SeedScan: A Corn Seed Viability Assessment using Image Recognition Technology

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Problem

How do farmers determine which corn seeds will grow?

Traditional Way

Rag Doll

Floating Method

- **Time Consuming** – This test takes days to determined Viability.
- **Inaccurate** – Human error can lead to incorrect assumptions.
- **Resource Intensive** – Laboratory base testing is expensive.


White Lagkitan: 9
Sweet Corn: 4
White Lagkitan 64.9%
Sweet Corn 63.6%
White Lagkitan 77.4%
White Lagkitan 67.4%
Sweet Corn 67.8%
White Lagkitan 78.8%
Sweet Corn 52.4%
Sweet Corn 60.8%
White Lagkitan 72.0%
White Lagkitan 64.1%

Solution

Seedscan

Corn Viability Detection
Users can start the viability detection process for corn.

Corn Type Detection
Allows users to determine the type of corn with ease.

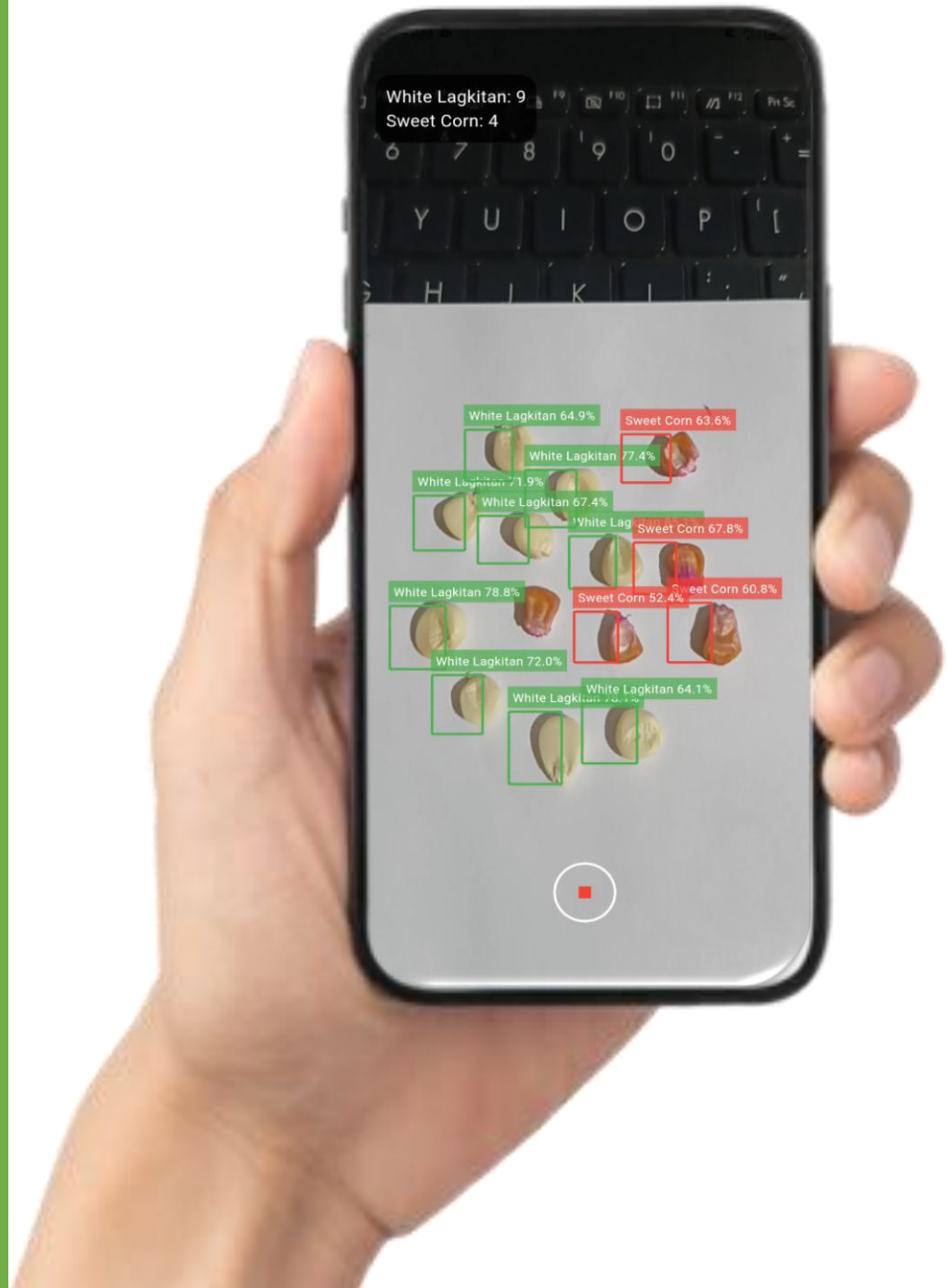
Harvest Estimation Features
Allows users to determine the probable number of harvest base on the viability results.

