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(UGC Autonomous)

(Affiliated to JNTUH, Approved by AICTE, New Delhi)

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Department of Computer Science and Engineering(AI&ML)

SwiftVerify : A Multi-Modal Smart Attendance System

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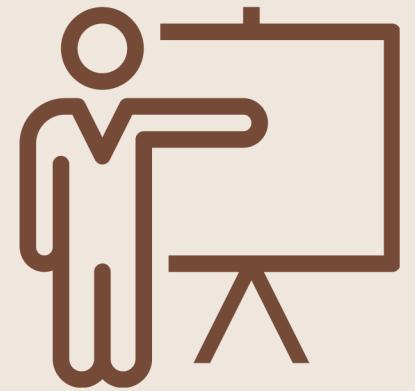
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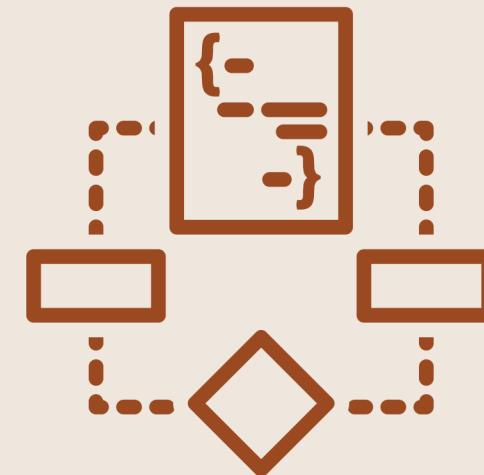
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SwiftVerify

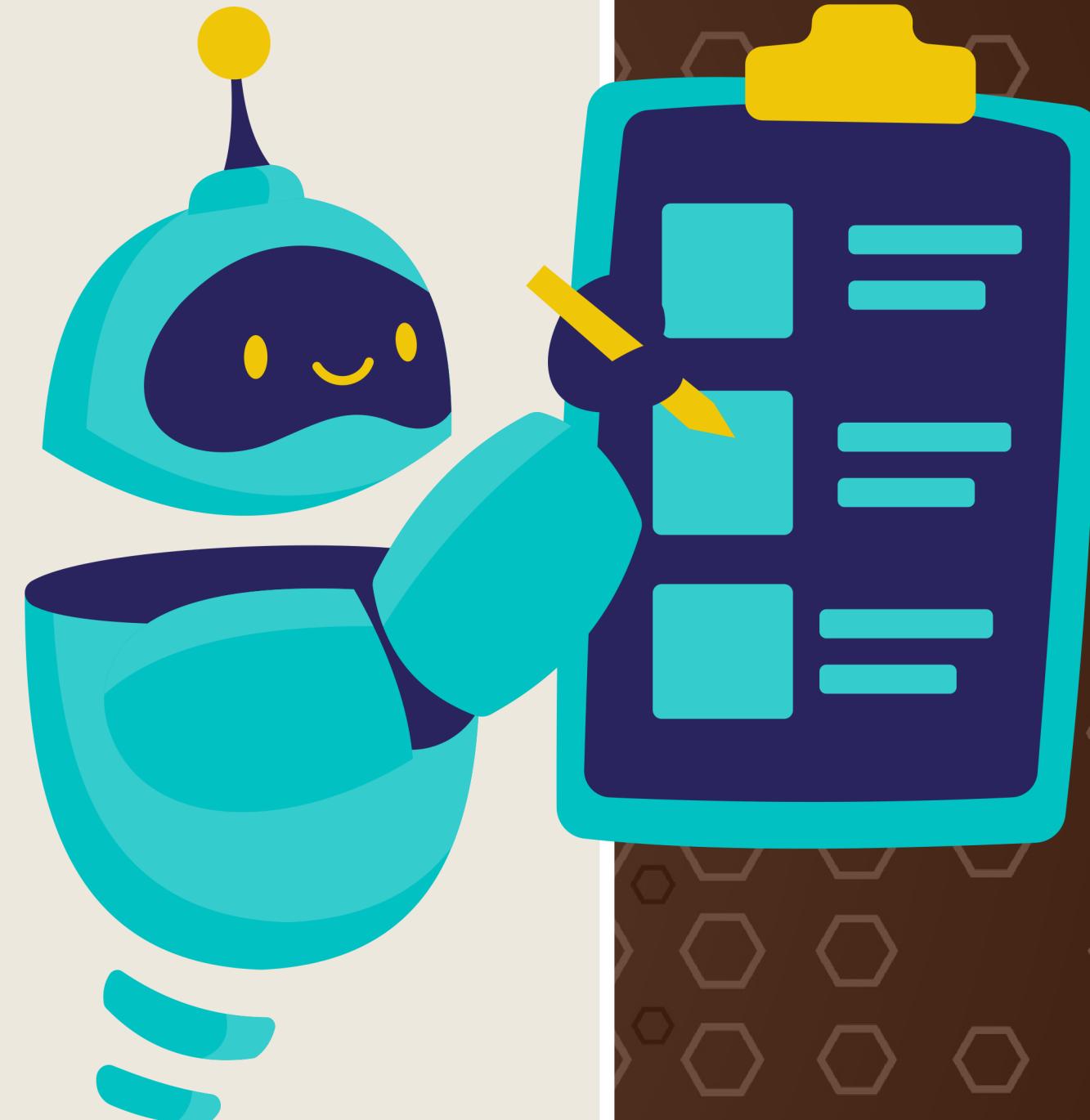
AGENDA

Introduction

Traditional attendance tracking methods in educational institutions often involve manual processes like paper-based sign-in sheets. Unfortunately, these systems are prone to human error during data entry and lack robust security measures, making them vulnerable to unauthorized access or data manipulation.

