

Face Recognition System: Recommendations, Customer Needs, and Pain Points

Recommendations for an Optimized Face Recognition System

To enhance the efficiency, accuracy, and user experience of the face recognition system, the following improvements are recommended:

1. Enhanced Facial Recognition Capabilities

- **Increased Snipping Points on Faces:** AI-driven facial recognition should incorporate more snipping points to enhance precision and accuracy.
- **Dual Lens Camera (RGB + IR):** Integrating both RGB and infrared (IR) cameras ensures accurate and fast recognition, even in varying lighting conditions.
- **Synchronized IR 3D TOF Depth Camera:** Utilizing a **Time-of-Flight (TOF) depth camera** enhances depth perception, improving accuracy and reliability in facial recognition.

2. Improved Illumination and Display Features

- **Infrared Supplementary Lights:** Two infrared lights should be included to improve recognition in low-light environments.
- **Flatted LED Fill Lights:** Adding flat LED fill lights enhances visibility, ensuring the system functions effectively in dimly lit areas.
- **Auto Brightness Optimization:** AI-based automatic brightness adjustment ensures optimal display visibility across different lighting conditions.
- **Average Display Size:** A minimum **4-inch** display should be maintained for better user interaction and visibility.

3. Performance and Speed Enhancements

- **Recognition Speed:** The system must recognize faces in **less than one second** for efficient and seamless operation.
- **Recognition Distance:** It should cover up to **2 meters** to enhance accessibility and improve throughput.
- **Multi-Face Recognition:** The system should support recognition of at least **three faces simultaneously**, making it ideal for high-traffic areas.

4. Hardware and Connectivity Improvements

- **WDR and Infrared Camera:** A **2MP Wide Dynamic Range (WDR) camera** and **2MP infrared camera** should be included for enhanced image quality and facial recognition accuracy.
- **Multi-Language Support:** The system should offer **multi-language accessibility**, ensuring usability across diverse user groups.
- **General User Connectivity Ports:** The device should support common connectivity options such as **Type-C and USB ports** for enhanced compatibility and ease of data transfer.

Customer Needs and Identified Pain Points

1. System Stability & Reliability Issues

- **Frequent Restarts:** Some users report that the device **occasionally restarts on its own**, disrupting workflow and reliability.
- **Time Syncing Issue:** After restarting, the system time may change by **a few minutes**, leading to inaccuracies in attendance tracking.

2. Scheduling & Software Challenges

- **Complex Shift Scheduling:** Adding schedules for employees with different shift timings can be **challenging and time-consuming**, requiring additional manual effort.
- **Subpar Software Support:** Users report **below-average software support**, making it difficult to resolve technical issues and integrate the system seamlessly.

3. Connectivity & Accessibility Limitations

- **VPN Dependency:** The device does not connect to **Android or iOS systems without a VPN**, making it less accessible for employees who want to check attendance online.
- **Complicated Setup:** Users find the **initial setup process complex**, requiring extensive time and effort for configuration.

4. User Experience & Interface Concerns

- **Non-User-Friendly Interface:** The interface lacks intuitive design, requiring **additional effort to enter data and extract reports**. This affects usability, especially for first-time users.

PRODUCTS

1.Product Overview: SCANMAX Face Recognition System (F6CS-T)

Recommended for: Multi-application security systems, biometric access control, and employee attendance solutions.

Product Specifications:

- **Price:** ₹38,000
- **Model Number:** F6CS-T
- **Resolution:** 1920 x 1080 pixels
- **OS:** Android 11
- **Processor:** RK3566 CPU, Quad-core 1.5 GHz
- **Display:** 8-inch Sun-readable screen
- **IP Rating:** IP66 (Waterproof)
- **Features:**
 - Motion detection
 - Video intercom
 - RFID reader
 - Face recognition and temperature measurement
 - Anti-tamper function
 - Liveness face detection
 - Multi-language access
 - Infrared sensor
 - Two-way audio
 - Three color indicator lights (Green/Red/White)
 - QR code scanning
 - NFC HDR wide dynamic detection
 - Biometric face recognition

