

Automated KYC System

Streamlining Identity
Verification with OCR and Face
Recognition



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Problem Statement

Financial institutions and service providers need a secure, efficient way to verify customers' identities (KYC).

Objective: Develop a proof-of-concept web application that automates ID scanning, text extraction, and face verification.

Scope:

1. OCR of Romanian ID cards to retrieve user data.
2. Face detection on the ID card to isolate the printed face.
3. Face verification between the ID's face and a live/selfie image.

Implementation Architecture and Workflow

User uploads ID image:

- PaddleOCR extracts textual information from the ID.
- Labels to Exclude and MRZ Pattern Matching parse critical fields.

User uploads selfie image:

- Multi-Task Cascaded Convolutional Neural Networks (MTCNN) detects and crops faces from the ID and selfie.

Face Verification:

- DeepFace compares the ID face and selfie face.

Results & Visualization:

- Extracted ID text fields and face verification result are displayed.

Key Components

Streamlit for user interface.

PaddleOCR for Optical Character Recognition (OCR).

MTCNN for face detection and cropping.

DeepFace for face embedding and similarity comparison.

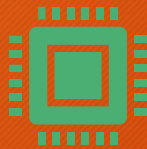
Key Performance Indicators (KPIs)



OCR Accuracy:

Metrics: Character Error Rate (CER), Word Error Rate (WER).

Target: High accuracy in extracting ID fields.



Face Detection Reliability:

Metrics: Precision, Recall of face detection.

Target: Correct bounding box detection.



Face Verification Accuracy:

Metrics: FAR, FRR, and overall accuracy.

Target: Minimal false positives or negatives.

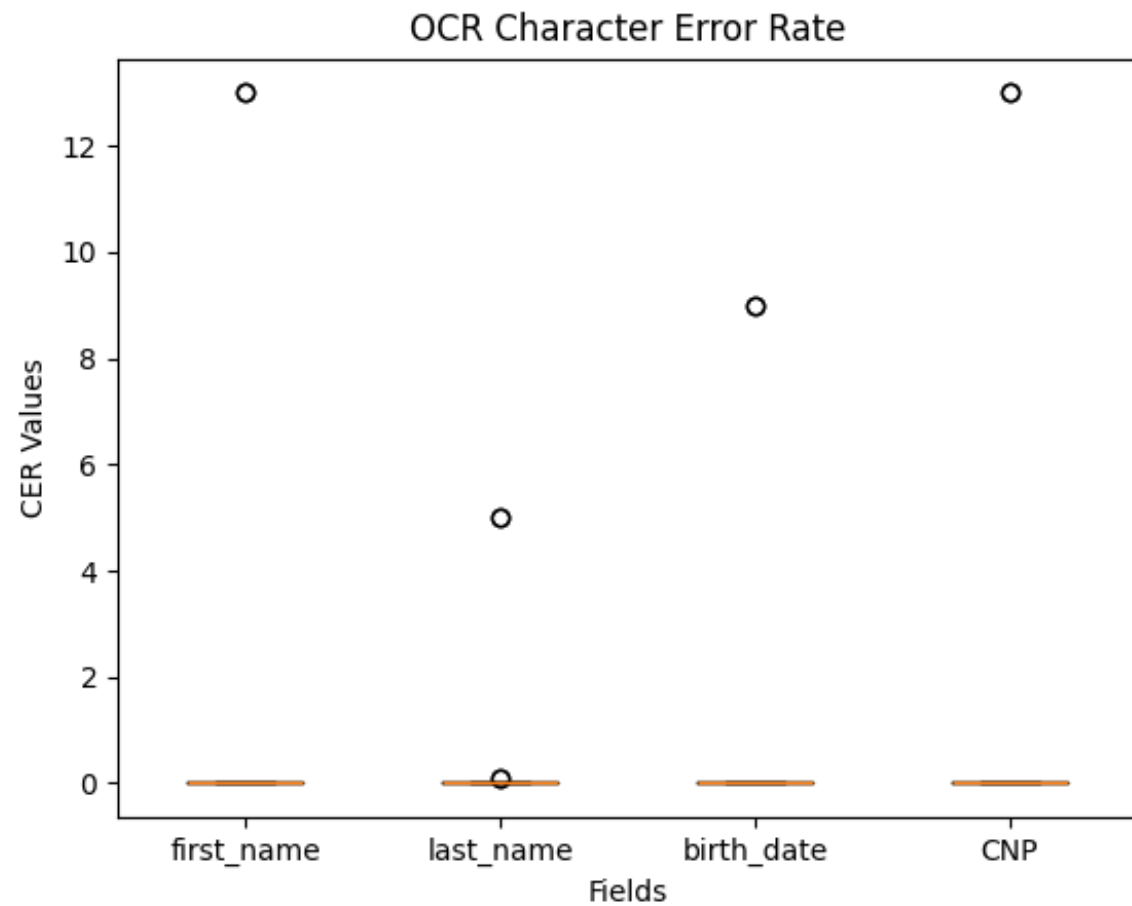


Processing Time:

