Final year project

Potato disease classification using deep learning

PRAMOD (18GAEC9086)

8th Semester, CSE

Under the guidance of

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Scope/ Objectives of the Project:

Utilization of Convolutional Neural Network (CNN):
- Develop a system that employs a CNN for the classification of potato leaf illnesses.
- Explore the capabilities of deep learning in accurately identifying and categorizing diseases in
  potato plants.
- Investigate and implement effective preprocessing techniques for the leaf image data.
- Ensure that the input data is appropriately formatted and optimized for training the CNN model.

Performance Evaluation on Test Set:
- Train the CNN model on the pre-processed leaf image data to learn patterns associated with potato diseases.
- Optimize the model architecture and parameters to enhance classification performance.
- Assess the success of the trained CNN model on a separate test set of potato leaf images.
- Measure various performance metrics such as accuracy, precision, recall, and F1 score to gauge the model's effectiveness.

Practical Application in Agriculture:
- Emphasize the practical application of the proposed method in agriculture.
- Provide a trustworthy and effective solution for identifying potato diseases, contributing to food
  security and minimizing financial losses in potato farming

Methodology:

Data Collection:
- Gather a diverse dataset of potato leaf images, including instances of Early Blight, Late Blight, and Healthy leaves.

Data Preprocessing:
- Apply preprocessing techniques to enhance the quality of leaf images, including normalization,
  resizing, and noise reduction.

Data Splitting:
- Divide the dataset into training and test sets to facilitate model training and evaluation.

Model Architecture Design:
- Define the architecture of the Convolutional Neural Network (CNN), specifying the number of layers,
  filters, and activation functions.

Model Training:
- Train the CNN model on the training dataset, using appropriate optimization algorithms and loss functions.

Hyperparameter Tuning:
- Optimize hyperparameters such as learning rate and batch size to enhance the model's learning capabilities.

Performance Evaluation:
- Evaluate the trained model on the test set, calculating metrics such as accuracy, precision, recall, and F1 score.

Disease Identification:
- Analyse the model's performance in accurately identifying Early Blight, Late Blight, and Healthy leaves.

Robustness Testing:
- Test the model's robustness by introducing images with severe infections, assessing its ability to handle challenging conditions.

Result Analysis:
- Interpret the experimental findings, emphasizing the model's overall accuracy (99.1%) and its effectiveness in disease classification.

Practical Application Assessment:
- Discuss the potential practical application of the developed model in identifying potato diseases for real-world agricultural scenarios.

Accuracy of the model
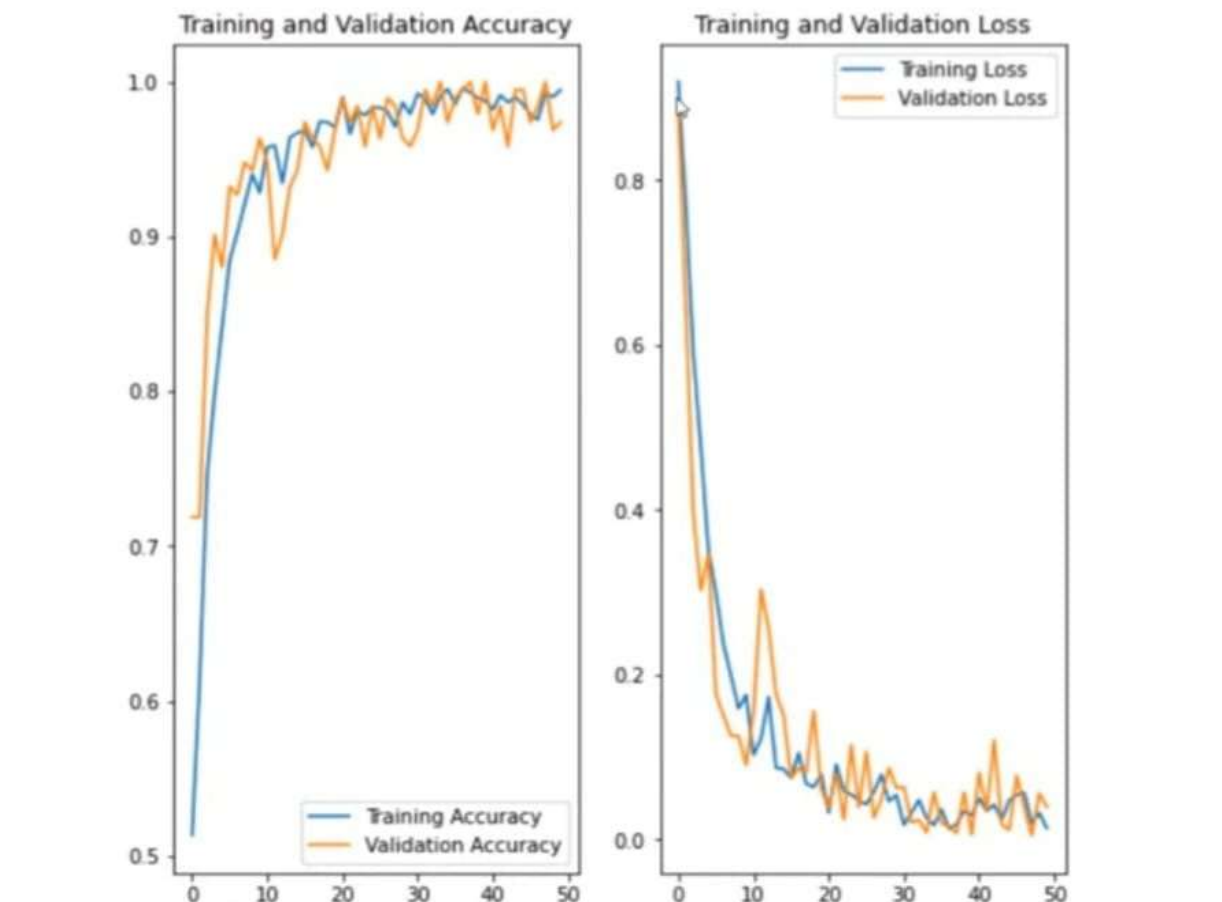
THIS IS SYNOPSIS OF OUR PROJECT REPORT IS STILL WORKING ON IT.