GREEN GUARD

TEAM DEFENDERS

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Slogan-

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PROBLEM STATEMENT

Description:

Plant diseases reduce agricultural yield, impact food security, and increase pesticide misuse.

Small-scale farmers and home gardeners often struggle to identify plant diseases accurately.

Manual diagnosis is time-consuming and error-prone.

Objective: Build a deep learning-based system that can identify plant diseases from leaf images and provide intelligent, real-time treatment recommendations.

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What we can put on the table....

PROPOSED SOLUTION

Our solution:

- Automated plant disease detection from leaf images
- Fast and accurate diagnosis
- Accessible through a simple web interface

Objective

- Build a CNN-based deep learning model (PyTorch)
- Deploy via Flask backend + Web UI
- Provide real-time disease prediction with confidence score
- Help in early treatment → reduce crop loss

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SDG'S GOALS WE ALIGN WITH

- SDG 2: Zero Hunger → Healthy crops = better food security
- SDG 3: Good Health & Well-being → Prevent harmful pesticide misuse
- SDG 8: Decent Work & Economic Growth → Higher yield = higher farmer income
- SDG 9: Industry, Innovation & Infrastructure → AI-driven smart farming
- SDG 12: Responsible Consumption & Production → Reduced farm wastage
- SDG 13: Climate Action → Sustainable farming, less environmental damage

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KEY FEATURES

- User-friendlyWebInterface(HTML,CSS,JS).
- Flask-poweredAPIforpredictions.
- PyTorch-traineddeeplearningmodel.
- Disease+ConfidenceScore.

- Early-stage disease detection can reduce crop loss by up to 40%
- CNNs outperform traditional ML in leaf disease classification
- PlantVillage dataset: 54,000+ images, 14 crops, 26 diseases
- Transfer Learning (ResNet / EfficientNet) boosts accuracy on small datasets

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METHODOLOGY

- Data Collection → PlantVillage dataset & field images
- Preprocessing → Resize, augmentation (flip, crop, brightness)

- Model Training → Transfer Learning (ResNet / EfficientNet)
- Evaluation → Accuracy, Precision, Recall, F1-score

- Deployment → Flask backend + Web UI
- Prediction → Upload leaf → Model outputs disease + confidence

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FUTURE SCOPE AND USE

Deforestation

Large-scale tree removal disrupts ecosystems, reduces biodiversity, and contributes to climate change by decreasing carbon absorption and altering habitats.

Pollution

Air, water, and soil pollution harm wildlife, poison ecosystems, and degrade natural resources essential for survival.

Climate Change

Rising temperatures, extreme weather, and melting ice caps threaten ecosystems, causing habitat loss and endangering species worldwide.

Overexploitation

Excessive hunting, fishing, and resource extraction deplete nature’s reserves, endangering species and disturbing ecological stability.

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TECH STACK USED

Front-End → HTMl,CSS,JAVASCRIPT
Back-end → Python , Flask
Machine-Learning Model → Deep Learning ,Pytorch

Used multiple Dataset to train Model->
PlantVillage Dataset
https://share.google/1AXexijYoxNtFSxWo
New Plant Diseases Dataset
https://share.google/FD2f9RlRnXlVUh2Zi

