

# Safe Tour – AI & Blockchain Powered Tourist Safety Android Application

---

Jeevika Khanna, Vaachi Goel, Shafaq Ahmad, Sanya Malhotra, Devansh Kumar, Ridhim Srivastava

## Background & Problem Context

Tourism is one of the most important sectors of the Indian economy, contributing significantly to GDP and employment. India is known for its cultural diversity, natural beauty, and unexplored destinations, attracts a large number of domestic and international tourists every year. However, despite its potential, the region faces critical tourist safety challenges that affect the overall travel experience and reduce tourism growth.

Some of the **major safety concerns** include:

- 1. Lack of Real-Time Tracking in Remote Areas**
  - Tourists visiting forests, caves, wildlife sanctuaries, or hilly terrains are often beyond the reach of conventional surveillance systems.
  - In such locations, tourists may go missing, get stranded, or lose communication, making it difficult for authorities and families to trace them quickly.
- 2. Delayed Police Response in Missing/Distress Cases**
  - Current systems rely heavily on **manual reporting**, where families or travel agencies inform authorities about a missing tourist.
  - This delay in reporting often results in a slower start to rescue operations, reducing the chances of timely intervention.
  - Authorities also lack **real-time intelligence** to act proactively.
- 3. Manual ID Verification that is Inefficient and Prone to Misuse**
  - Tourists are currently verified through physical IDs such as passports or Aadhaar.
  - These documents can be misplaced, forged, or misused, leading to risks of identity theft or wrongful verification.
  - There is no **tamper-proof system** to track a tourist's verified presence during their trip.
- 4. Language Barriers for Domestic and International Tourists**

- India's diversity, while its strength, can also become a challenge for tourists, particularly in remote states.
- In cases of emergencies, tourists—especially the elderly or foreign visitors—struggle to communicate with local authorities due to **language differences**.
- The absence of multilingual emergency support makes it harder to report incidents or seek help quickly.

# Objectives

## 1. Develop a Tamper-Proof Digital Tourist ID using Blockchain

Create a secure and immutable identity verification system for tourists.

1. IDs will be generated at airports, hotels, or checkpoints and will remain valid only for the duration of the trip.
2. Prevents forgery, identity theft, and misuse of tourist details.

## 2. Enable Geo-Fencing Alerts in High-Risk Zones

- Define virtual boundaries around unsafe or restricted areas (forests, border regions, caves, accident-prone spots).
- If a tourist enters or exits these zones, the system immediately generates an alert.
- Alerts are sent to both the tourist (warning) and the nearest police/tourism authority for timely intervention.

## 3. Provide a Panic/SOS Button with Live Location Sharing

- Tourists can trigger an SOS alert in emergencies such as harassment, accidents, or medical distress.
- The SOS button instantly shares the tourist's **live location** with:
  - Nearest police unit
  - Emergency contacts (family/friends)
- Ensures quick assistance even in critical situations.

## 4. Detect Anomalies in Tourist Behavior using AI

- AI algorithms analyze movement patterns against the planned itinerary.
- Detects unusual activities such as:
  - Long inactivity in unsafe zones
  - Deviations from planned travel routes
  - Sudden disappearance of location signals (possible abduction/accident)

- Such anomalies automatically raise alerts for investigation.

## 5. Build a Real-Time Police & Tourism Dashboard

- Centralized system for law enforcement and tourism departments.
- Features include:
  - Real-time heatmaps of tourist clusters
  - Access to digital ID profiles and travel itineraries
  - Alert history and last known location logs
  - Automated E-FIR generation for missing tourist cases
- Enables faster, data-driven decisions and improves coordination across departments.

## 6. Offer Multilingual Support for Accessibility

- Application and platform will be available in **10+ Indian languages plus English**.
- Includes **voice-based emergency reporting** for elderly and disabled tourists.
- Overcomes communication barriers, making the system inclusive for both domestic and international visitors.

# Proposed Solution

## 1. Blockchain-Based Digital ID

- A secure, tamper-proof identity system built using blockchain technology.
- Issued to tourists at airports, hotels, or check-posts during their entry into a region.
- The ID contains:
  - Basic KYC details (Aadhaar/Passport).
  - Trip itinerary and travel plans.
  - Emergency contact details (family/friends).
- The ID remains valid only for the duration of the visit and automatically expires after the trip.
- Ensures authenticity, privacy, and security of tourist records, while eliminating risks of forgery or misuse.

