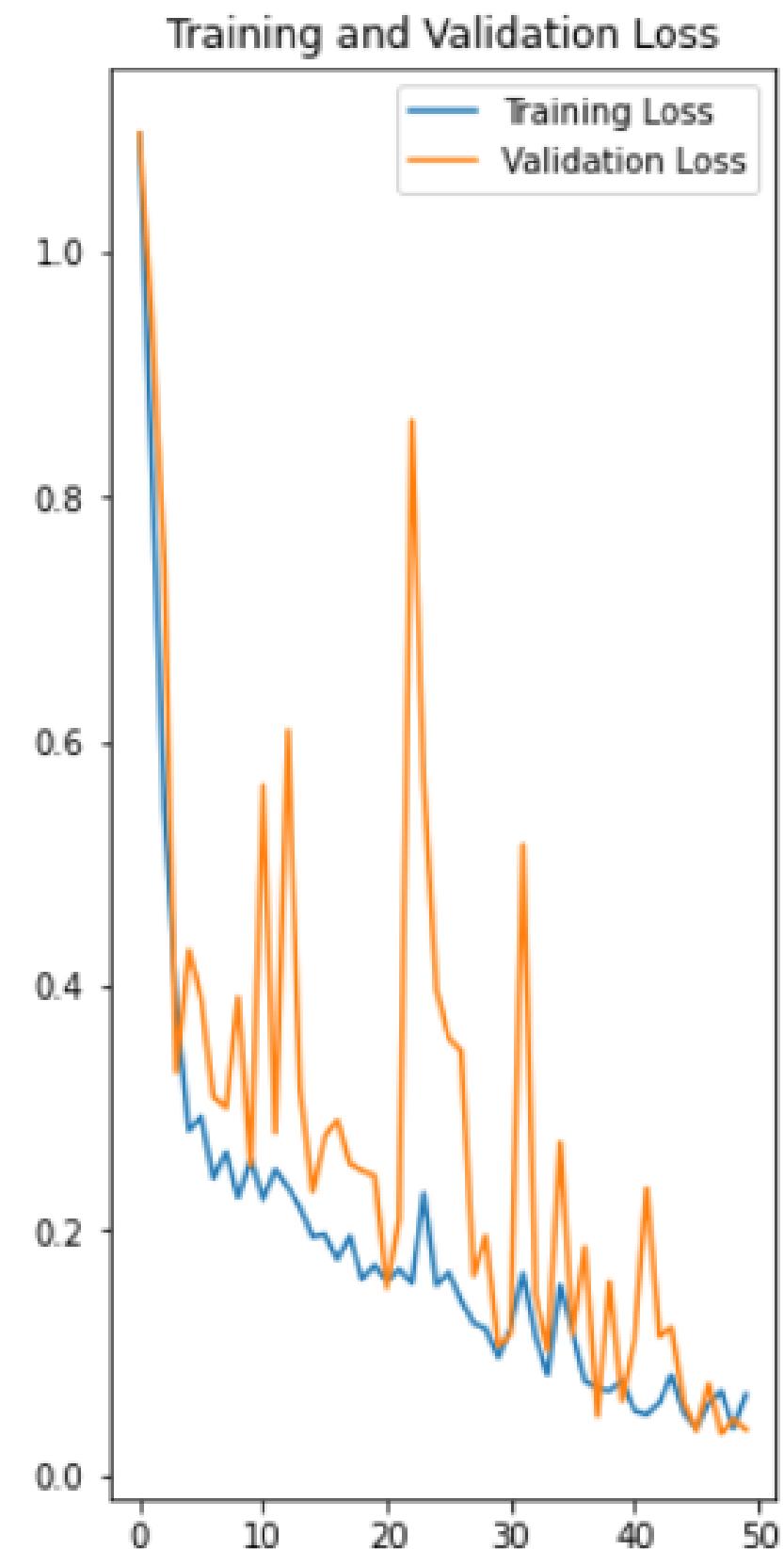
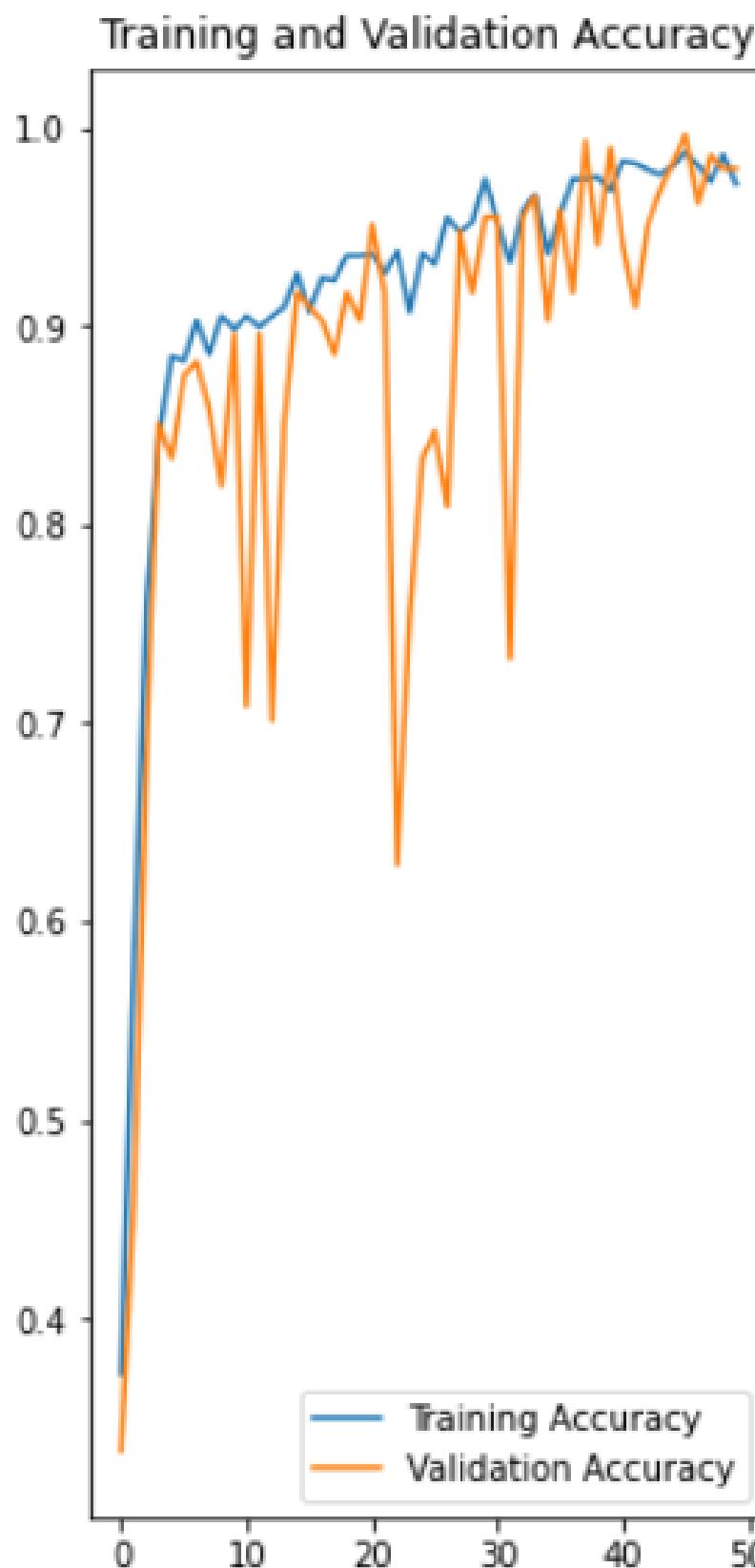
USE CASES

