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Detection of Northern Leaf Blight Disease of Maize Based on Teachable Machine (AI)

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SUMMARY

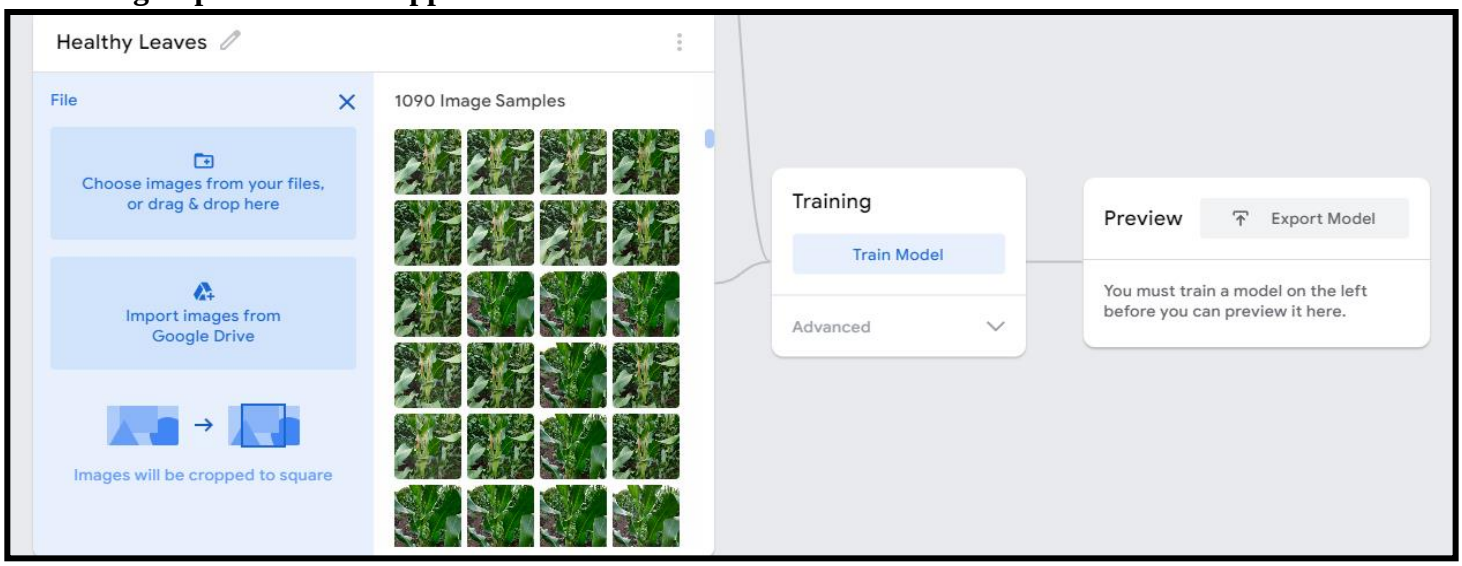
Plant disease identification through naked eye observation of symptoms on plant leaves is becoming increasingly difficult. Even seasoned agricultural professionals and plant pathologists are baffled by the intricacy and enormous number of cultivated Crops, as well as their existing psychopathological disorders. A machine learning-based technique is used to detect plant disease. To extract information and offer correct results, the model employs a teachable solution and a simple interface. When compared to the typical convolutional neural network, the teachable solution saves money and simplifies algorithms. We developed a Northern leaf blight detection algorithm with a 0.98 percent accuracy and a 0.99 percent accuracy for healthy leaves.