Seedscan

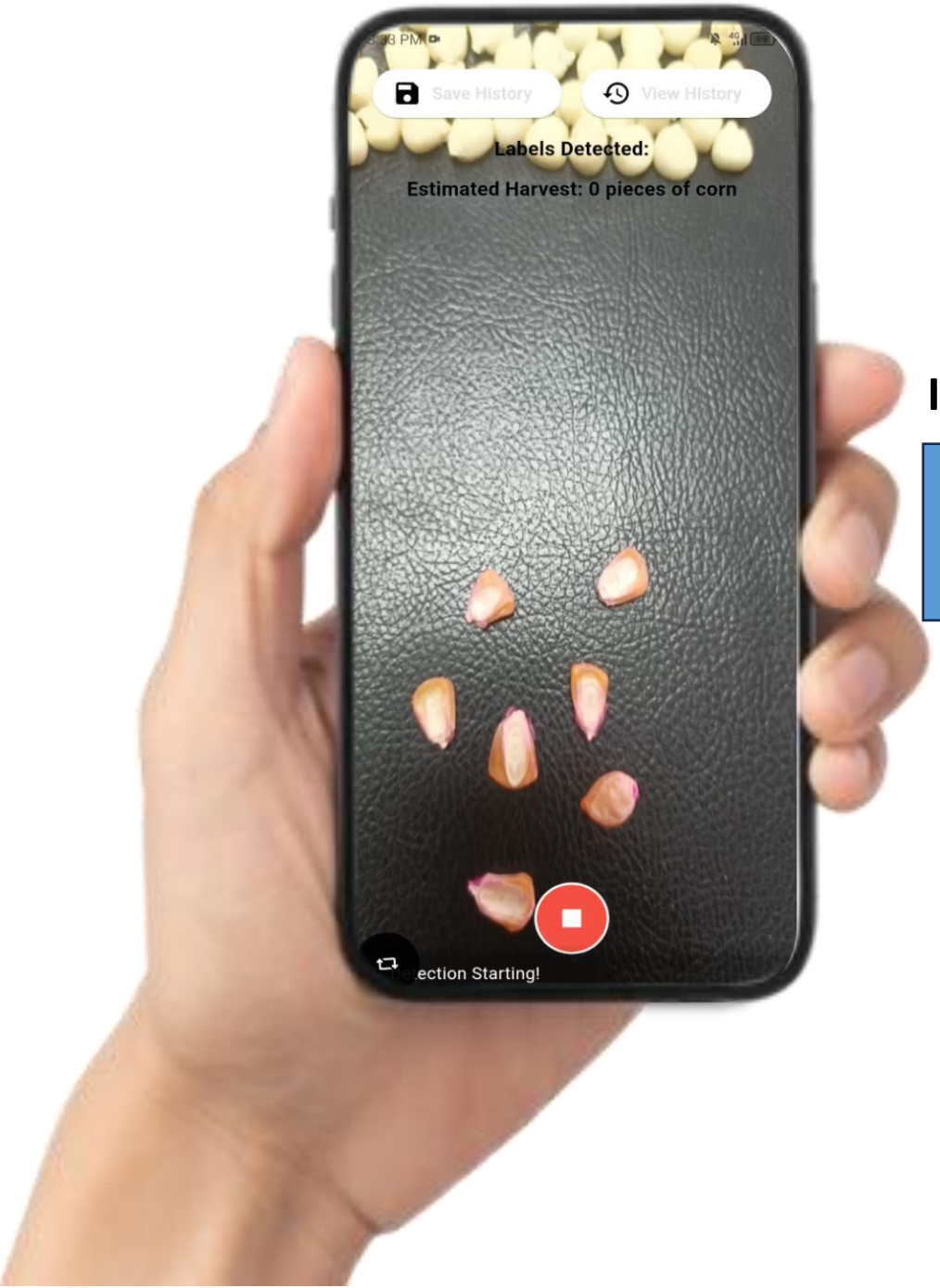
Data History
Allows users to save detection reading.