CNN can be used to solve a wide range of problems:

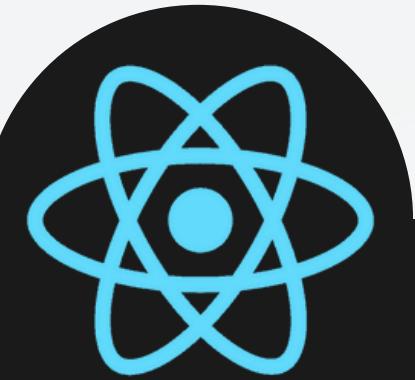
- Classification
- Clustering
- Decision making
- Regression
- Pattern recognition
- Dimension reduction
- Anomaly detection
- Visualization

STATISTICS

The use of data augmentation techniques, such as random flips and rotations, along with the sequential layer enabled us to achieve a maximum accuracy of 92%.



ON THE FRONT END



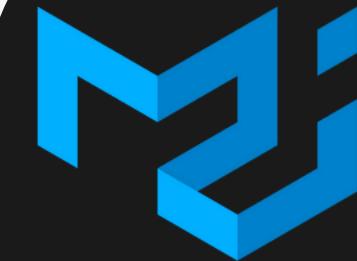
React is one of the most popular javascript libraries for front-end web development. React allows developers to build reusable UI components and manage the components efficiently.