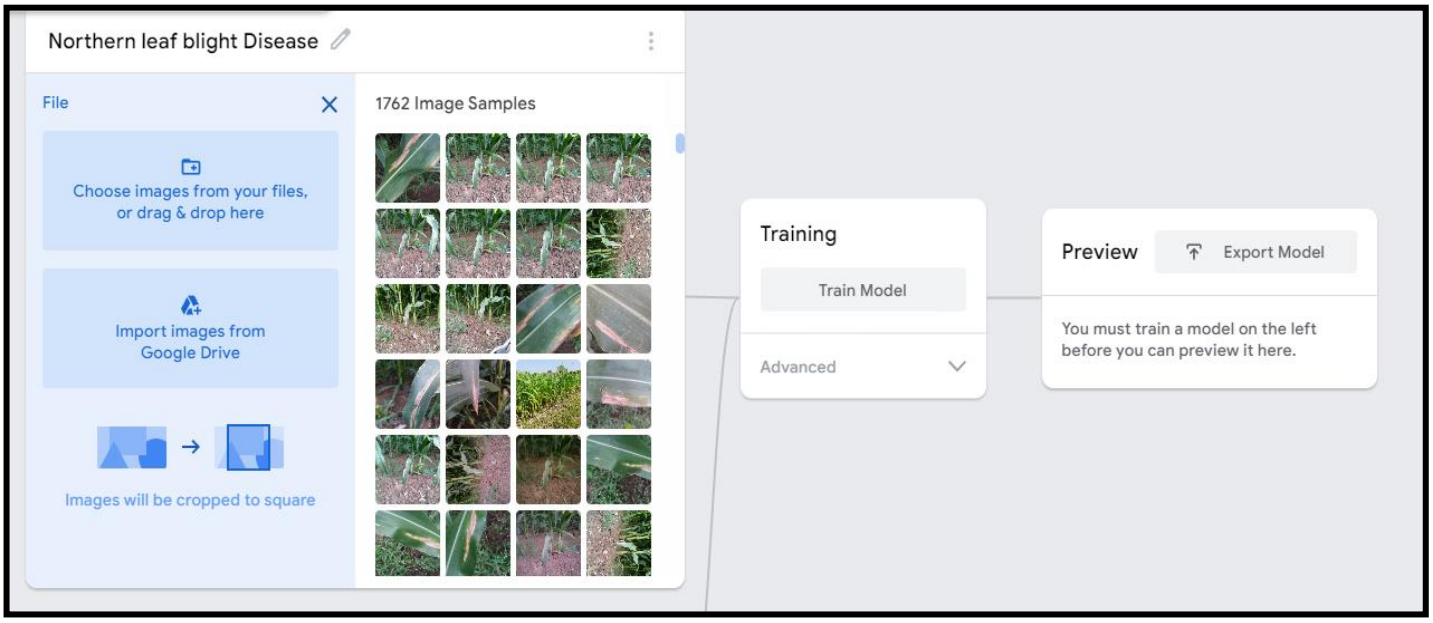
INTRODUCTION

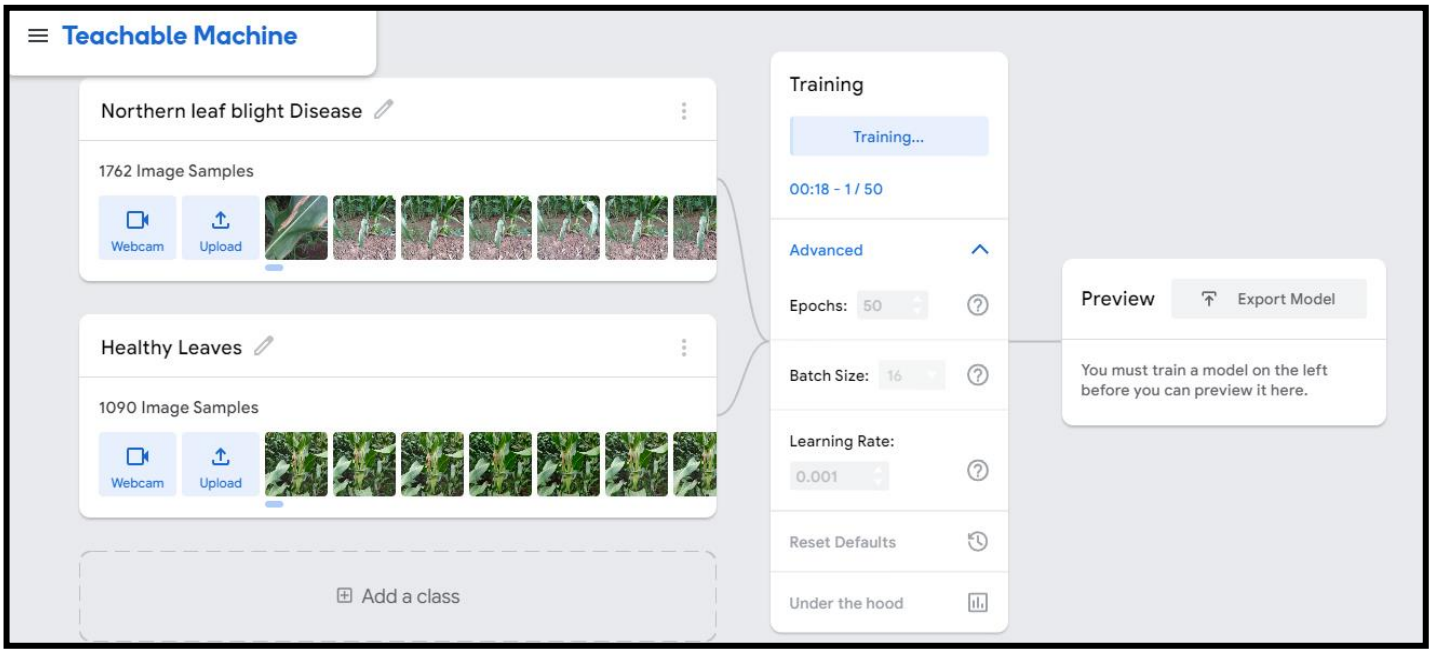
An automated system designed to aid in the identification of plant diseases based on the look and visual symptoms of the plant could be extremely beneficial to amateur farmers. This will be a valuable technique for farmers, alerting them at the appropriate moment before the disease spreads over a vast area. We intend to construct a model that will assist farmers in monitoring fields, detecting pests in crops, and reducing the effort of manually judging the field using the old technique. The automated crop health monitoring system does not require human involvement and is an intelligent device that automatically checks farms. We acquire a data collection of images of Northern leaf blight and healthy leaves. Teachable Machine (teachablemachine.withgoogle.com) is a web-based graphical user interface (GUI) tool for developing custom machine learning categorization models without specialist technical knowledge. (Machine learning, or ML, is a technique that allows systems to learn to understand data without being explicitly programmed.) Designers built it to assist students, instructors, designers, and others in learning about ML through the creation and application of their own categorization models. Its widespread adoption shows that it has enabled people to learn, teach, and explore ML concepts: Teachable Machine has been used to develop curriculum, tutorials, and other materials on issues such as AI ethics at schools such as Stanford University, NYU's Interactive Telecommunications Program, the MIT Media Lab, and creative experiments.