Key Features & Functions:

- **Face Library:** Can store over 30,000+ face templates.
- **Detection Distance:** Ultra-long detection range of 0.5m – 1.5m.
- **Binocular Liveness Detection:** Detects faces from 3D printing, electronic screens, videos, pictures, masks, and headgear.
- **Smart Access Control Integration:** Integrated smart access control management system.
- **Temperature Measurement:** Built-in temperature measurement module for health screening.
- **User Interface:**
 - 8-inch touchscreen with sunlight-readable display.
 - Clear visual feedback with RGB LED fill lights for enhanced user experience.

Components:

- **Operating System:** Android 11
- **Processor:** RK3566 CPU with Quad-core 1.5 GHz
- **Display:** 8-inch touchscreen
- **NFC Reader**
- **QR Code Reader**
- **Dual Lens Camera:** RGB + IR cameras for accurate facial recognition.

- **Infrared Lights:** 2 infrared supplementary lights for enhanced low-light recognition.
- **Temperature Measurement Module:** Ensures temperature scanning during user verification.
- **LED Fill Light:** Helps in ensuring clear visibility of face recognition even in low light conditions.

Applications:

- Access Control Projects
- Biometric Security Systems
- Employee Attendance
- School Attendance Management
- Hospital Access Control
- General Control Management Solutions

Working & Functionality:

- **Temperature Indication:** The system indicates user temperature through color-coded lights (Green for normal, Red for elevated temperature).
- **Fast Response Time:** The system provides quick facial recognition, ensuring minimal wait time.
- **Synchronized IR 3D TOF Depth Camera:** The system uses an advanced infrared depth camera to ensure accuracy and reliability in facial recognition, even in challenging lighting conditions.

Positive Feedback:

- **Fast Response:** Users report quick and reliable facial recognition, ensuring smooth access control.
- **Synchronized IR 3D TOF Depth Camera:** The advanced camera system provides precise face recognition even with difficult face angles or lighting conditions.

2.ZENTO Face Recognition System (FS033)

Price: ₹16,715

Model Number: FS033

Key Features:

- **Recognition Time:** 0.5 seconds for quick and efficient face identification.
- **Recognition Distance:** Range from 0.3 meters to 1.5 meters, offering flexible placement options.
- **Face Capacity:** Capable of storing up to 20,000 face templates, accommodating large-scale applications.
- **Display:** 4.3-inch touch screen for easy navigation and operation.
- **Touch Screen Support:** Provides an intuitive interface for ease of use and system interaction.

3.Team Office Bio-Park D01 AI-Based Dynamic Face Recognition Attendance Device with Cloud-Based Attendance Software

Price: ₹9,499

Rating: 4.7/5

Key Features:

- **Recognition Speed:** Less than 1 second for swift and efficient face recognition.
- **Face Capacity:** Supports up to 5,000 face templates, suitable for medium to large-scale environments.
- **Recognition Distance:** Functional at a range from 0.5 meters to 2.5 meters, offering flexibility in installation and usage.
- **Card Capacity:** Can store up to 5,000 card details for hybrid authentication methods.
- **Camera:** Equipped with a 2MP infrared live camera for reliable facial recognition in low-light conditions.
- **Wide Dynamic Range (WDR):** 2MP camera with WDR functionality ensures accurate identification in various lighting environments.
- **Display:** 4.3-inch screen for user-friendly interface and smooth operation.
- **Multi-Language Support:** Allows users to operate the device in multiple languages for diverse user groups.
- **Access Control:** Integrated access control functionality for enhanced security and building management.
- **Accuracy Rate:** 99.70% for highly reliable face recognition.

Components:

- **HD Infrared Camera:** Provides high-quality, accurate face recognition even in challenging lighting conditions.
- **4.3-inch LCD Display:** Clear and user-friendly screen for system operation and user interaction.
- **Card Reader:** Supports RFID card-based access in addition to face recognition for versatile authentication.
- **Flatted LED:** Integrated LED light for better visibility and user feedback during interaction.