Our Solution

Presenting the state-of-the-art system that is revolutionising attendance management. Our solution provides improved security and dependability by incorporating cutting-edge technology like voice matching, facial recognition, and barcode scanning. By reducing the possibility of human mistake and accuracy of attendance records, this offers a safe and effective alternative for managing attendance.



Proposed System

PROPOSED FEATURES

For better attendance management, our suggested solution combines voice matching, facial recognition, and barcode scanning, providing increased security and dependability.



Barcode scan

Allows for quick and accurate identification through scanning unique codes, enhancing efficiency in attendance tracking.



Face Recognition

Utilizes facial features to authenticate individuals, providing a seamless and secure method for identity verification.



Voice Verification

Verifies individuals based on their unique vocal patterns, adding an extra layer of security to the authentication process.



Database Management

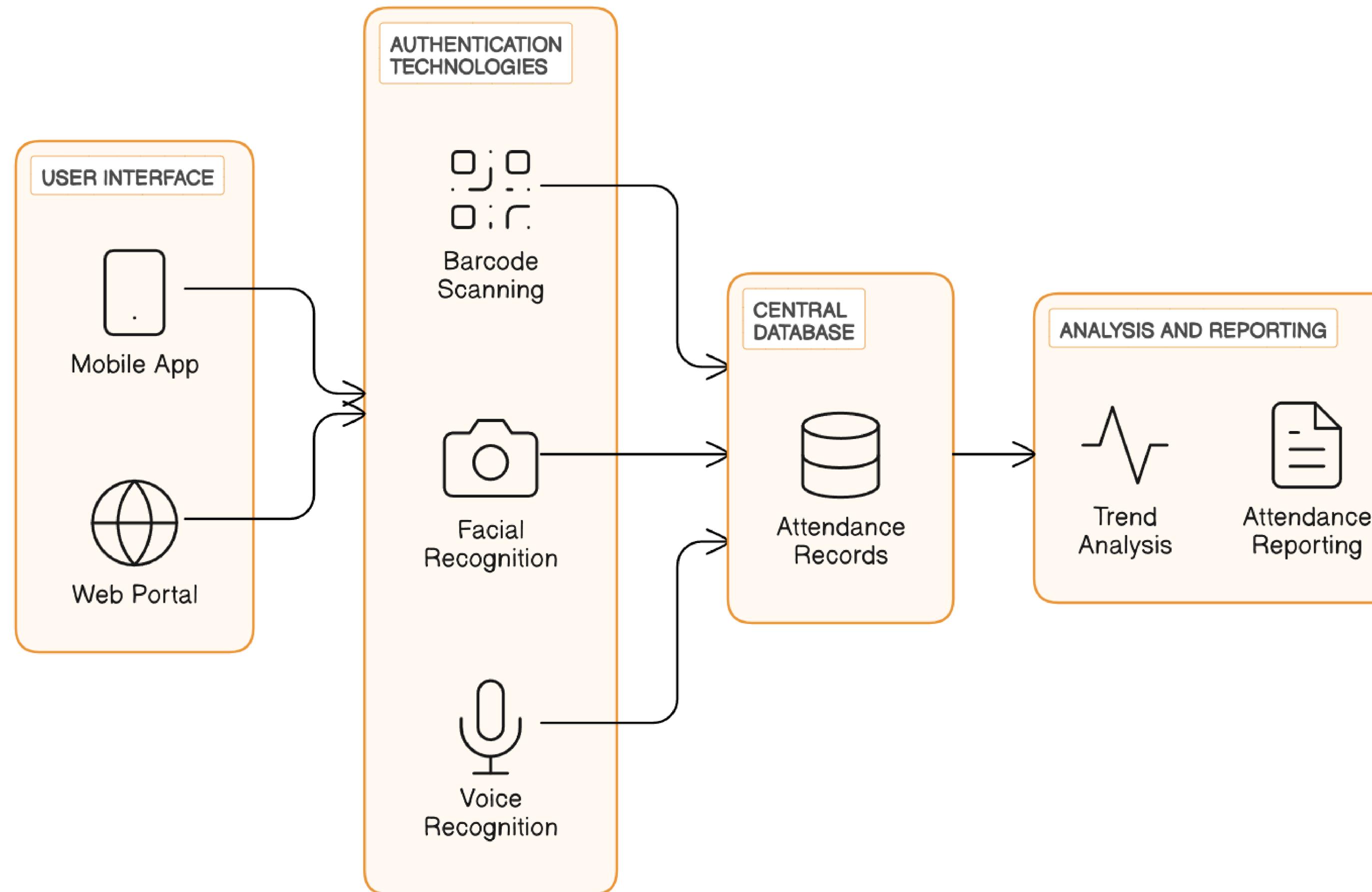
Maintains a centralized database for real-time attendance updates and insightful analysis of attendance trends.



