



REAL TIME FACE RECOGNITION

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A POWERFUL, ACCESSIBLE FACE RECOGNITION SYSTEM FOR EVERY USE CASE



Why?

- Manual photo and video analysis is time-consuming
 - Our system automates face detection and identification
- Existing solutions are expensive and overly complex
 - We offer a free, intuitive, and user-friendly alternative
- Organizing personal media collections is a common challenge
 - We deliver instant face recognition across photos and videos

OUR DATA

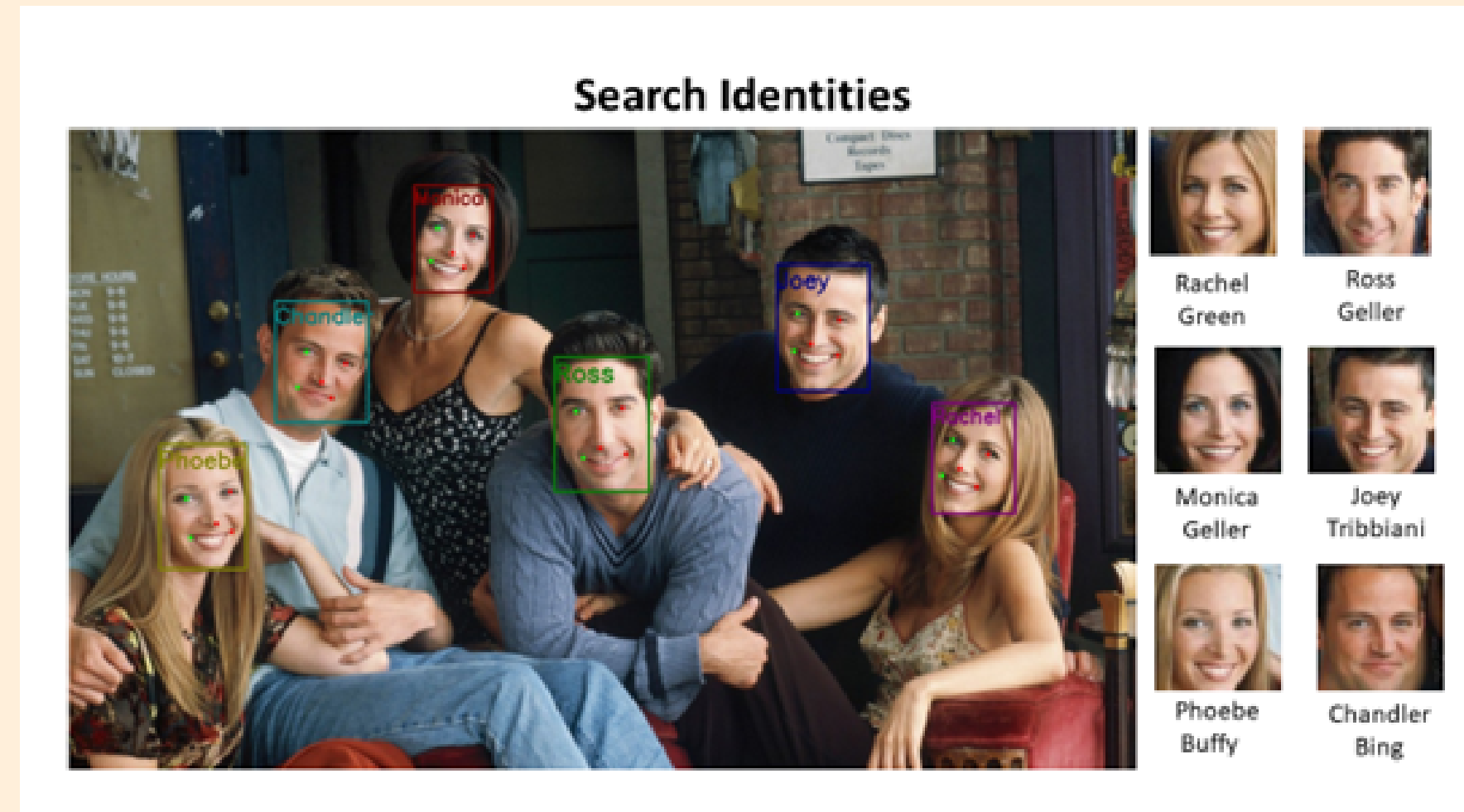
- Selected individuals only
- Multiple images per person
- Diverse angles & lighting
- Local storage, project-specific use
- Trained on Ron, Gilad, and Ori