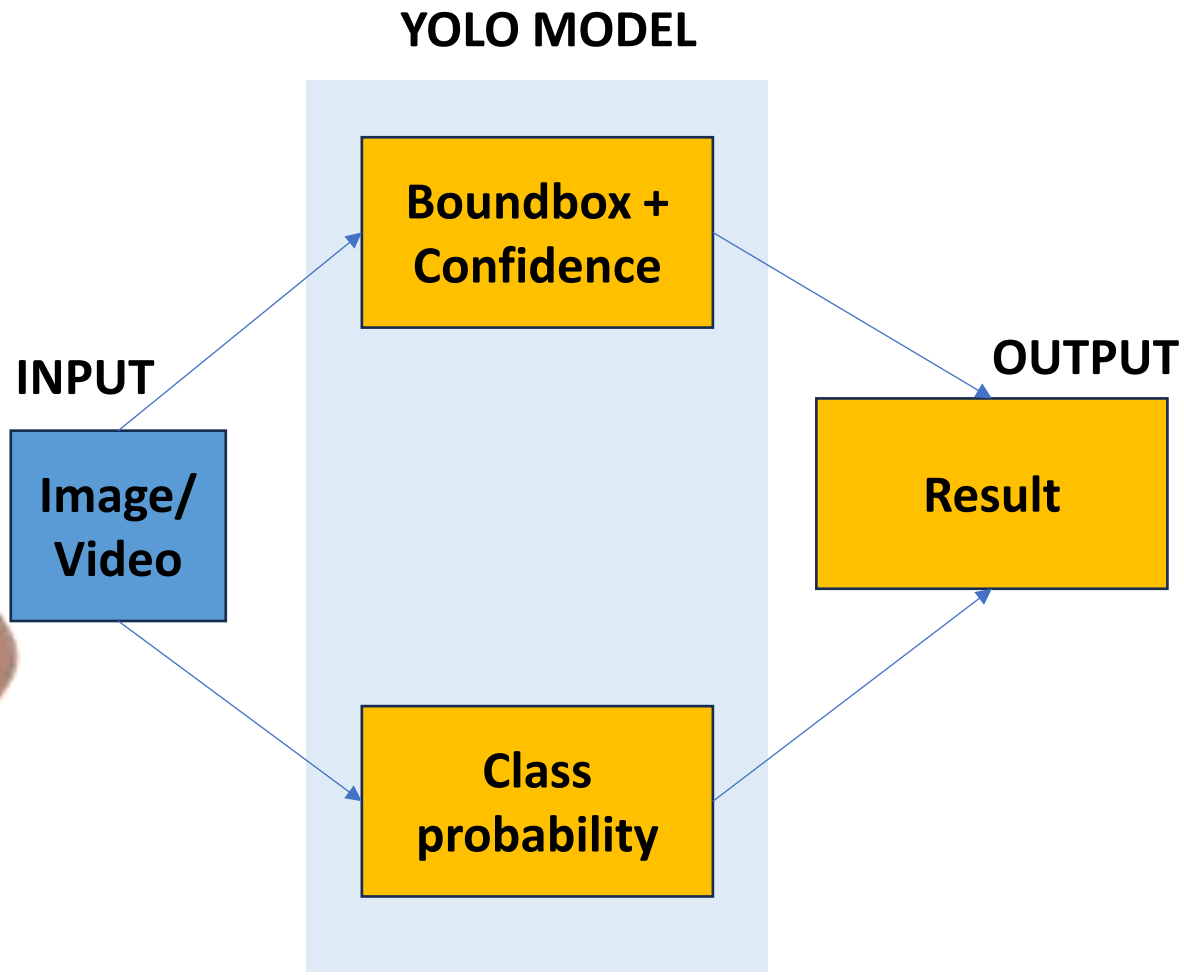
Display Graphical Representations
Can Display data visualization in each readings in a graphical representation.

User Friendly
Allows users to use the app with ease.