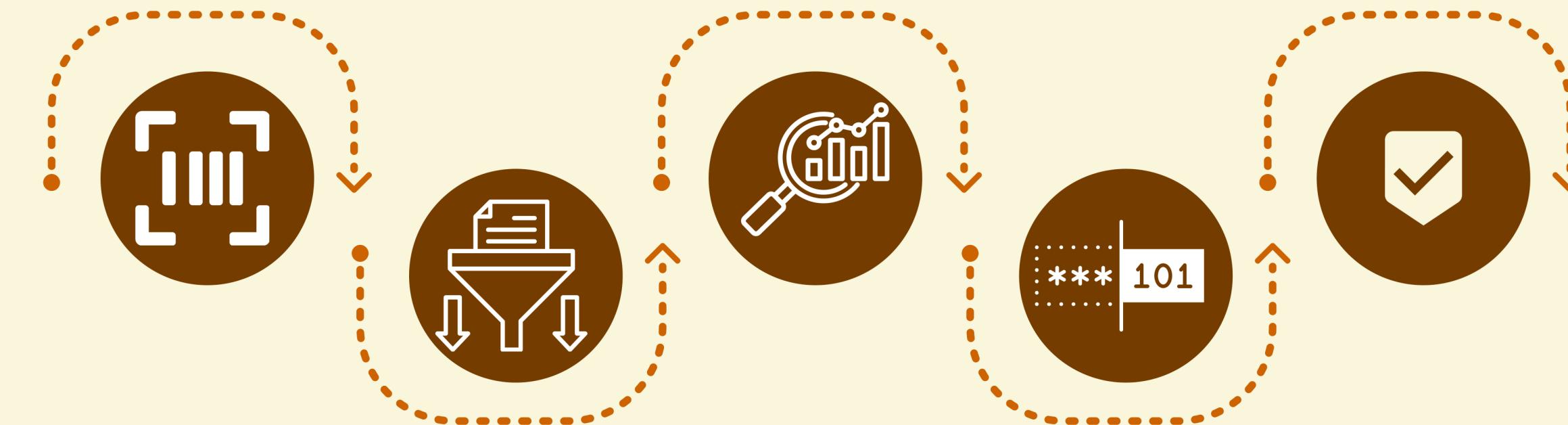
User-friendly Interface

Offers an intuitive interface for easy navigation and accessibility, ensuring a smooth experience for users interacting with the system.

System Architecture



Internal Process of Barcode Scan



1 - Image Acquisition

Capturing an image containing the barcode using a camera or scanner

2 - Preprocessing

Improve barcode readability, including noise reduction and contrast adjustment

3 - Barcode Detection

Detection algorithm is applied to locate the barcode within the preprocessed image

4 - Decoding

Extracts the encoded information, such as product details or authentication codes

5 - Validation and Authentication

Data is validated for accuracy and integrity

Models Used & Obtained Accuracy



ZBar

ZBar, an open-source barcode scanning library, is renowned for its efficiency and reliability, supporting multiple barcode types. It employs image processing techniques such as edge detection and segmentation.