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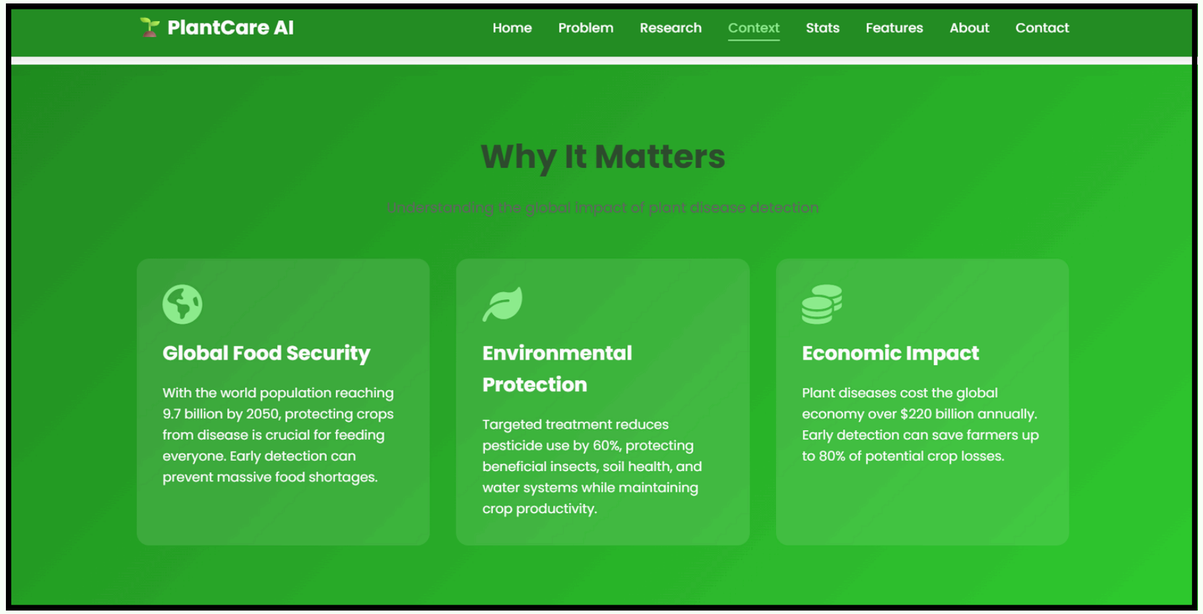
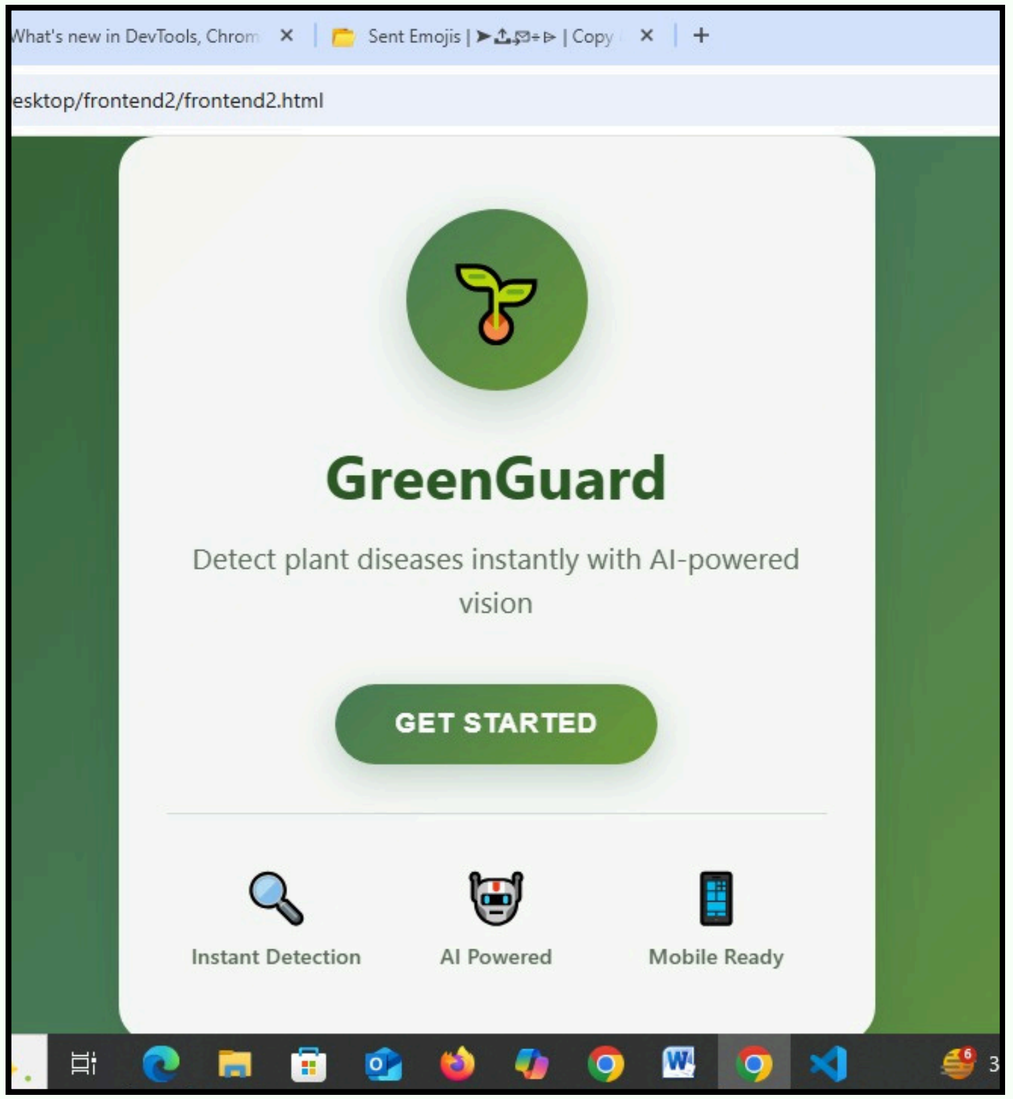


