

Request for Quotation (RFQ) Document for TTD Project

1. Objectives

The Tirumala Tirupati Devasthanams (TTD) aims to improve the overall management and experience of pilgrims visiting the temple premises by implementing a robust visitor identification, tracking, and queue management system. The project's key objectives include:

1. Instantly validating SSD-type pilgrims at the entry point using video and photo-based recognition.
2. Detecting fraudulent practices such as multiple bookings by the same individual.
3. Capturing and storing data of SD-type pilgrims to estimate queue processing times and overall darshan timelines.
4. Real-time segregation and analysis of darshan times for SSD and SD pilgrims.
5. Enabling real-time tracking of selected visitors across the temple premises.
6. Providing accurate entry and exit counts of visitors.
7. Monitoring and managing headcounts in intermediate compartments in real time for better queue movement planning.

2. Detailed Requirements

2.1 SSD Pilgrim Validation

1. **Visitor Validation:**
 - Install high-resolution cameras at the SSD registration point and temple entry points.
 - Implement instant photo capture and verification of SSD pilgrims against a database of the past 24 hours.
 - Identify multiple bookings by the same individual within:
 - The same day.
 - The past week.
 - The past 30 days.
2. **Fraudulent Booking Detection:**
 - Use AI-based facial recognition to flag individuals appearing more than once within restricted time frames.
 - Generate alerts for TTD authorities upon detecting potential fraud.

2.2 SD Pilgrim Identification and Queue Analysis

1. **Visitor Capture:**
 - Install cameras in SD pilgrim queues to record videos and capture photos of visitors.
 - Store captured images for analysis and real-time processing.
2. **Queue Time Estimation:**
 - Use captured data to calculate estimated darshan time for SD pilgrims.

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- Provide reports for TTD authorities to optimize queue management.
- 3. **Segregated Darshan Time:**
 - Implement a smart system to demarcate darshan times for SSD and SD pilgrims even when they merge at certain points in the queue.
 - Provide separate “bins” to record darshan timelines for each type by hour. The historic trends must also be stored for future validation.

2.3 Real-Time Tracking

1. **Photo-Based Tracking:**
 - Enable real-time tracking of selected visitors (SSD or SD) by matching their entry photos across all cameras within the premises.
 - Provide a timeline of movements for selected individuals across the temple premises.

2.4 Entry and Exit Counts

1. **Visitor Count Monitoring:**
 - Deploy cameras at all entry and exit points.
 - Record and display the total number of visitors entering and exiting the temple premises in real time day wise.

2.5 Compartment Monitoring

1. **Headcount in Compartments:**
 - Use strategically placed cameras and AI to calculate the number of pilgrims in each compartment.
 - Provide a dashboard with real-time updates for each compartment’s occupancy.

3. Proposed Solution Architecture

3.1 Camera Network and Data Capture

1. Deploy high-resolution cameras with AI capabilities at SSD registration points, SD queues, entry/exit points, and compartments.
2. Use edge computing devices at each camera location for real-time processing and reducing data transfer load to central servers.

3.2 Centralized Database and AI Engine

1. Implement a central database to store:
 - Pilgrim data (photos and timelines).
 - Queue and compartment occupancy metrics.
2. Integrate an AI-powered facial recognition engine for instant verification and analysis.

3.3 Real-Time Dashboard

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1. Create a centralized dashboard to display:
 - o Real-time entry and exit counts.
 - o Occupancy of compartments.
 - o Darshan timelines for SSD and SD pilgrims.
 - o Movement tracking for selected visitors.

3.4 Fraud Detection Mechanism

1. Configure alerts for detecting multiple bookings using the AI engine.
2. Provide automated reports and notifications to TTD authorities for further action.

4. Key Deliverables

1. Deployment of cameras at all critical locations:
 - o SSD registration points.
 - o Entry and exit points.
 - o Queue areas.
 - o Compartments.
2. Real-time dashboards for:
 - o Visitor counts.
 - o Queue and darshan time estimation.
 - o Compartment occupancy.
 - o Pilgrim tracking.
3. AI-powered fraud detection and alert system.
4. Reports and analytics for queue management and darshan optimization.

5. Next Steps

1. Conduct a feasibility study for camera placement and network setup.
2. Develop a detailed implementation plan for the proposed architecture.
3. Pilot the system in a specific area of the temple premises before full-scale rollout.

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