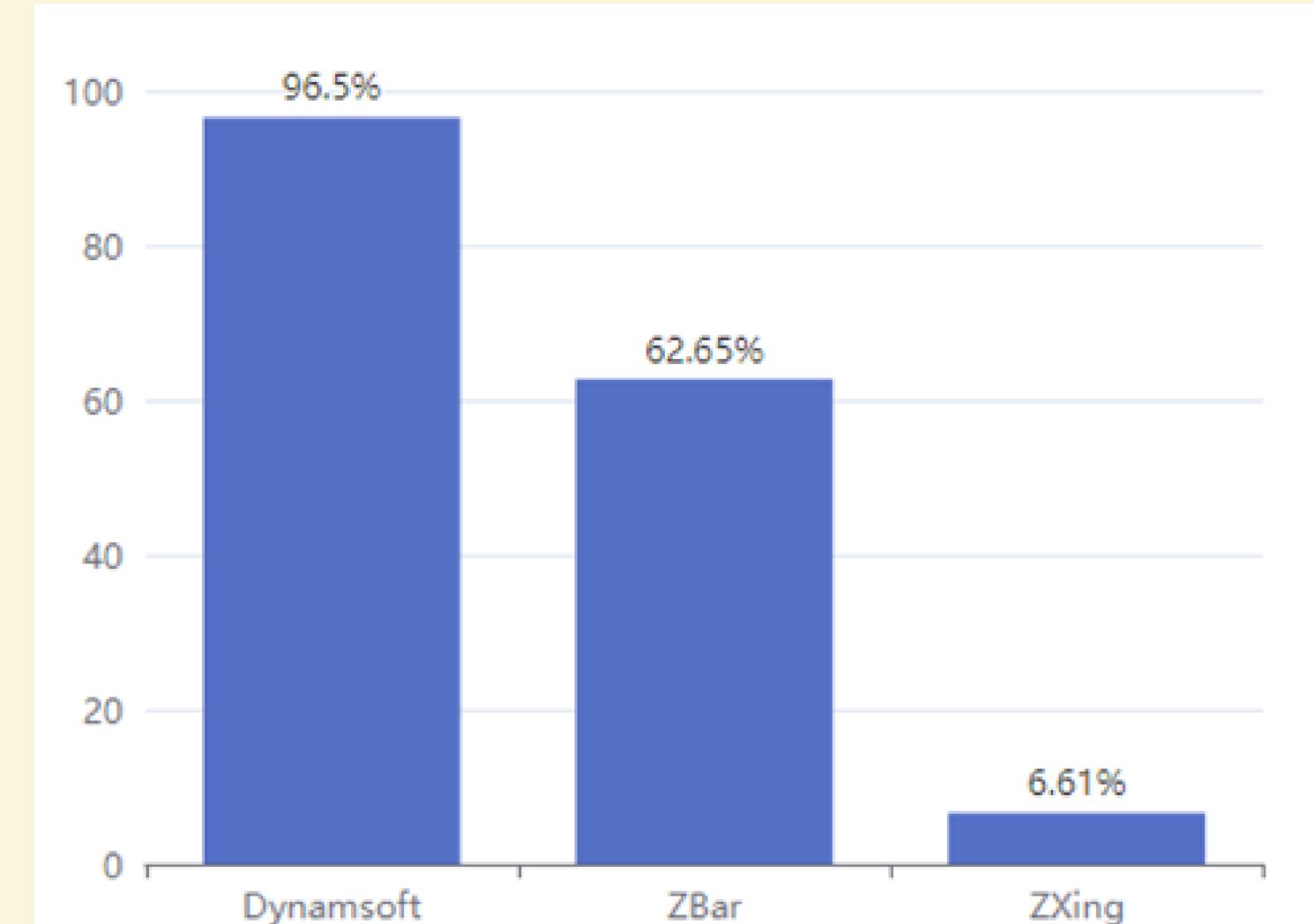
ZXing (Zebra Crossing)

ZXing, an open-source library, offers extensive documentation and supports multiple barcode formats. Highly accurate, especially for common types, it suits various applications.