User Feedback:

- **Issue:** The device occasionally restarts on its own, which affects its continuous operation.
- **Additional Concern:** After a restart, the system's time may change by a few minutes, which could disrupt time-sensitive operations.

4.Team Office Z912 Face Recognition Attendance Device with Dual Camera, 1500 Users, 1.5 Lakh Transactions, Touch Display, Wi-Fi & Cloud Compatible

Price:

₹9,499

Rating: 4.1/5

Key Features:

- **User Capacity:** Supports up to 1,500 users, making it ideal for medium-sized organizations.
- **Dual HD Cameras:** Equipped with dual high-definition cameras, the device offers clear and precise face recognition, with automatic LED adjustments for optimal visibility in any lighting condition, including low light.
- **Multi-Face Recognition:** Capable of recognizing up to **three faces simultaneously**, improving the speed and efficiency of attendance logging.
- **Anti-Spoofing Detection:** Incorporates advanced algorithms to detect spoofing attempts, such as photos or videos, ensuring high security.
- **Specific Recognition Features:** Accurately recognizes individuals with **glasses, makeup, mustaches, beards, and other distinguishing features, ensuring reliable performance across various user types.**
- **Face and Card Capacity:** Stores up to 1,500 facial templates and 1,500 RFID card details for added flexibility in authentication methods.
- **Recognition Speed:** Face recognition in under 1 second for quick and seamless operation.
- **Recognition Distance:** Operates efficiently at a distance of up to 1.5 meters, offering flexibility in installation.
- **Wide Dynamic Range (WDR):** The 2MP WDR ensures clear recognition in varying light conditions.
- **Infrared Camera:** The 2MP infrared camera enables accurate facial identification in low-light environments.
- **Display:** 2.5-inch touch display for easy operation and clear interaction with the system.
- **Wi-Fi & Cloud Compatibility:** Offers Wi-Fi connectivity and cloud-based functionality for remote management and data access.

5.ZKTeco Touchless Face Attendance & Access Control Device with Free Software (WiFi + Mobile App) – MiniTA

Price:

₹7,350

Rating: 3.8/5

Box Contents:

- LAN cable
- Access control cable
- Power cable
- 12V adapter
- Mounting plate screws
- Device screws
- Mounting plates
- MiniTA device

Key Features:

- **Visible Light Facial Recognition:** Utilizes visible light for facial recognition, providing an efficient and secure solution for attendance and access control.
- **Anti-Spoofing Technology:** Equipped with advanced anti-spoofing algorithms to guard against attacks using color or black-and-white photos, videos, and 3D mask simulations.
- **Touchscreen:** 2.8-inch touch screen for easy navigation and operation.
- **Supplemental Lighting:** Adjustable brightness for optimal recognition in different lighting conditions.
- **Multi-Language Support:** Offers multiple language options for user flexibility.
- **Extended Recognition Distance:** Recognition distance extended to 2 meters with an extra-wide angle of recognition, supporting up to a **±30-degree angle** for better accuracy and coverage.
- **Speedy Recognition:** Delivers fast recognition with processing time of under 1 second.
- **Proactive Facial Recognition:** Features motion detection technology to automatically activate facial recognition when someone approaches the device, ensuring a touchless and hygienic experience.

Specifications:

- **Face Capacity:** 800 faces
- **User Capacity:** 800 users
- **Operating System:** Linux

Feedback:

- **Scheduling Issues:** Adding schedules for employees with different shift timings can be tricky and may require additional effort for proper setup.
- **Software Support:** The software support has been reported as below expectations, leading to difficulties in setting up and using the device.
- **Connectivity Limitations:** The device cannot connect to Android or iOS systems without a **VPN**, limiting its accessibility for employees who wish to check their attendance online.
- **Complicated Setup:** Users have reported that the device setup is complex and requires significant time and effort for configuration.
- **User Interface:** The interface is not user-friendly, requiring extra effort to enter details and extract data from the system.