## 2. Tourist Mobile Application

- A user-friendly app available in 10+ Indian languages + English.
- Key features include:
  - Tourist Safety Score → Auto-calculated based on travel patterns, adherence to itinerary, and the risk level of visited areas.
  - Geo-Fencing Alerts → Tourists get instant notifications when they enter restricted, unsafe, or accident-prone zones.
  - SOS/Panic Button → A one-touch emergency button that sends live location to police and registered emergency contacts.
  - Real-Time Tracking (Opt-In) → Tourists can allow family members or authorities to track their journey for additional safety.
  - Multilingual & Voice Emergency Access → Tourists can send alerts or messages through voice commands, helpful for elderly or disabled travelers.



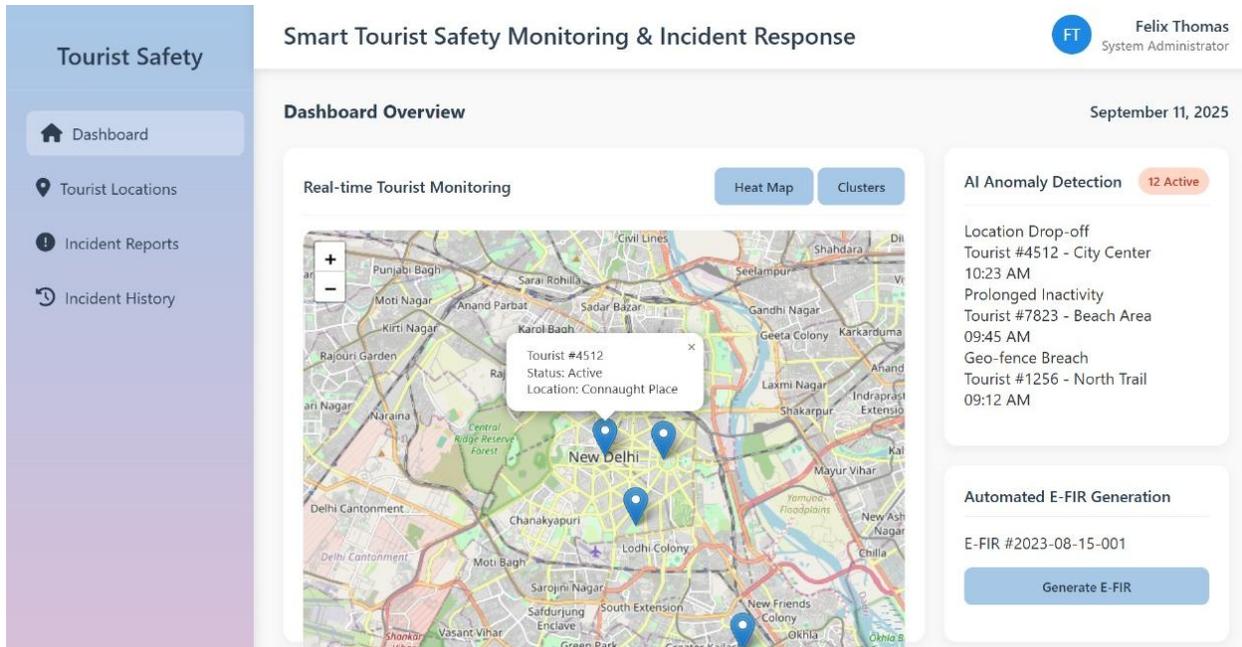
### 3. AI-Based Anomaly Detection

- The system uses AI/ML algorithms to analyze tourist movement patterns.
- It compares real-time GPS data with the planned itinerary.
- Detects anomalies such as:
  - Prolonged Inactivity → Tourist not moving for long durations in high-risk areas.
  - Route Deviations → Moving away from planned paths or entering restricted zones.
  - Sudden Signal Drop-Offs → Unexpected loss of GPS/location data that could indicate distress or abduction.
- The AI engine then flags such events and triggers alerts to authorities for further action.
- This predictive layer ensures authorities can respond proactively instead of waiting for an incident to be reported.