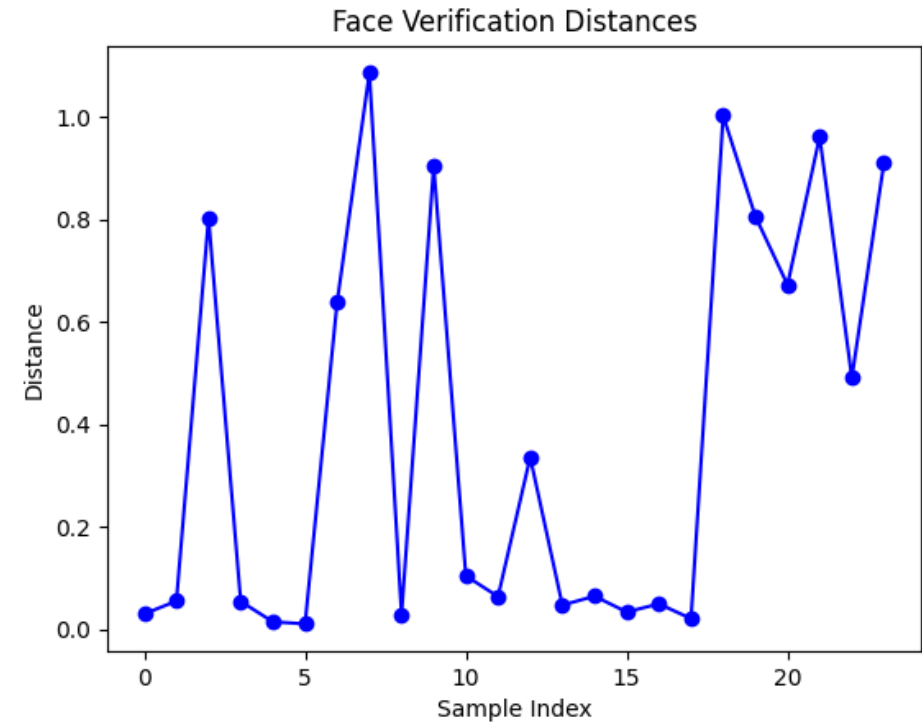
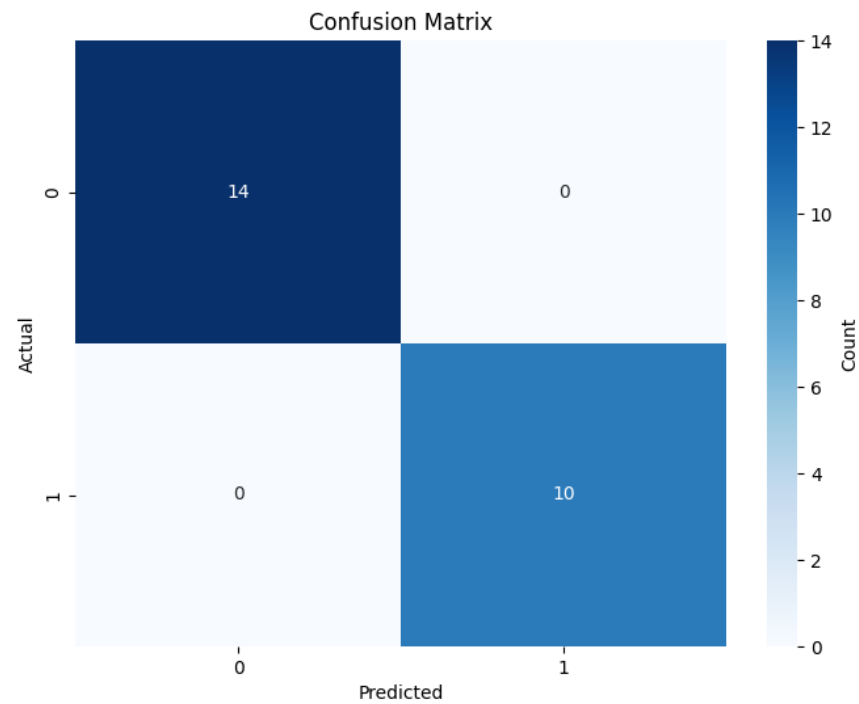
Metric: Average time for results.

Target: Near real-time (few seconds).

OCR



Face Recognition



Results

Successful OCR Data Extraction:

- Reliable extraction of CNP, name, and MRZ fields.

Face Cropping and Verification:

- High-confidence face detection and cropping using MTCNN.

Real-Time Demonstration:

- Deployed via Streamlit for quick testing.

Potential Improvements:

- Larger dataset for model fine-tuning.
- Enhanced preprocessing for low-quality images.
- Tuning DeepFace thresholds for specific risk tolerances.