OUR TECHNOLOGY

- **Powered by InsightFace for accurate face detection:**
 - buffalo_l model
- **Uses deep learning embeddings for robust recognition:**
 - ArcFace with a ResNet-100 backbone
- **Built with Streamlit for an intuitive, accessible interface**
- **Supports real-time face recognition in images and videos**

INSIGHTFACE

- Open-source 2D & 3D deep face analysis toolkit
- Built on PyTorch and MXNet
- Supports multimodal, real-time tasks (vision + text)
- We used insightface.app for face extraction from videos and photos
- Ideal for building customizable face recognition pipelines
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BUT IN REALITY...

- Changing lighting conditions affect appearance
- People alter hairstyles, expressions, and more
- Recognition is dynamic, but training data is often static
- Fixed embeddings struggle with real-world variation
- Result: the model gets confused and less accurate

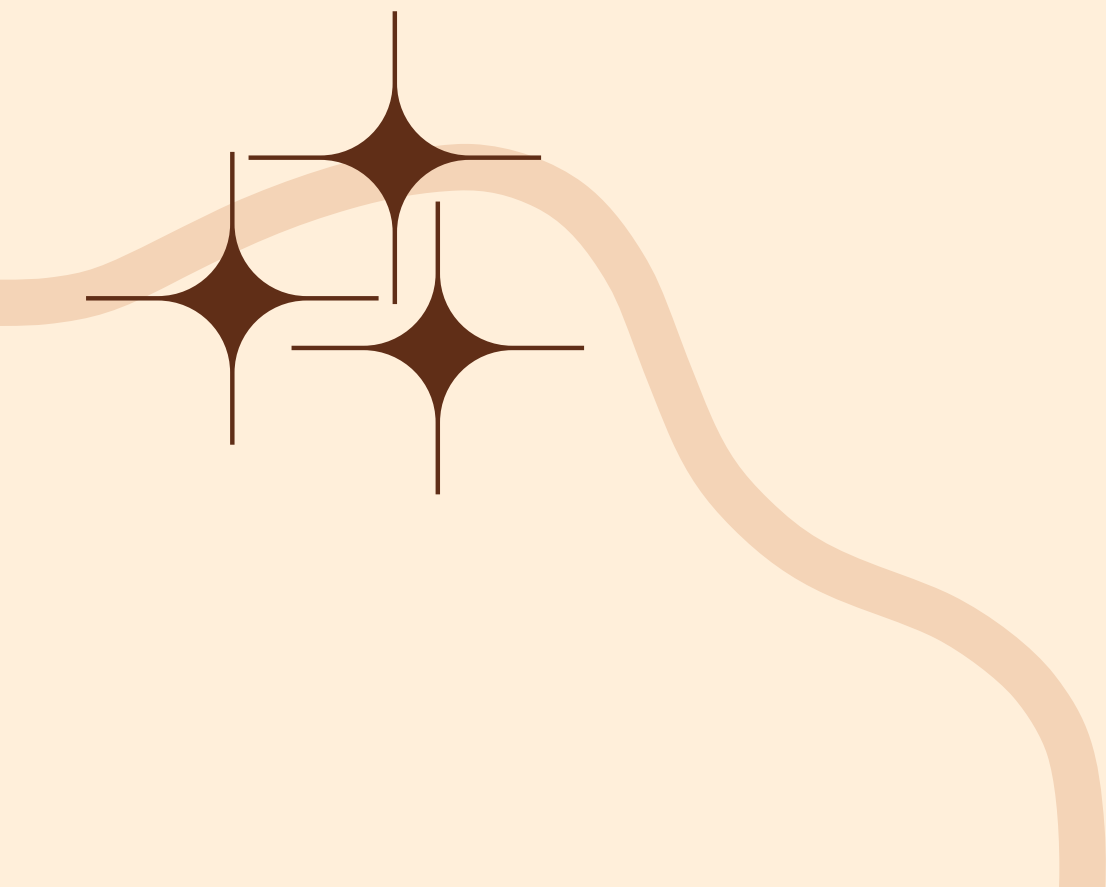
OUR CHALLENGES

TECHNICAL CHALLENGES:

- **Limited training data -**
 - Requires multiple images per person for reliable embeddings
- **Inconsistent lighting -**
 - Bright, dim, indoor, or outdoor conditions impact accuracy
- **Varying angles & poses -**
 - Profile vs. frontal shots introduce recognition difficulty
- **Image quality issues -**
 - Blurry or low-resolution images degrade performance
- **Facial changes over time -**
 - Aging, hairstyles, glasses, and facial hair affect consistency

PERFORMANCE CHALLENGES

A decorative illustration of a brown branch with several leaves, positioned in the top right corner of the slide.

- High cost of processing every video frame
 - Limited memory for large video files
 - Need to balance speed and accuracy for real-time use
 - Heavy reliance on GPU for smooth performance
- 
- A decorative illustration featuring a light brown wavy line and three dark brown starburst shapes, located in the bottom left corner of the slide.

DATA MANAGEMENT CHALLENGES

- Manual sorting of photos by person
- Efficient storage and updating of embeddings
- Handling false positives and negatives from lookalikes

OUR SOLUTION

- Utilize Insightface's cutting-edge deep learning models for reliable face detection
- Pre-generate embeddings offline to reduce real-time processing load
- Apply frame skipping to analyze key video frames only
- Leverage GPU acceleration for faster computations
- Outcome: Fast and accurate face recognition in both images and videos!

OUR FINAL PIPELINE



**COLLECT
TRAINING
PHOTOS OF
KNOWN
PEOPLE**



**GENERATE
FACE
EMBEDDINGS
WITH AI**



**USER
UPLOADS
IMAGE OR
VIDEO FILE**





**DETECT
AND
MATCH
FACES
WITH
DATABASE**



**OUTPUT
RESULTS
AND
RECOGNIZE!**

DEMO

Real-Time Face Recognition App

 **Image Upload**  Video Upload

Upload an Image ⇄

Choose an **image** file



Drag and drop file here

Limit 200MB per file • JPG, JPEG, PNG

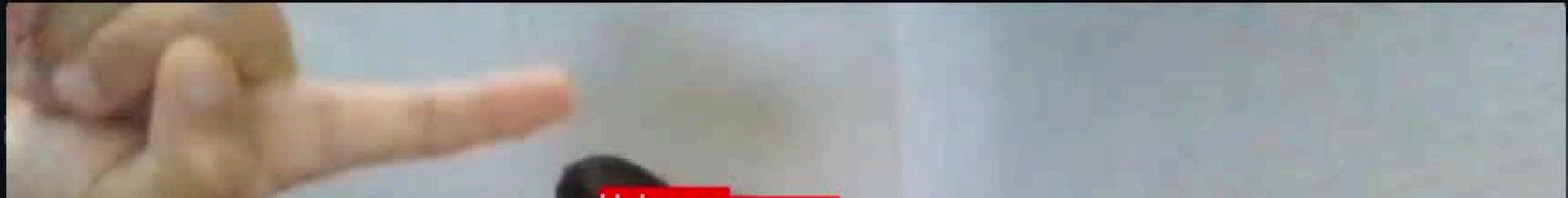
[Browse files](#)