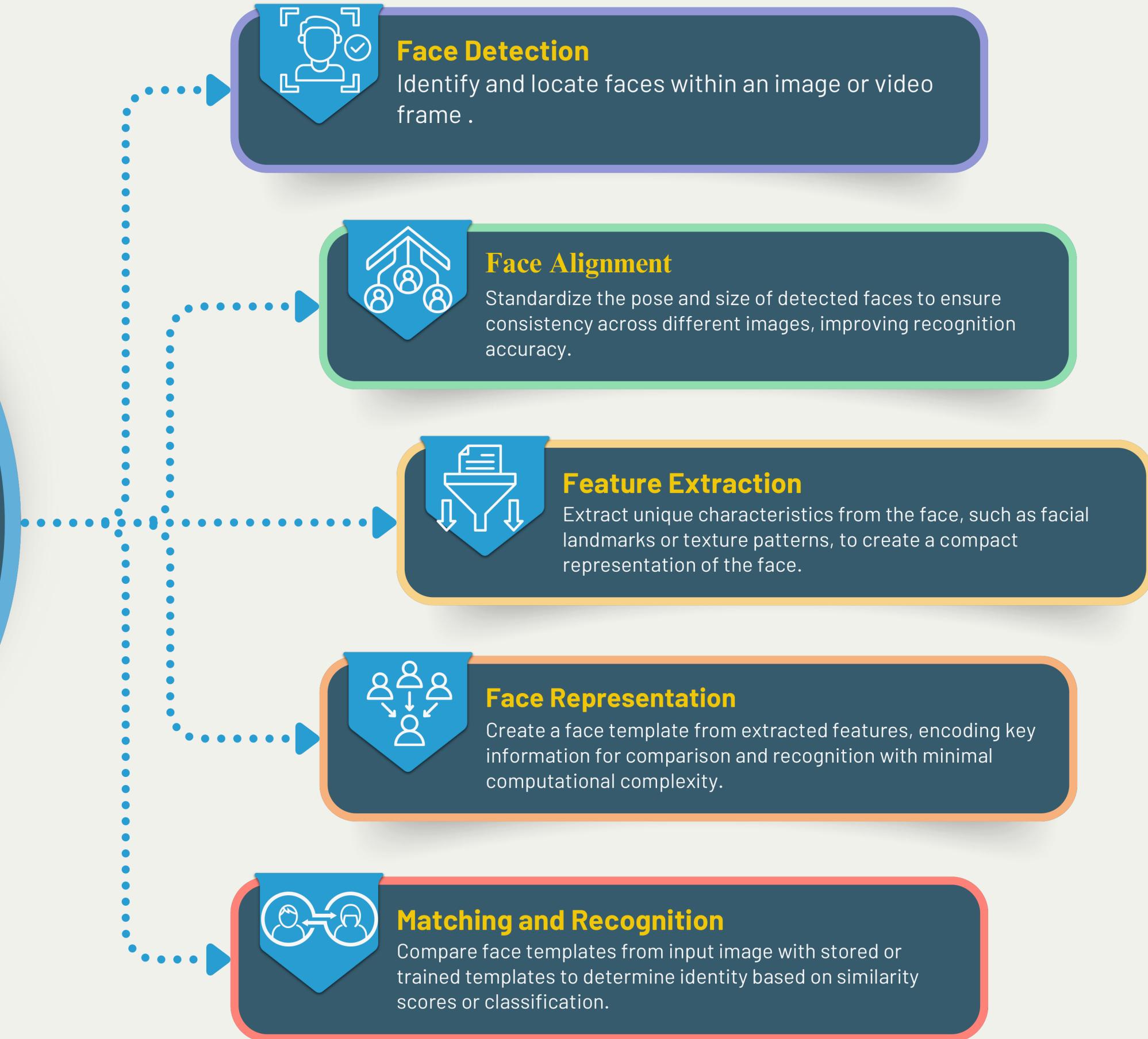
Dynamsoft Barcode Reader

Dynamsoft Barcode Reader is a commercial SDK offering advanced features such as live video stream recognition and provides high accuracy and robust performance.

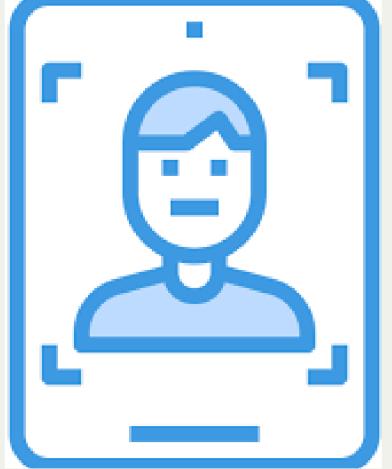


Accuracy

Face Recognition Process



Models Used & Obtained Accuracy



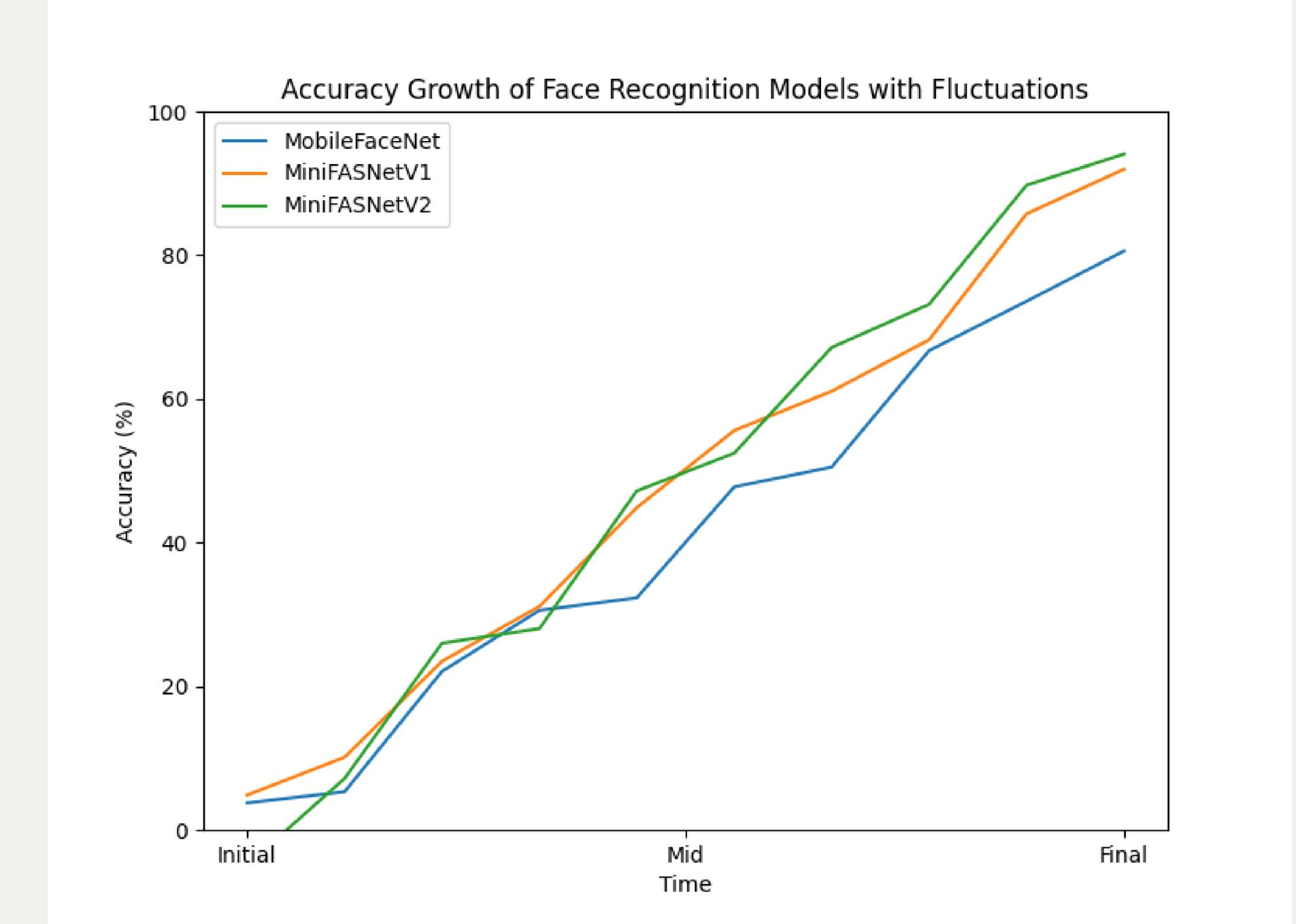
MobileFaceNet

A lightweight convolutional neural network optimized for face recognition on mobile devices. It maintains high accuracy while minimizing computational complexity, enabling real-time face recognition in resource-constrained environments.



