CMR COLLEGE OF ENGINEERING & TECHNOLOGY
Kandlakoya, Medchal, Hyderabad - 501401
Department of Electronics And Communication Engineering

LEAFPATHOS-LEAF DISEASE DETECTION

K.SHASHANK-22H51A0430

K.SIDDARTHA-22H51A0431

K.LASYA PRIYA-22H51A0432

UNDER THE GUIDANCE OF

MRS.SURYAKALA

MS.DEEPA RAO

ABSTRACT

- The project presents plant disease detection using image processing techniques for automated vision system used at agriculture field.
- In agriculture research of automatic plant disease detection is essential one in monitoring large fields of crops, and thus automatically detects symptoms of disease as soon as they appear on plant leaves.
- For this approach, colour transformations, masking green pixels, segmentation are used for classification based on learning with some training samples of that category.
- Finally, the simulated result shows that used network classifier provides minimum error during training and better accuracy in classification.

INTRODUCTION

- The automatic identification technique will take less effort and time and a more accurate program.
- It works by using CNN to detecting the leaf is healthy or diseased and if it is a disease it identifies the diseases like fungi, viruses, bacteria, black spots, powdery mildew, downy mildew, blight, canker, etc. and also provides remedies for recoverability of these diseases.

"LeafLens: A Python CNN Approach for Digital Leaf Disease Detection"

PROBLEM STATEMENT

1.The agricultural industry faces significant challenges due to crop diseases and pests.

2.These issues lead to substantial economic losses.

3.Early detection and accurate diagnosis are crucial for effective management and mitigation.

4.Traditional methods rely heavily on expert knowledge and manual inspection.

5.Manual inspection methods can be time-consuming and prone to human error.