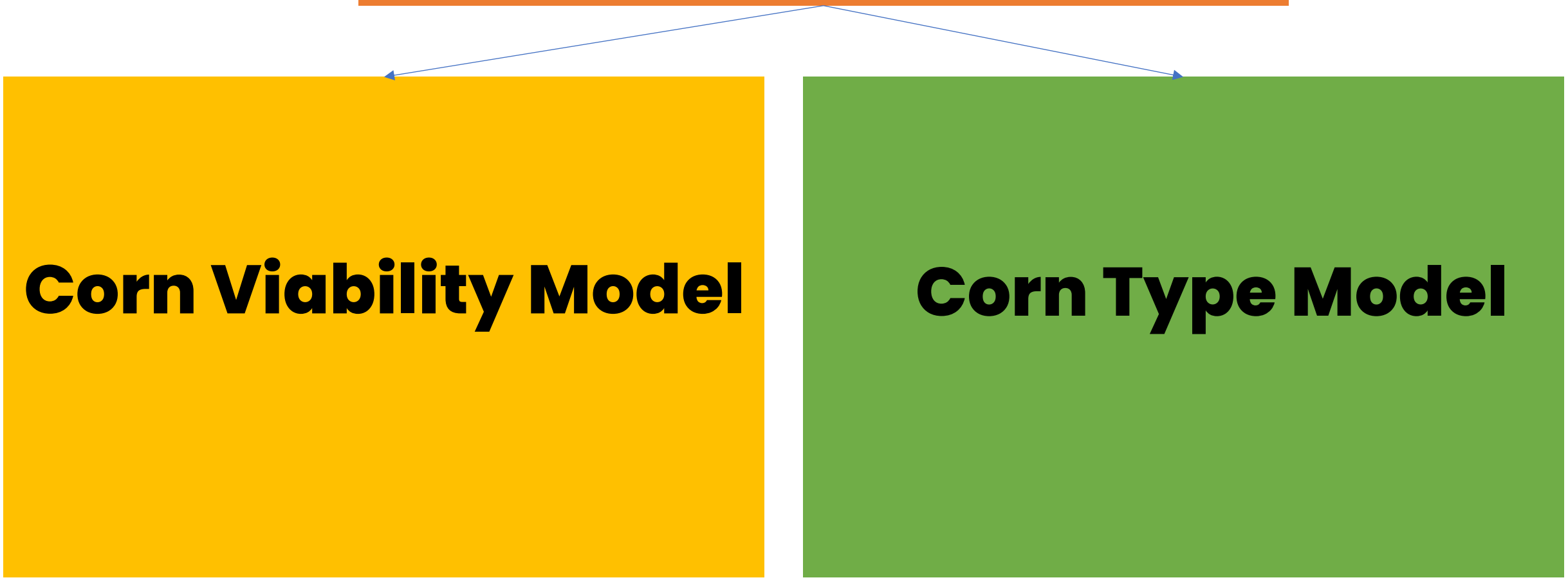


How it Works?

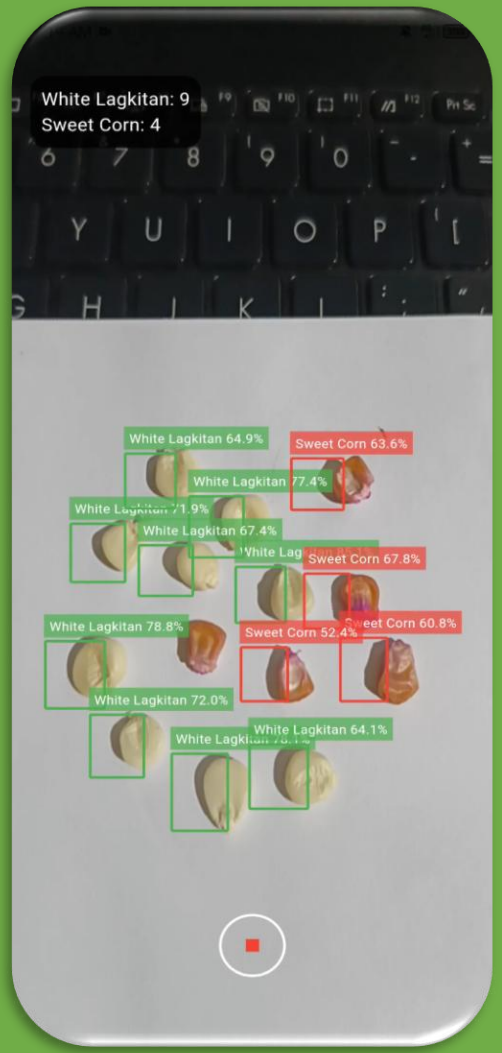

Save History
View History
Labels Detected:
Estimated Harvest: 0 pieces of corn


YOLO MODEL
INPUT
Image/
Video
Boundbox +
Confidence
Class
probability
OUTPUT
Result