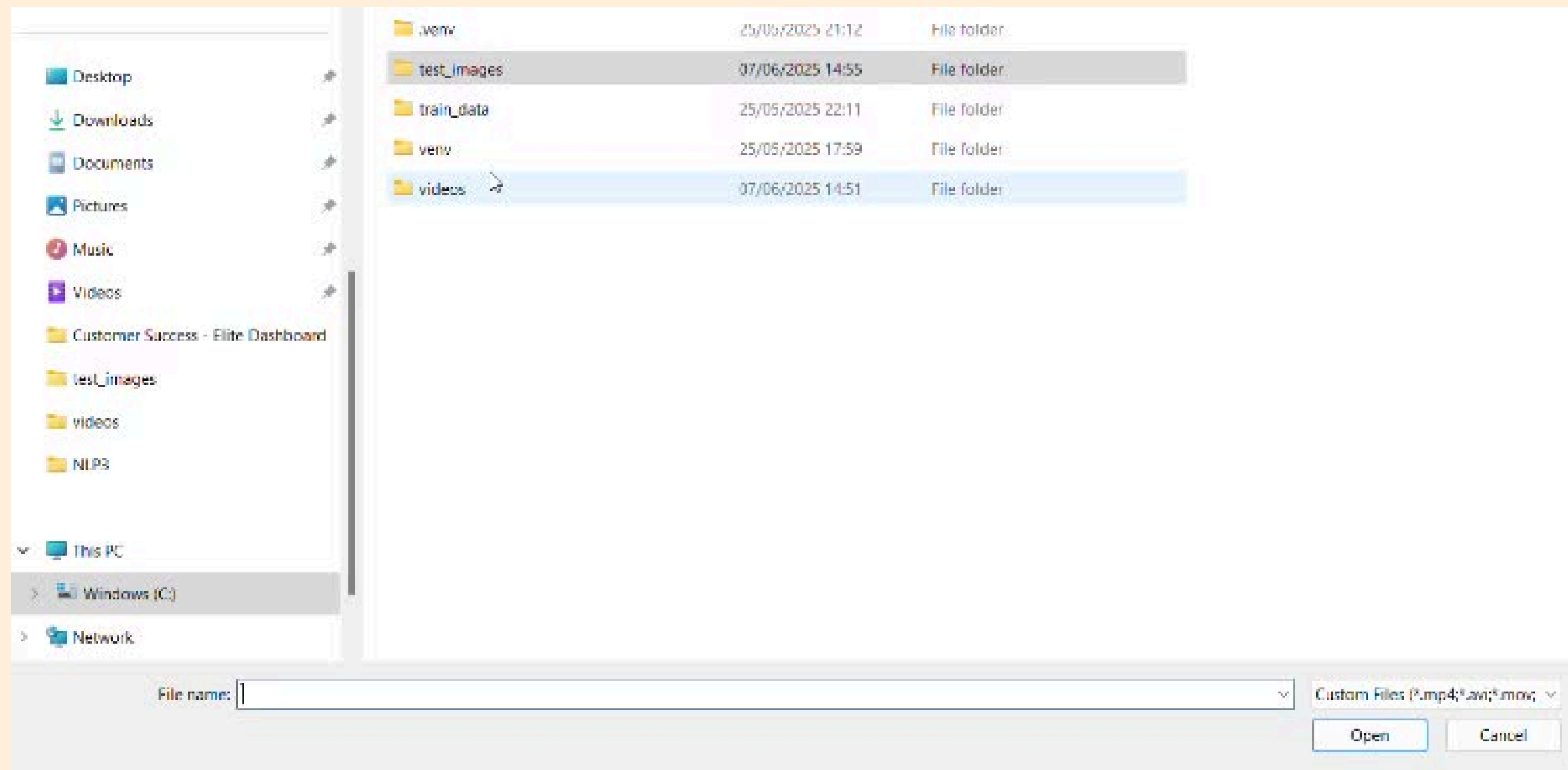


all.jpg 57.2KB



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CONCLUSIONS AND FUTURE POTENTIAL

CONCLUSIONS

- **A user-friendly foundation for advanced face detection**
- **Real-time, lightweight, and fast performance**
- **Runs locally without internet dependency**
- **Easily scalable and adaptable to other use cases or domains**

FUTURE POTENTIAL

- Endless applications across industries
- Automated attendance –
 - No more manual roll calls
- Continuous learning –
 - Adapts to changes in appearance over time
- On-the-fly data generation –
 - Real-time updates and improvements
- Shopper tracking
 - Identify customers as they enter
 - Analyze shopping behavior and patterns
 - Monitor frequent visitors and personalize experiences

THANK
YOU