SCREENSHOTS



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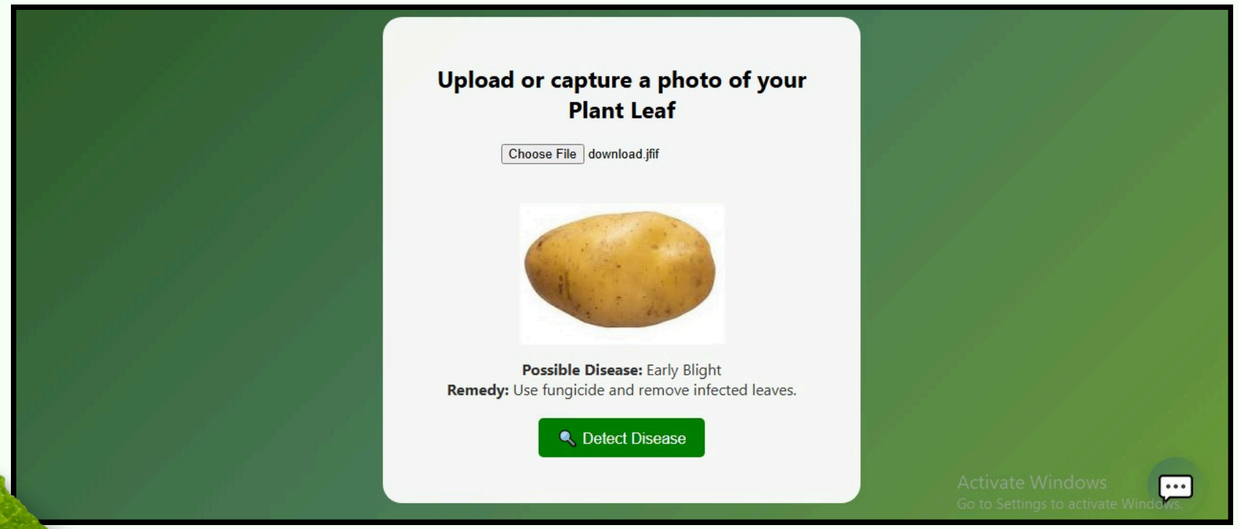

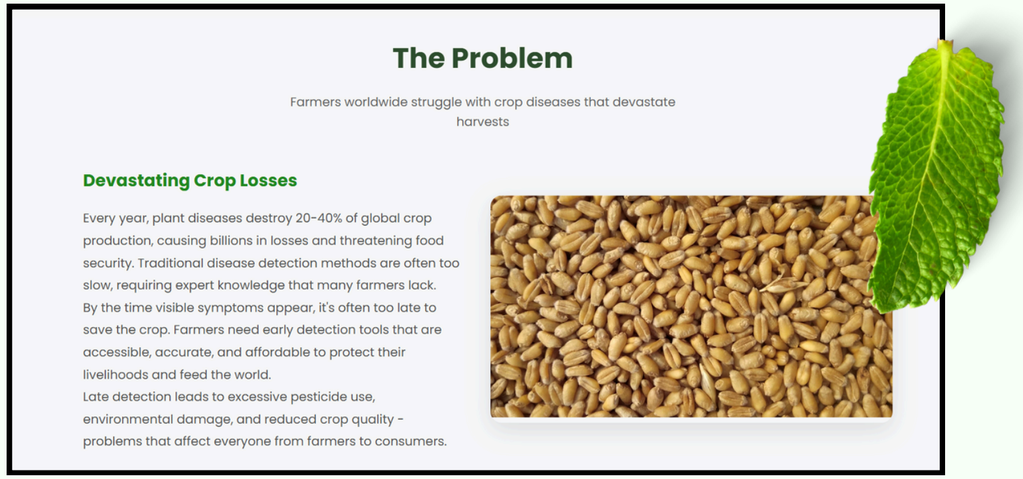

CONNECT WITH US

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Thank You