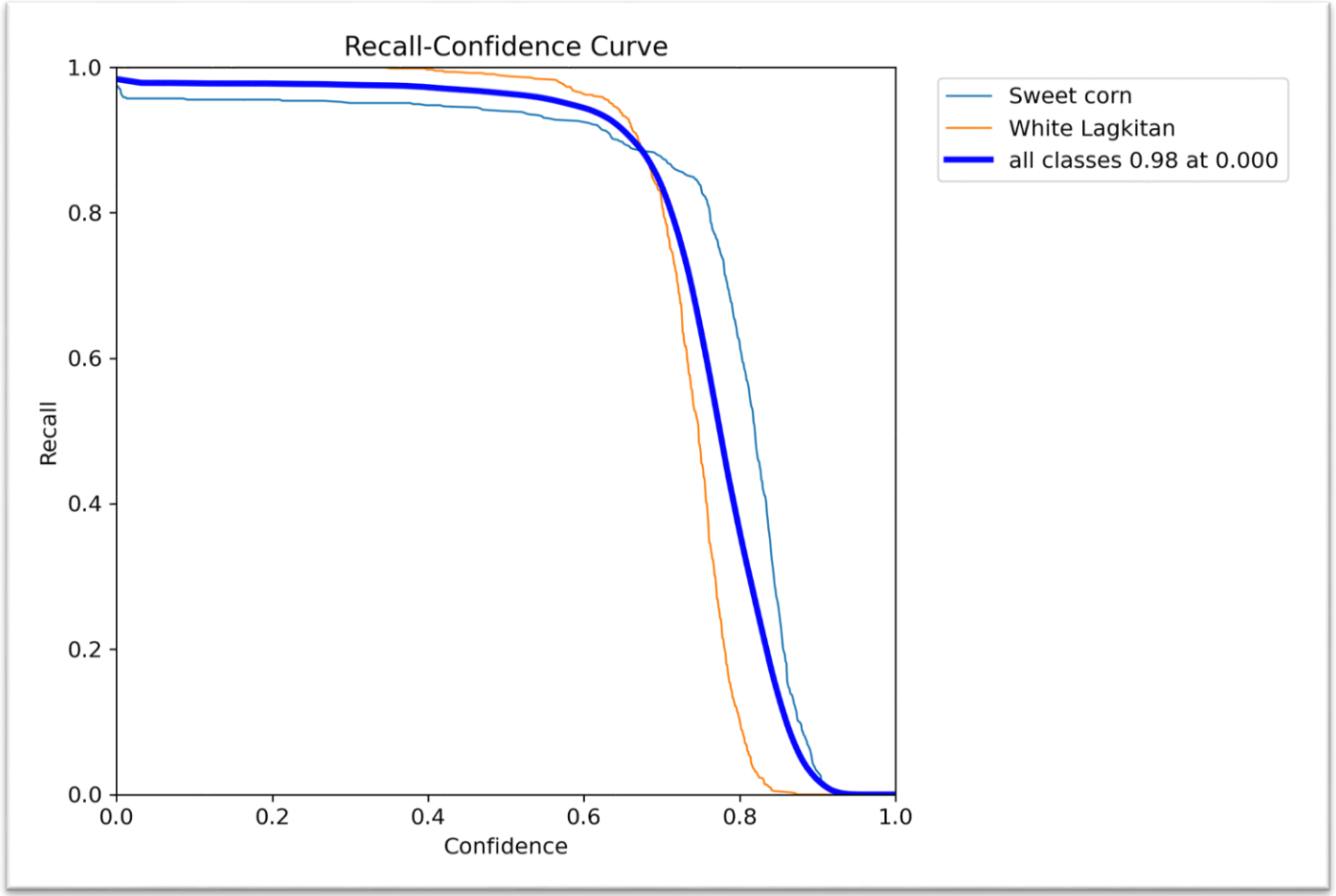
My YOLO Model



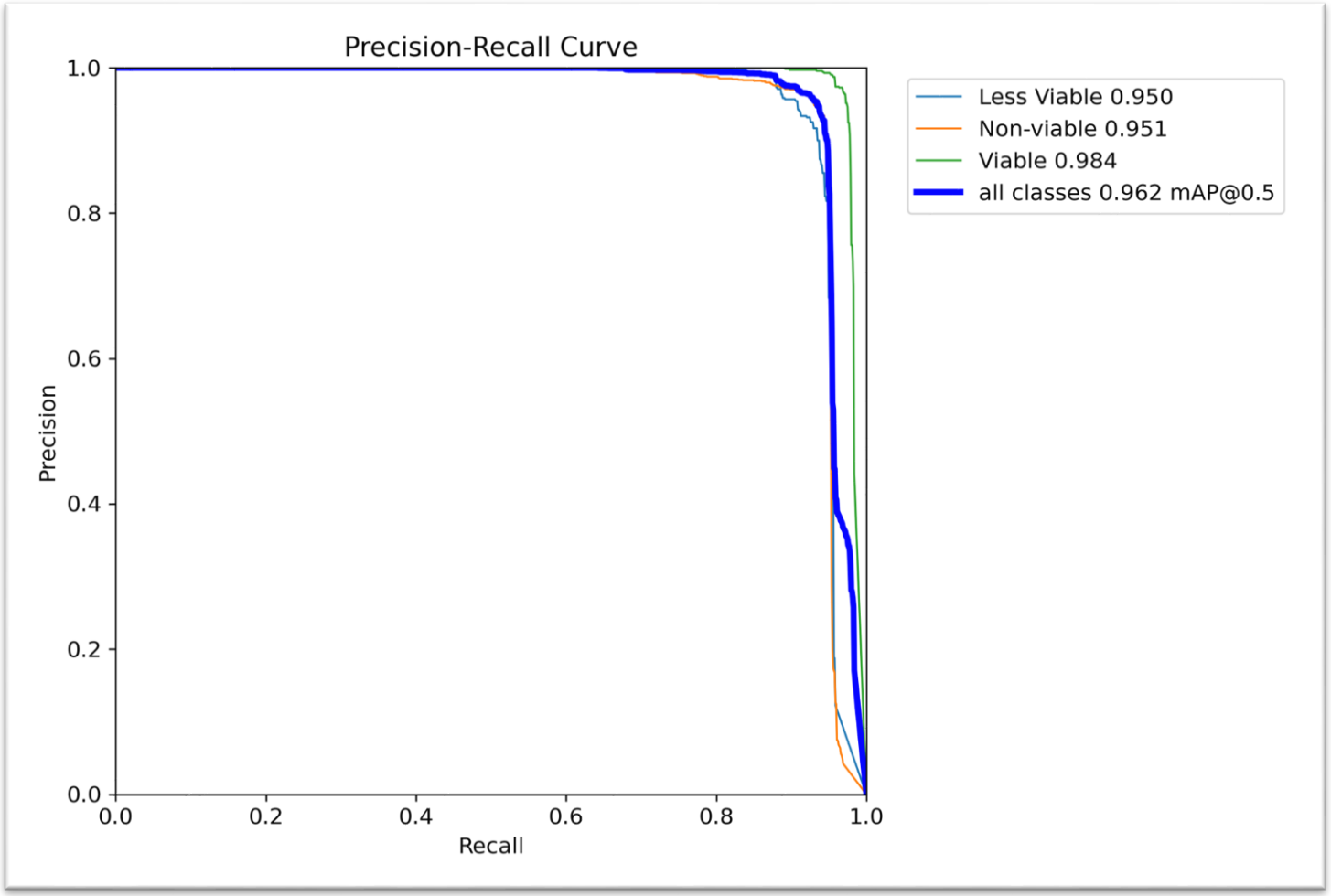
Corn Type Model



Precission Recall Curve



Precission Recall Curve



Corn Viability Model

Technology Breakdown

A real time object detection algorithm that identifies and localizes objects in images or videos with high accuracy and speed.

A UI toolkit by Google for building natively compiled applications for mobile, web and desktop from single codebase.

A lightweight, optimized version of Tensorflow designed for deploying machine learning models on mobiles and embedded devices

A versatile, high level programming language known for its simplicity and broad use in web, development, data analysis and AI.

Core Packages Used:

A library designed for implementing machine learning and computer vision tasks In flutter applications.

A flutter package that supports local authentication using biometric fingerprint recognitions

Is a flutter lightweight, relational database integrated into mobile apps for local storage of structured data.

supports theming, animations, and adaptive designs, making it easy to create beautiful and user-friendly applications.

Real World Impact and Result

- Higher Crop Yields
- Cost Reduction
- Sustainable Agriculture

Future Plans

- Expand Detection to other crops
- Improve Model
- Develop cloudbase analysis

END