REACT



GitHub has become an essential tool for software development. It has been used for version control and collaboration throughout this project.

GITHUB

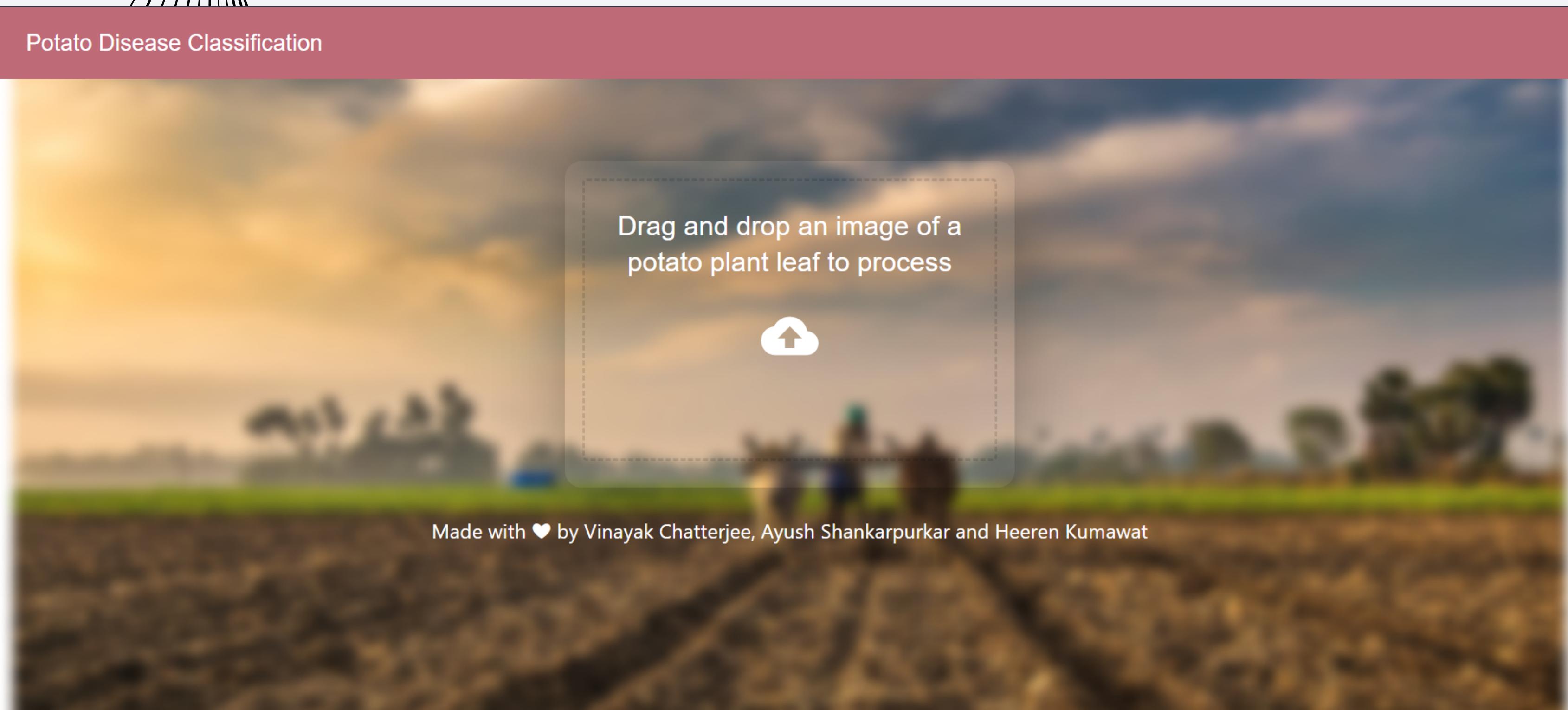


Material UI is a React component library that provides pre-built, customizable UI components based on Google's Material Design system.

MATERIAL UI

PREVIEW WEBSITE

Potato Disease Classification



Drag and drop an image of a potato plant leaf to process



Made with ❤️ by Vinayak Chatterjee, Ayush Shankarpurkar and Heeren Kumawat

FUTURE SCOPE

Further improvements and upgradations are possible, which can be added in the future.

Recommendation of chemicals and their ratio to control further spread of disease on different parts of the plant

TREATMENT SUGGESTIONS

Other than plant leaf diseases, it can be used for identification and classification of nutrient deficiency of leaves.

NUTRIENT DEFICIENCY

Creating a CNN model is a tedious process, this model can be used to detect and classify other plant disease by training the model with specific datasets

REPURPOSING THE MODEL

THANK YOU