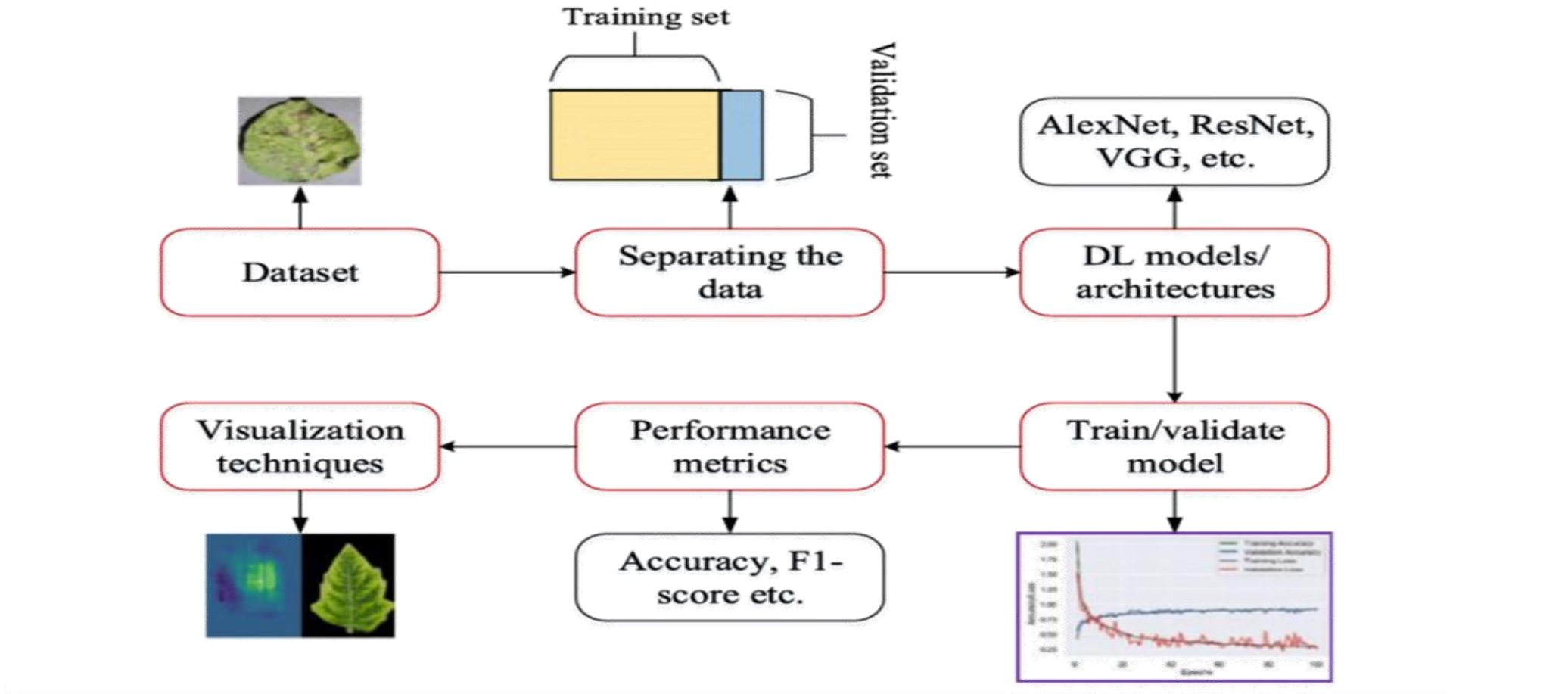
LEAFPATHOS-LEAF DISEASE DETECTION

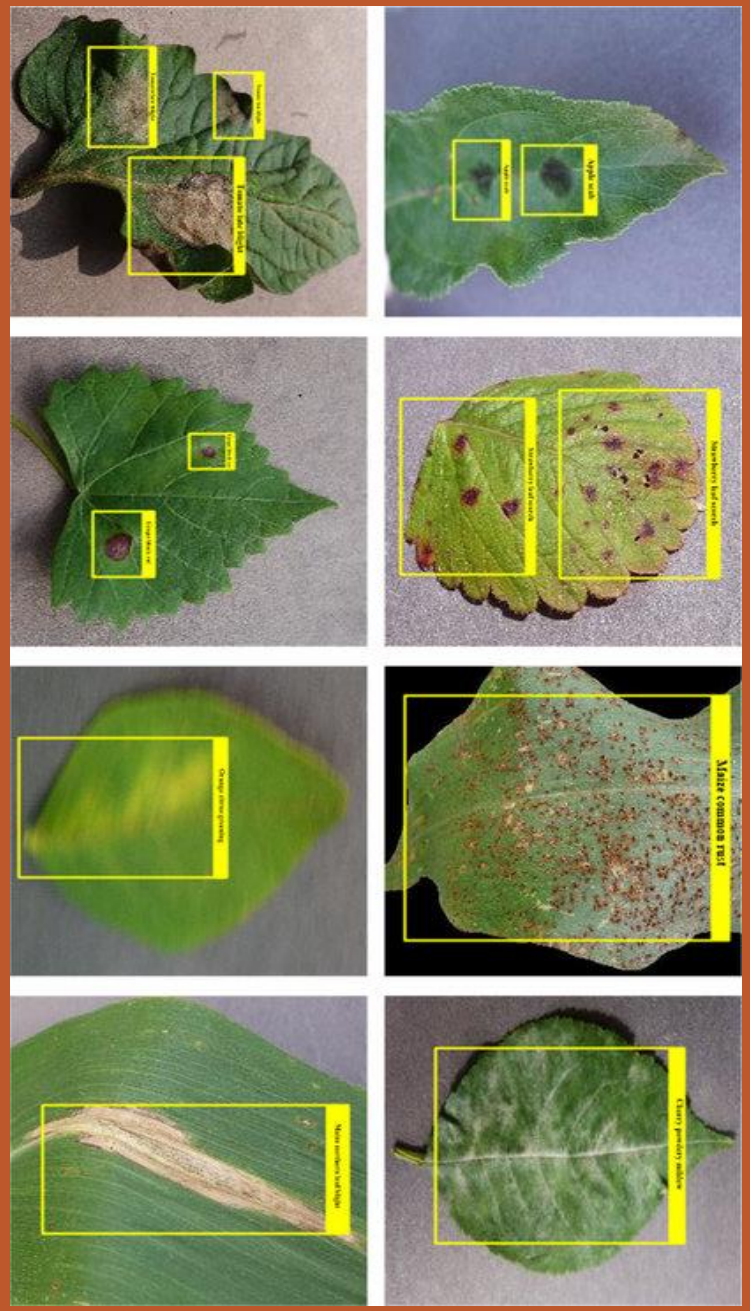
EXISTING METHOD	DRAWBACKS	OVERCOME
•Transfer Learning with CNN •Multitasking learning Method •Traditional Method(Manual inspection)	•Limited to Specific task •Complex architecture •Computational intensive •Time consuming, prone to human error	By using CNNs we can get High accuracy and able to detect small lesions , improved performance , highly accessesble

OBJECTIVE:

- Plant disease detection uses image processing for automated agricultural systems.
- Essential for monitoring large crop fields and detecting disease symptoms early.
- Uses color transformations, masking green pixels, and segmentation for classification.
- Classification based on learning with training samples of the specific category.