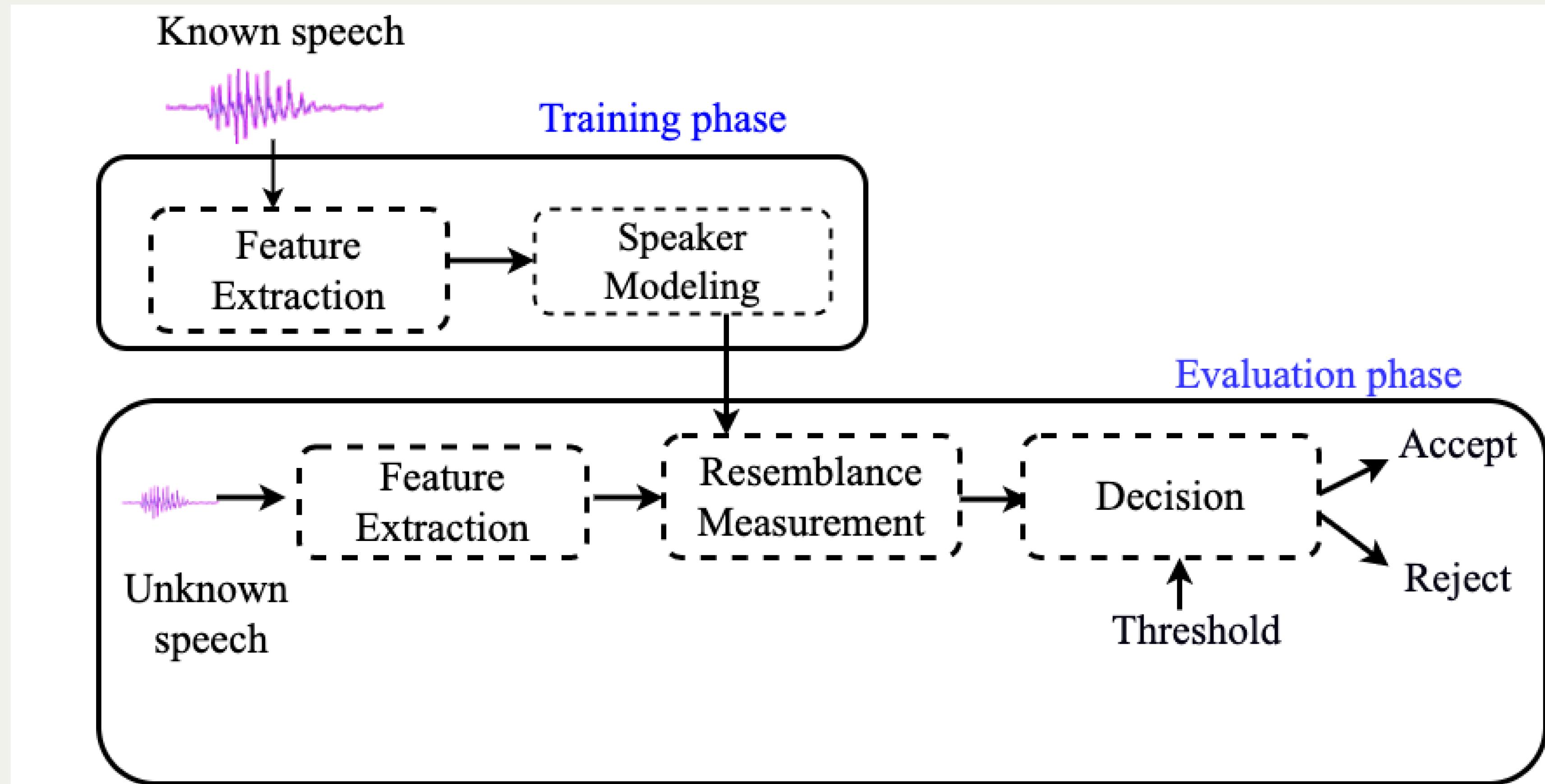
MiniFASNet

A compact neural network designed for real-time face detection and alignment. It balances efficiency and accuracy, making it suitable for diverse environments such as mobile and embedded systems.



Accuracy

Voice Verification Architecture



Results & Output Screens

Smart Attendance,
Our system combines barcode scanning, facial recognition, and voice matching for secure user verification and real-time attendance updates, with automatic hourly reports for insights into attendance trends.