### 4. Police & Tourism Dashboard

- A web-based, real-time monitoring system for law enforcement and tourism departments.
- Features include:

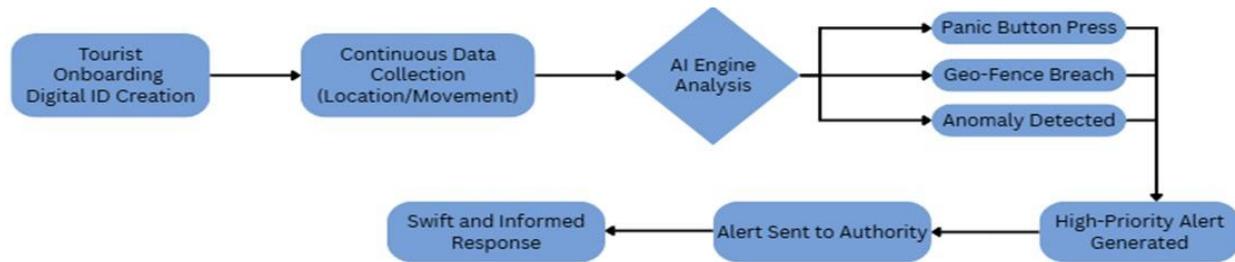
- Tourist Heatmaps & Cluster Tracking → Authorities can view the density and movement of tourists in different zones.
- High-Risk Zone Monitoring → Identify unsafe areas and send preventive



advisories.

- Access to Digital ID Records → Secure access to verified tourist identities and itineraries for investigation.
  - Alert History → View all geo-fencing and SOS alerts linked with each tourist.
  - Automated E-FIR Generation → In case of a missing tourist, the system can instantly generate an FIR draft with the tourist's last known location and ID details.
- This ensures data-driven policing and improves coordination across departments for faster incident resolution.

# Technical Approach



## 1. Mobile App (Java, Google Maps API, Firebase):

Real-time location tracking, geo-fencing alerts, SOS button, multilingual support, and cloud sync.

## 2. Backend (Firebase):

Secure storage of tourist IDs, itineraries, and alert history with fast API communication.

## 3. AI/ML (TensorFlow):

Detects anomalies such as route deviations, prolonged inactivity, or sudden signal loss.

## 4. Blockchain (Hyperledger):

Issues tamper-proof digital tourist IDs valid only for trip duration.

## 5. Dashboard (React.js + Maps API):

Real-time heatmaps, tourist cluster tracking, access to digital IDs, and automated e-FIR generation.

## Expected Impact & Benefits

- **For Tourists:**  
Safer and stress-free travel with proactive safety alerts, secure identity verification, and immediate help in emergencies through SOS and live location sharing.
- **For Families:**  
Peace of mind knowing they can track their loved ones in real time and receive instant alerts if any emergency arises.
- **For Police & Authorities:**  
Faster incident response with real-time dashboards, automated alert systems, and predictive AI insights, reducing manual delays and improving efficiency.
- **For Economy & Tourism Sector:**  
Increased confidence in India as a safe tourist destination, leading to higher tourist inflow, greater local business growth, and stronger economic contribution from tourism.
- **For Governance:**  
A transparent, tamper-proof, and scalable digital ecosystem that aligns with Digital India and Smart Policing initiatives, strengthening trust in public safety systems.

## Uniqueness & Innovation

- First-of-its-kind **integration of AI + Blockchain + Geo-fencing** for tourist safety in India, creating a holistic and secure ecosystem.
- **Predictive AI anomaly detection** ensures risks are identified early (e.g., inactivity, deviations, distress), preventing incidents rather than just reacting after they occur.
- Blockchain-backed Digital Tourist IDs guarantee tamper-proof, time-bound, and secure identity management, eliminating risks of forgery or misuse.
- **Geo-fencing with real-time alerts** makes tourists aware of high-risk zones while simultaneously notifying authorities for proactive intervention.
- Inclusive **multilingual and voice-enabled** emergency features ensure accessibility for foreign tourists, elderly travelers, and people with disabilities.
- The system creates a balance between safety and privacy, as real-time tracking is optional (opt-in), giving tourists full control over their data.

# **Conclusion**

The proposed Smart Tourist Safety Monitoring & Incident Response System is a comprehensive digital ecosystem that combines AI, Blockchain, and Geo-fencing to ensure the safety of tourists in India. By providing secure digital IDs, real-time monitoring, and predictive anomaly detection, the system empowers tourists with confidence, assists families with peace of mind, and enables authorities to respond faster and more effectively.

Unlike traditional systems that are reactive and manual, this solution is proactive, scalable, and tamper-proof, aligning perfectly with India's Digital India vision and Smart Policing initiatives. Its focus on inclusivity through multilingual and voice-based support makes it accessible to both domestic and international visitors.

By building trust and ensuring a safer travel environment, the project has the potential to boost tourism, strengthen the economy, and enhance India's reputation as a global travel destination.