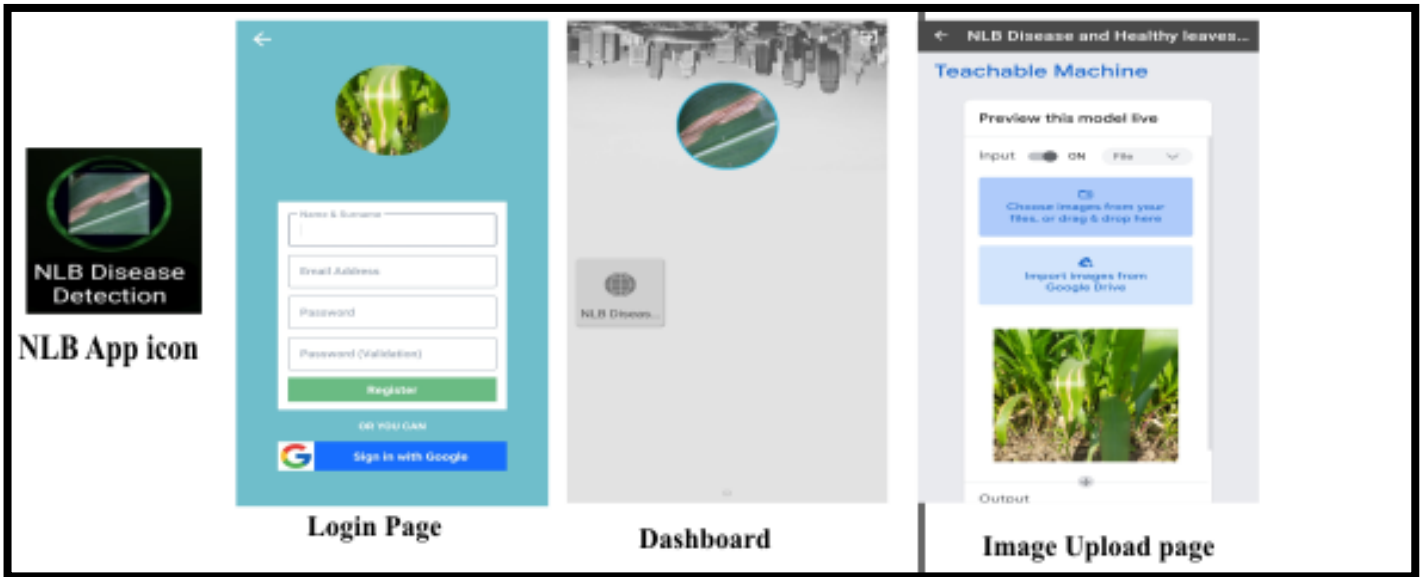
Model Preparation:

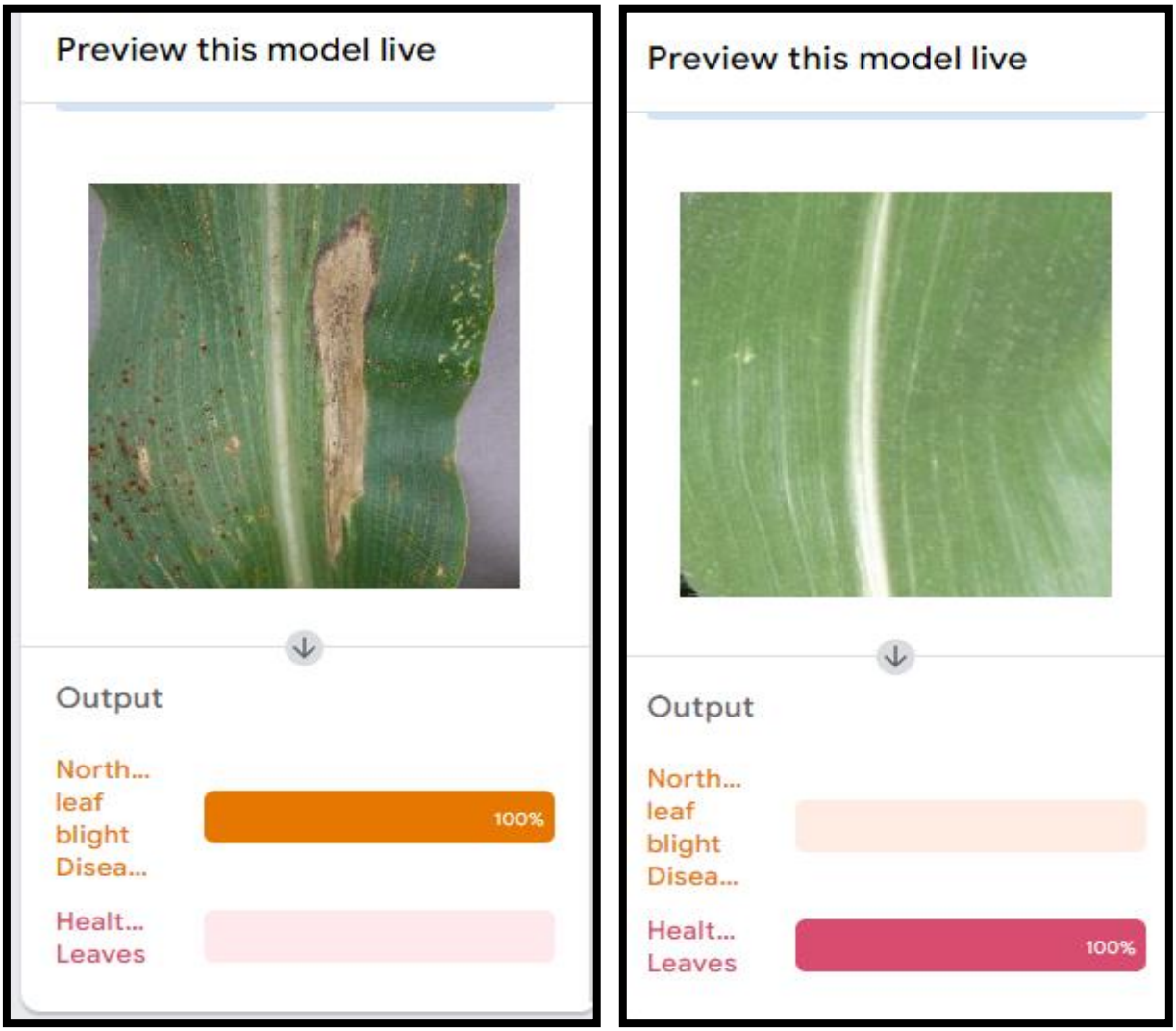
Test image Upload in Web App




Northern leaf blight Disease
File
Choose images from your files, or drag & drop here
Import images from Google Drive
Images will be cropped to square
1762 Image Samples
Training
Train Model
Advanced
Preview
Export Model
You must train a model on the left before you can preview it here.


Teachable Machine
Northern leaf blight Disease
1762 Image Samples
Webcam
Upload
Healthy Leaves
1090 Image Samples
Add a class
Training
Training...
00:18 - 1 / 50
Advanced
Epochs: 50
Batch Size: 16
Learning Rate:
0.001
Reset Defaults
Under the hood
Preview
Export Model
You must train a model on the left before you can preview it here.


NLB Disease Detection
NLB App icon
Login Page
Dashboard
NLB Disease and Healthy leaves...
Teachable Machine
Preview this model live
Image Upload page



NLB Application Icon and dashboard

Source: https://teachablemachine.withgoogle.com/models/duISVp3Hm/)

CONCLUSION

A deployment of model was also performed using Web App develop by us link is given below https://teachablemachine.withgoogle.com/models/duISVp3Hm/ using this web app anyone can predict NLB disease by uploading image of maize leaves to model they can get fast result. Farmer or student can also download Android app from this link or website provided. They can login this app and can upload image of NLB leaves or healthy leaves of maize. (https://drive.google.com/file/d/17gjlU_S_BIeV6wEee9FXbpfAgp89Xqzu/view?usp=drivesdk)

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