

Smart Security Screening

Project Description:

AI can enhance security screening by detecting suspicious behaviour patterns or anomalies in real-time, improving security while reducing passenger wait times. AR could provide security staff with enhanced visual aids to quickly scan and verify baggage or identity documents, making the process faster and more efficient.

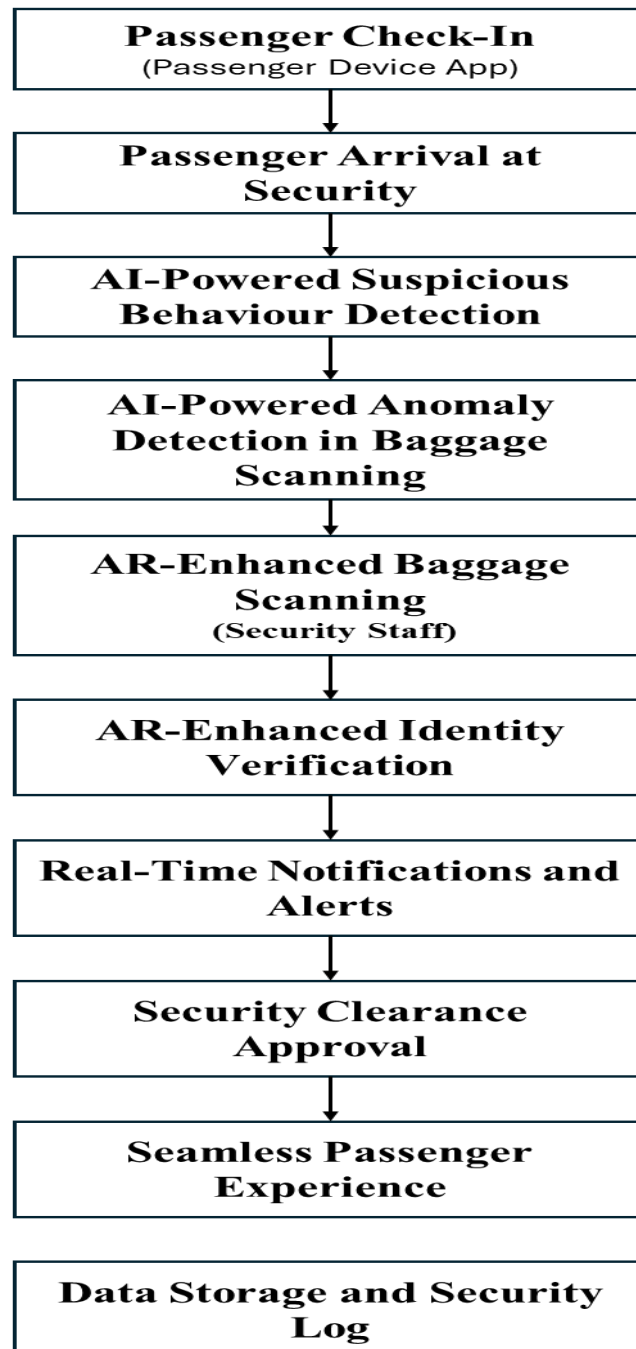


Fig.1: Flow Diagram

Step-by-Step Process:

1. **Passenger Check-In**
 - The passenger enters the airport and checks in via the app. The app links the passenger's identity documents and flight details for seamless tracking throughout the journey.
2. **Passenger Arrival at Security**
 - Upon reaching the security screening area, the passenger's app sends real-time updates to the security system, alerting staff to begin the screening process.
3. **AI-Powered Suspicious behaviour Detection**
 - The app leverages AI to monitor live video feeds and detect any suspicious behaviour patterns among passengers. Anomalies are flagged for immediate attention by security personnel.
4. **AI-Powered Anomaly Detection in Baggage Scanning**
 - Luggage is scanned, and AI systems analyse it in real-time for potential threats or forbidden items. The AI checks for irregularities in the X-ray images or the weight of the luggage compared to allowed standards.
5. **AR-Enhanced Baggage Scanning for Security Staff**
 - Security personnel use augmented reality (AR) devices to visualize and identify potential risk factors. The AR system overlays digital information, such as dangerous item alerts or the internal structure of luggage, to improve speed and accuracy in the scanning process.
6. **AR-Enhanced Identity Verification**
 - The app integrates AR-based verification tools for quick identity checks. Security staff can use AR glasses or mobile devices to verify passengers' ID cards, passports, or biometric data, such as facial recognition, to confirm their identity seamlessly.
7. **Real-Time Notifications and Alerts**
 - If any anomalies are detected, the app instantly alerts security staff and prompts further action. Notifications for a secondary screening or manual inspection are pushed to the relevant team.
8. **Security Clearance Approval**
 - Once the AI and AR checks are successfully completed, the passenger is cleared. A digital confirmation of clearance is sent to the app, allowing the passenger to proceed to the boarding area without delays.
9. **Seamless Passenger Experience**
 - With AI reducing false positives and AR enabling fast identity and baggage checks, the passenger experiences shorter wait times and a streamlined security process.
10. **Data Storage and Security Log**
 - All security screening data is securely stored for compliance and future reference. The system ensures passenger privacy by anonymizing sensitive information after the process is complete.

Benefits & Outcomes

- **Increased Efficiency:** AI and AR technologies streamline the screening process, reducing manual tasks and speeding up security checks for both passengers and staff.
- **Reduced Wait Times:** Automation leads to faster processing, minimizing long queues and allowing passengers to move through security more quickly.
- **Enhanced Security:** AI improves accuracy in detecting suspicious behaviour and anomalies, reducing the chances of missed threats and ensuring safer travel.
- **Cost Savings:** Fewer staff are required for manual scanning and verification, leading to lower operational costs while maintaining high security standards.
- **Improved Passenger Experience:** A faster, smoother security process results in a more stress-free and convenient journey for passengers, enhancing overall satisfaction.