Our Features

- Barcode Detection**
Swift identification through barcode scans assigns each participant a unique identifier for attendance tracking.
- Face Recognition**
Advanced facial recognition technology combined with gesture analysis enhances security by verifying user identity through facial features and gestures.
- Voice Match**
Voice matching adds an additional layer of authentication by analyzing and matching the user's voice to their registered voice pattern.

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Enter Your Email
Your Message
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Home Page

Hello!
Register with your personal details to use all of site features.

SIGN UP

Sign in

Username
Password
LOGIN

Sign In

Welcome back!
Enter your personal details to use all of site features.

SIGN IN

Sign up

Username
Email
Password
SIGN UP

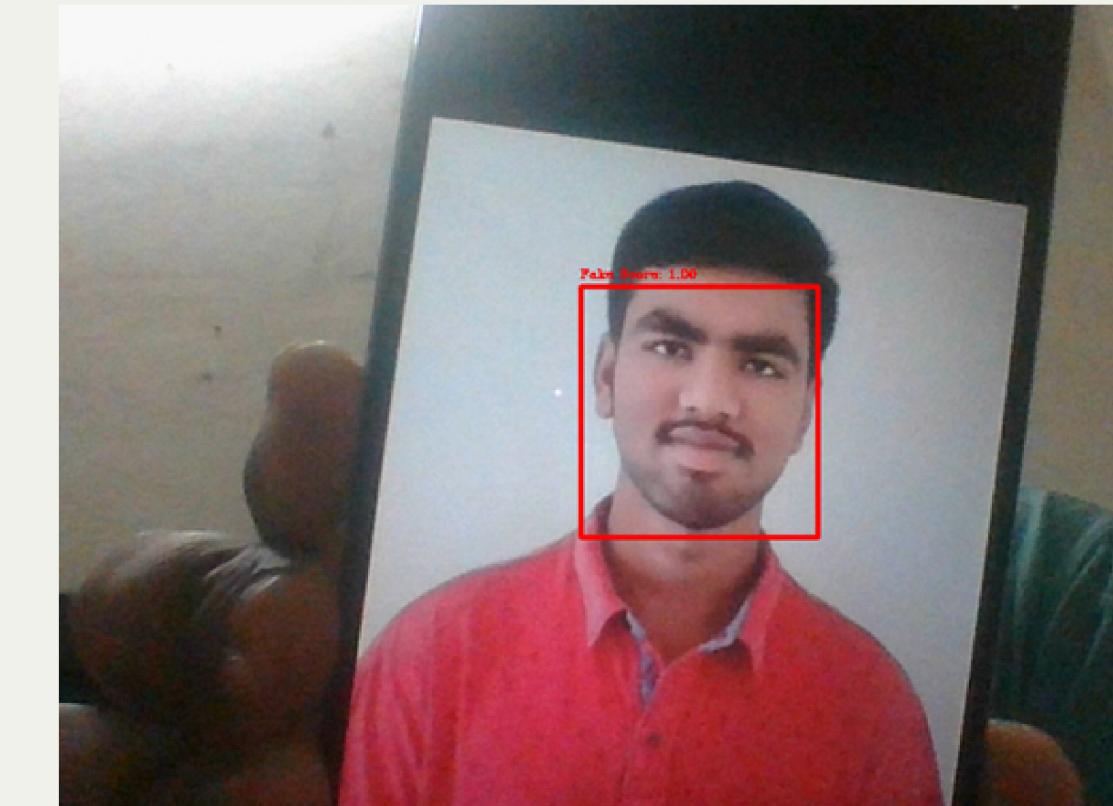
Sign Up

Barcode Scan

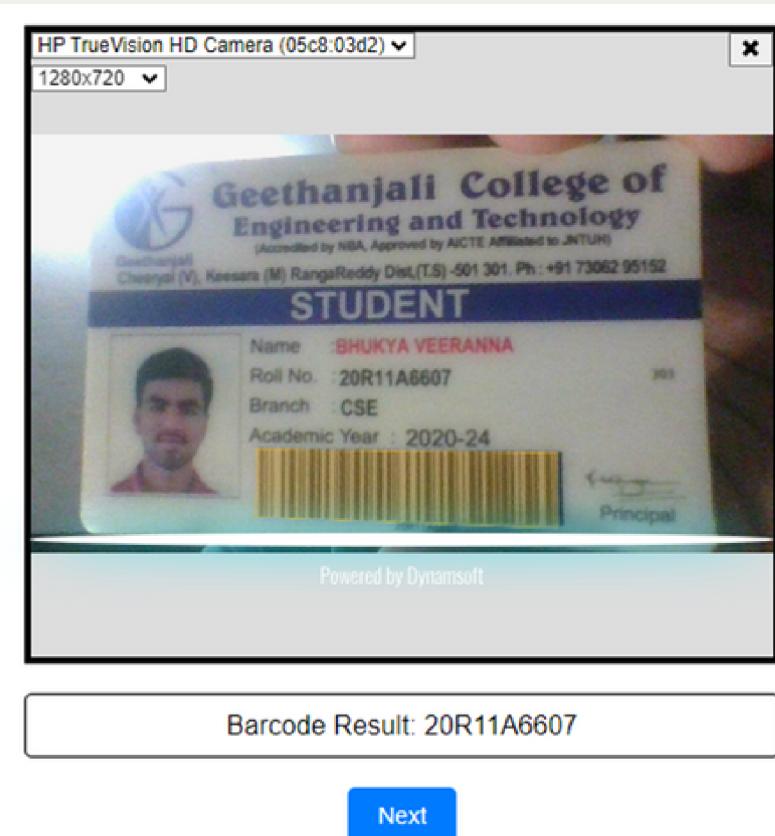


Rejected Barcode from Mobile screen

Face Recognition

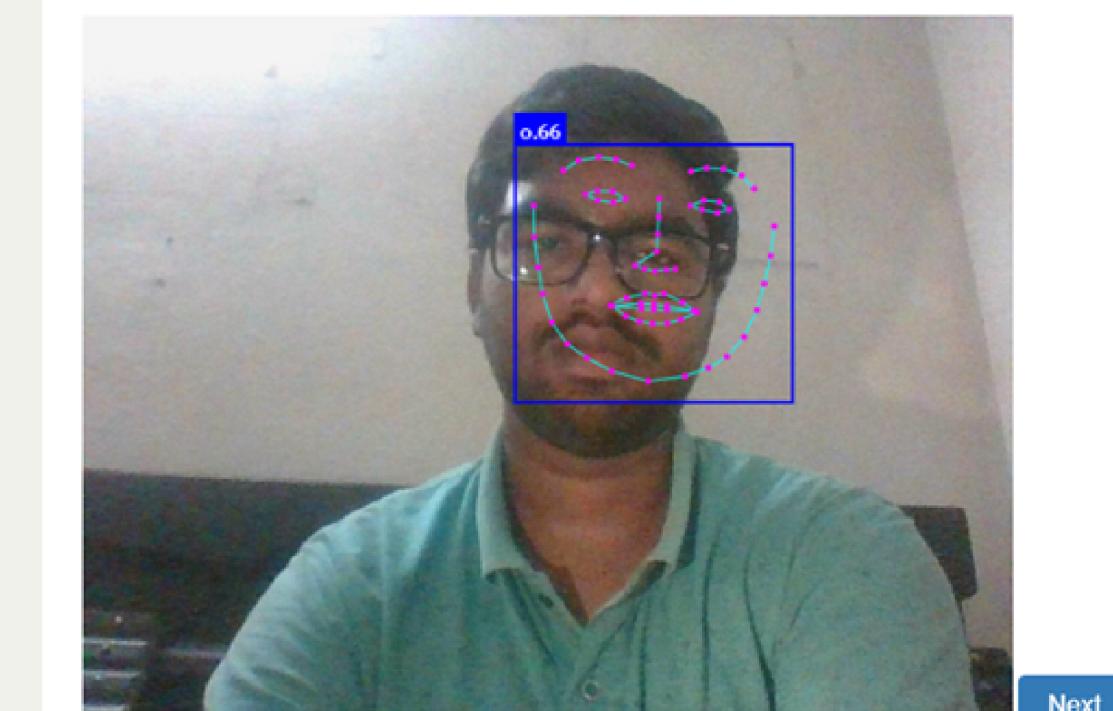


Fake face detection from Mobile screen



Accepted Barcode

Face Recognition



Accepted screen

Summary

Our Multi-Factor Attendance System represents a revolutionary advancement in attendance management.

Through the utilisation of state-of-the-art technology such as voice recognition, facial recognition, and barcode scanning, we have successfully addressed the weaknesses present in conventional approaches, hence increasing accuracy and security.