BLOCK DIAGRAM

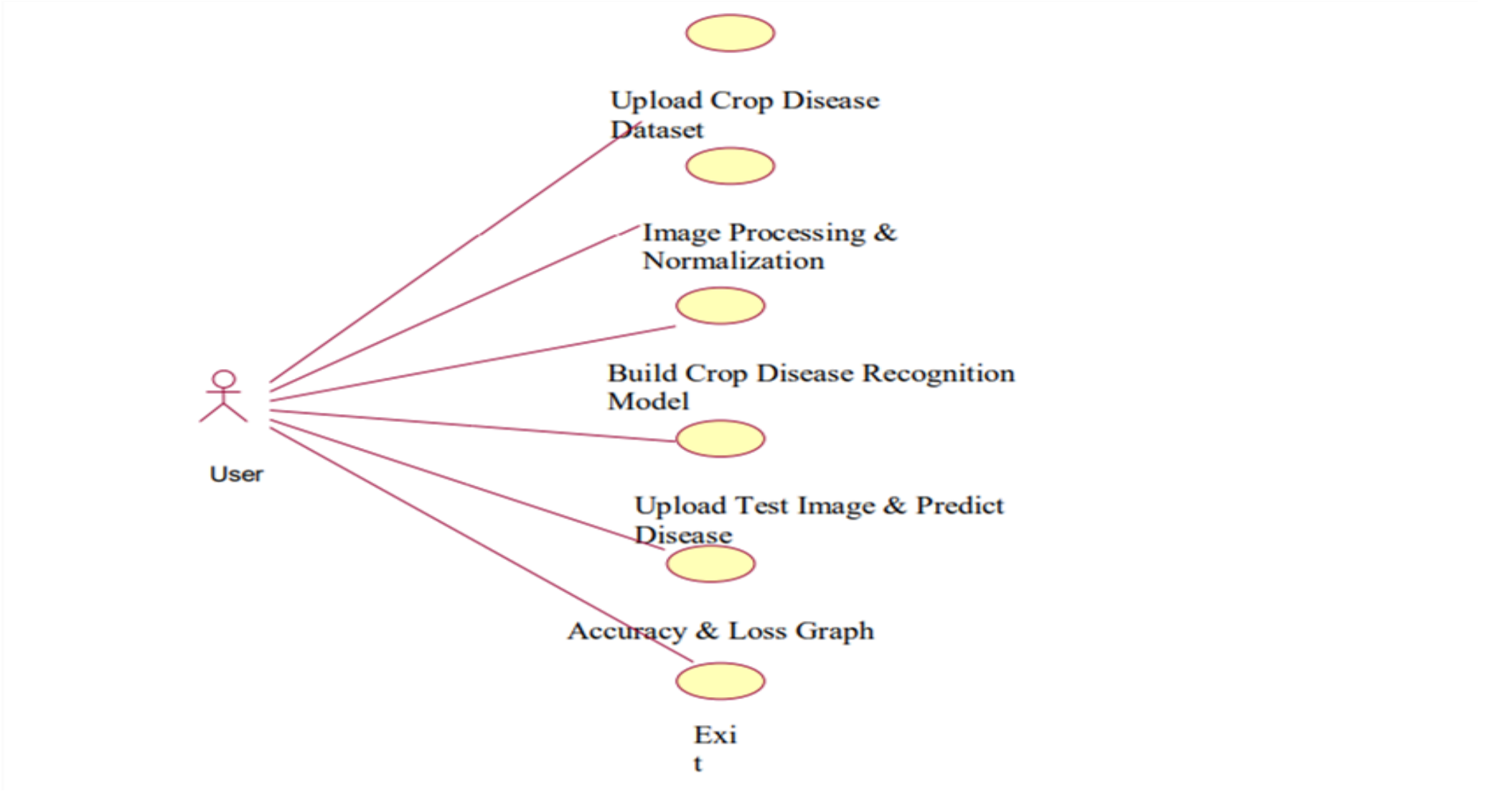




EXPLANATION OF BLOCK DIAGRAM:

- Dataset Preparation: Collect and preprocess the dataset of leaf images.
- Data Splitting: Separate the data into training and validation sets.
- Model Selection: Choose a deep learning model/architecture (e.g., AlexNet, ResNet, VGG).
- Model Training and Validation: Train and validate the selected model using the training and validation sets.
- Performance Evaluation: Evaluate model performance using metrics like accuracy and F1-score, and visualize the results.

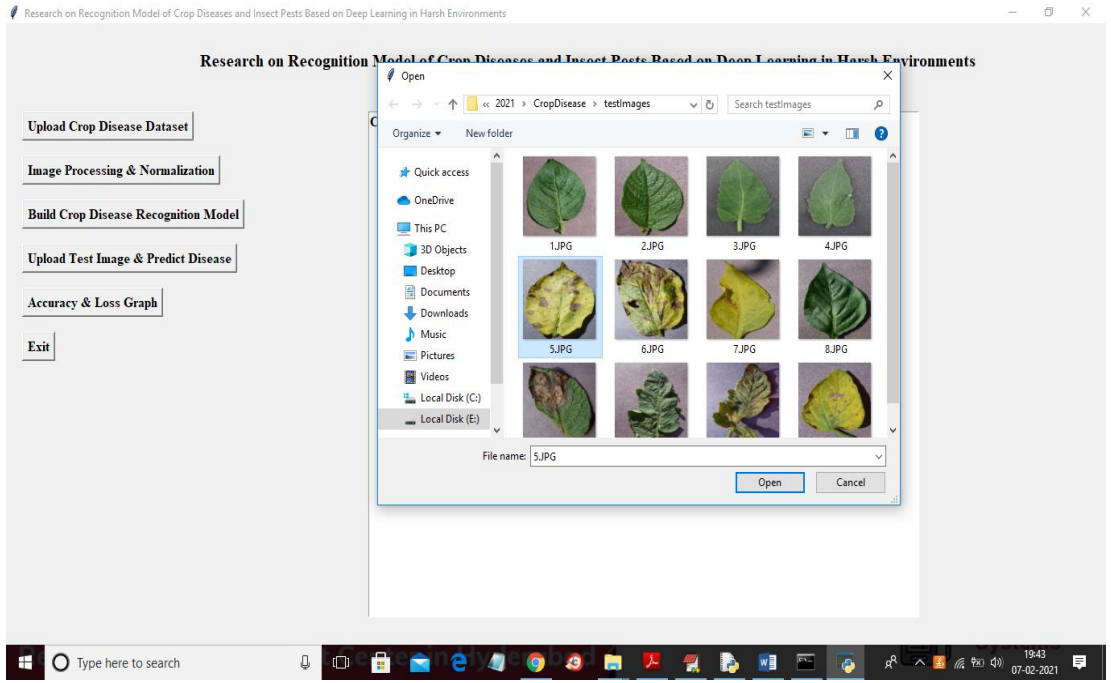
CROP DISEASE DETECTION WORKFLOW

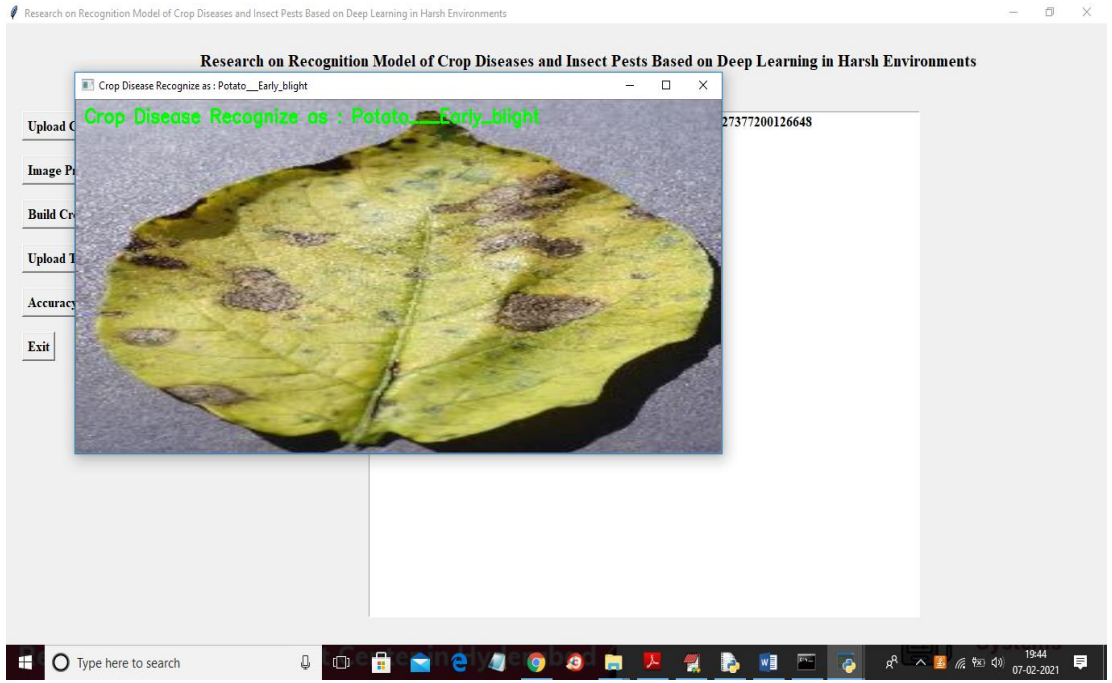


TECHNICAL SPECFICATIONS

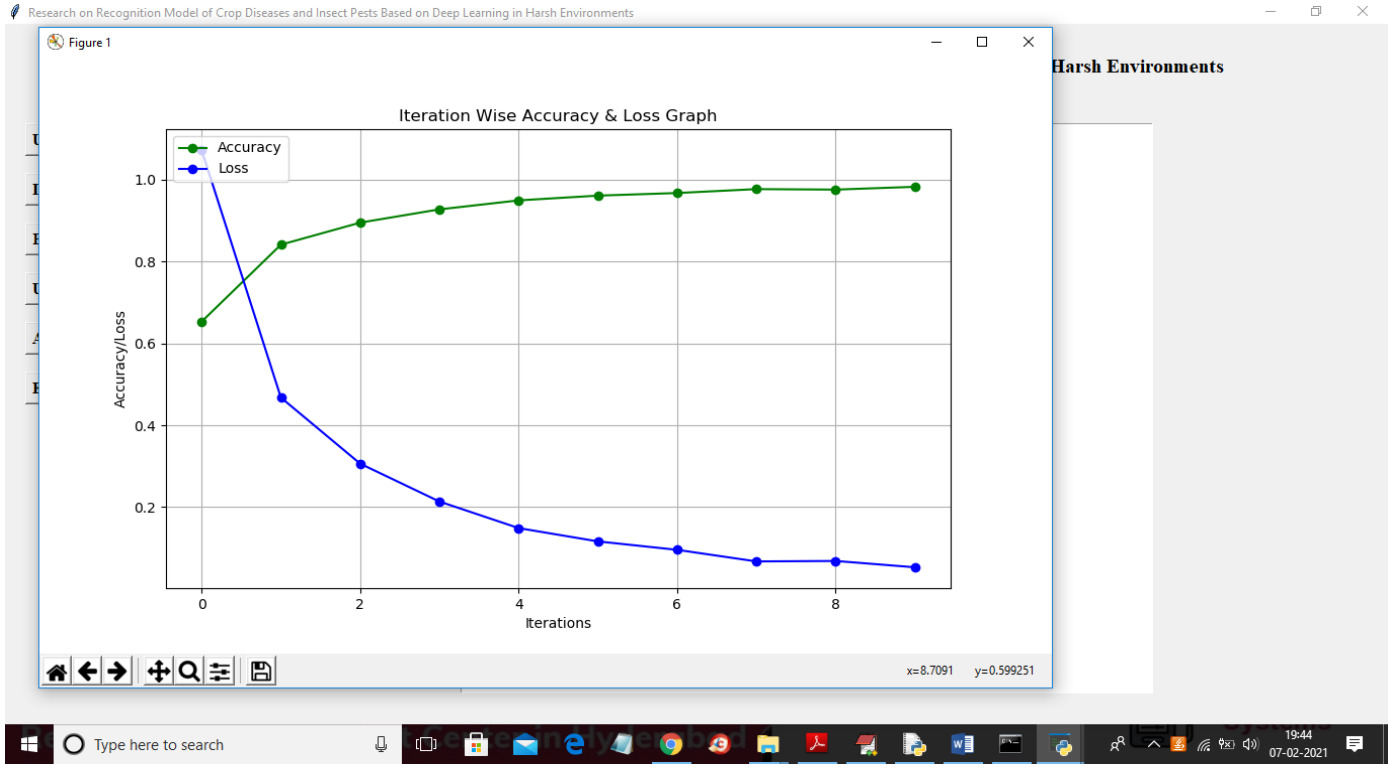
- Automatic Identification Technique
- CNN-based Detection
- Disease Identification
- Disease Types Detected
- Remedies and Recoverability