In addition to improving data integrity, the multi-layered authentication mechanism simplifies the attendance monitoring procedure and drastically lowers error rates.

Additionally, administrators are able to make wise judgements because of the real-time updates from our centralised database, which gives them crucial insights on attendance trends.

REFERENCES

Prerak Moolchandani, Shreya Hegde, Muskan Hassanandani, Garv Jhangiani, Gresha Bhatia, Abha Tewari, Shashikant Dugad, "Pehchaan: A Touchless Attendance System", 2023 International Conference on Artificial Intelligence and Applications (ICAIA) Alliance Technology Conference (ATCON-I), pp.1-5, 2023.

Ss, Poornima & Sripriya, N & Vijayalakshmi, B & Vishnupriya, P. (2017). Attendance monitoring system using facial recognition with audio output and gender classification. 1-5. [10.1109/ICCCSP.2017.7944103](https://doi.org/10.1109/ICCCSP.2017.7944103).

Smitha, & Hegde, Pavithra & Afshin,. (2020). Face Recognition based Attendance Management System. International Journal of Engineering Research and. V9. [10.17577/IJERTV9IS050861](https://doi.org/10.17577/IJERTV9IS050861).

Soewito, Benfano & Lumban Gaol, Ford & Simanjuntak, Echo & Gunawan, Fergyanto. (2016). Smart mobile attendance system using voice recognition and fingerprint on smartphone. 175-180. [10.1109/ISITIA.2016.7828654](https://doi.org/10.1109/ISITIA.2016.7828654).

Ajinky Patil, Mrudang Shukla(2014) “Implementation of classroom attendance system based on face recognition in class”, International Journal of Advances in Engineering & Technology, Vol. 7 Issue 3, pp976-978.

THANK YOU!