OUTPUTS:


Research on Recognition Model of Crop Diseases and Insect Pests Based on Deep Learning in Harsh Environments
Upload Crop Disease Dataset
Image Processing & Normalization
Build Crop Disease Recognition Model
Upload Test Image & Predict Disease
Accuracy & Loss Graph
Exit
Open
2021 › CropDisease › testImages
Search testImages
Organize
New folder
Quick access
OneDrive
This PC
3D Objects
Desktop
Documents
Downloads
Music
Pictures
Videos
Local Disk (C:)
Local Disk (E:)
1.JPG
2.JPG
3.JPG
4.JPG
5.JPG
6.JPG
7.JPG
8.JPG
File name: 5.JPG
Open
Cancel
Type here to search
19:43
07-02-2021


Research on Recognition Model of Crop Diseases and Insect Pests Based on Deep Learning in Harsh Environments
Research on Recognition Model of Crop Diseases and Insect Pests Based on Deep Learning in Harsh Environments
Crop Disease Recognize as : Potato__Early_blight
Crop Disease Recognize as : Potato__Early_blight
Exit
Type here to search
19:44
07-02-2021

OUTPUT:


Research on Recognition Model of Crop Diseases and Insect Pests Based on Deep Learning in Harsh Environments
Figure 1
Iteration Wise Accuracy & Loss Graph
Accuracy
Loss
Accuracy/Loss
Iterations
x=8.7091
y=0.599251
Harsh Environments
Type here to search
19:44
07-02-2021

ADVANTAGES

1. **ACCURATE DETECTION**
2. **REDUCED FOOD WASTE**
3. **COST-EFFECTIVE**
4. **IMPROVED CROP MANAGEMENT**

DISADVANTAGES

1. **DATA REQUIREMENT**
2. **COMPUTATIONAL**
3. **RESOURCES OVERFITTING**
4. **INTERPRETABILITY**

FUTURE SCOPE:

The future of plant disease detection systems includes integrating IoT for real-time monitoring.

utilizing advanced AI and machine learning for precise detection, enhancing image processing, expanding databases, and making solutions scalable and accessible.

It also involves adapting to climate change, supporting precision agriculture, and providing real-time analytics and reporting.

APPLICATIONS

Precision Agriculture

Crop Monitoring

Disease Surveillance

Yield Prediction

Automated Farming Systems

Early Warning Systems

Quality Control

Educational Tools for Farmers

CONCLUSION

- In conclusion, the project demonstrated the effectiveness of deep learning techniques in detecting plant leaf diseases. The project achieved high accuracy rates in classifying the different types of plant leaf diseases using a Convolutional Neural Network (CNN) architecture.

- With further advancements in technology and the integration of precision agriculture techniques, the future of plant leaf disease detection and agriculture can become more efficient, sustainable, and productive.

REFERENCE

- AI-Bashish D, M. Braik and S. Bani-Ahmad, 2011. detection and classification of leaf diseases using K-means-based segmentation and neural networks-based classification.Inform.Technol.J.,10:267-275. DOI:10.3923/itj.2011.267.275, January 2011.
- Shima Ramesh, Niveditha M, Pooja R, Prasad Bhat N, Shashank N, Mr. Ramachandra Hebbar, Mr. P.V Vinod.plant disease detection using machine learning. conference paper.April 2018.DOI:10.11.1109/ICDI3C.2018.00017.2018 International conference on design innovations for 3Cs compute communicate control.

THANK YOU!