SMART INDIA HACKATHON 2024

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- **Problem Statement ID:** SIH25061
- **Problem Statement Title:** Digitize and Showcase Monasteries of Sikkim for Tourism and Cultural Preservation
- **Theme:** Travel & Tourism
- **PS Category:** Software
- **Team ID:**
- **Team Name:** Coding Pirates

Coding Pirates

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Immersive Exploration Engine

360° Virtual Tours

Experience monastery interiors and stunning landscapes from anywhere in the world.

Narrated Walkthroughs

Listen to stories and histories in multiple languages (English, Hindi, Nepali, etc.).

Digital Archive & Learning

Living History

Access high-resolution scans of rare manuscripts, murals, and historical artifacts.

AI-Powered Search

Instantly find information, symbols, or deities across the entire digital collection

Smart Travel & Discovery

Interactive Geo-Map

Find all monasteries on a single map, complete with travel routes and local tips.

Cultural Calendar

Never miss a festival. Get real-time updates on events, rituals, and opening hours

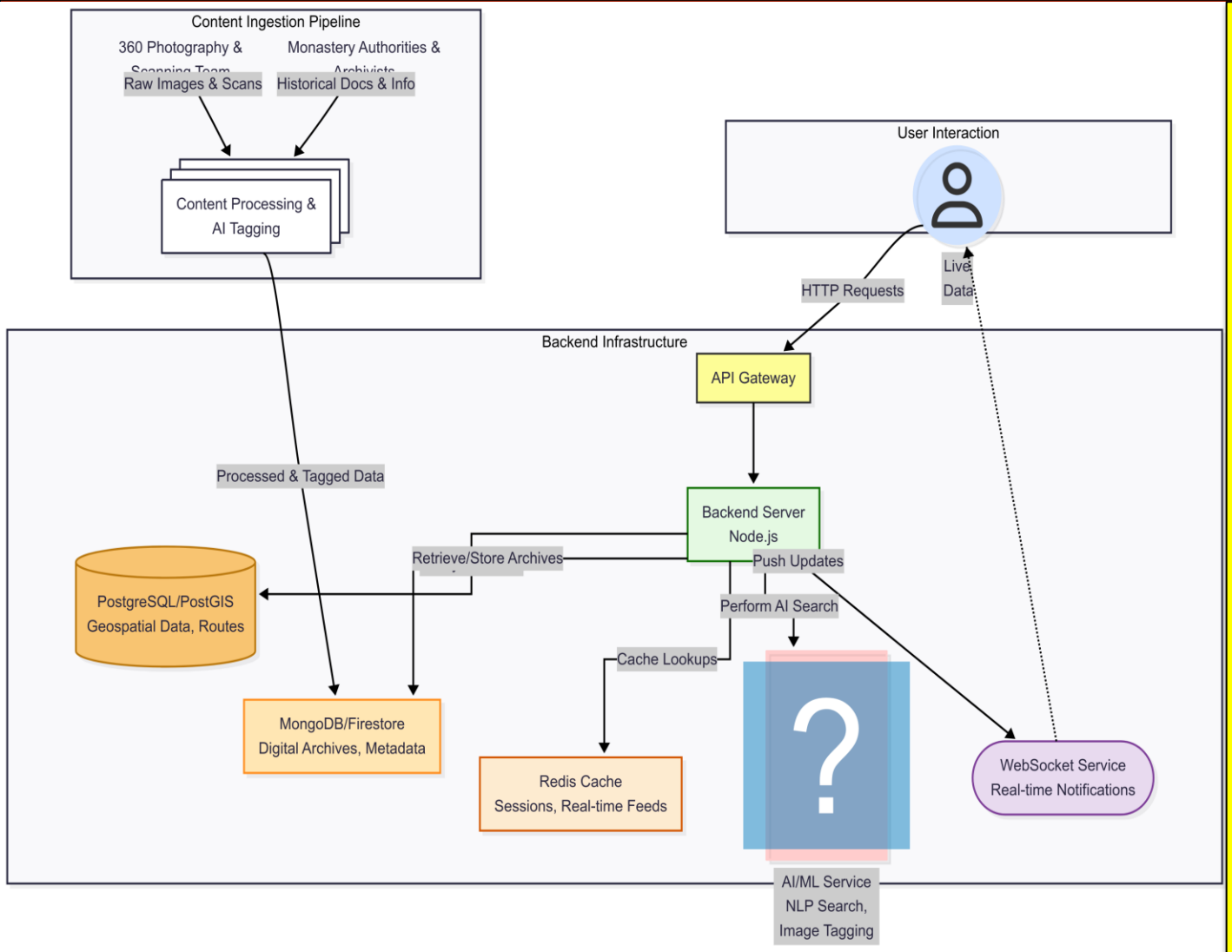
On-Site Companion App

Smart Audio Guide

Receive location-aware audio commentary automatically as you walk through a monastery using GPS and Bluetooth beacons.

Offline Access

Download tours and maps for use in remote areas with no internet connectivity.



Frontend:

UI/UX: React / Next.js, TypeScript
360° Viewer: React Three Fiber / Panellum
Mobile App: React Native (for cross-platform) or native Swift/Kotlin
Mapping: Mapbox / Leaflet.js

Backend:

Web Server: Node.js (Express.js / NestJS)
Database:

- PostgreSQL + PostGIS: For geospatial data (monastery locations, routes).
- MongoDB / Firestore: For unstructured data (documents, archives, user comments).
- Redis: For caching session data and real-time calendar updates.

APIs: RESTful API & WebSockets for real-time notifications.
AI/ML: Python (TensorFlow/PyTorch) for image recognition and NLP search on archives. Hosted on a separate service.

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Technical Feasibility:

•**Core Technology:** The tech stack (React, Node.js, PostGIS) is mature, well-documented, and widely used.
•**360° Content:** Creating high-quality panoramic images is achievable with prosumer-level 360° cameras (e.g., Insta360, Ricoh Theta).
•**AI Search:** Leveraging pre-trained models for OCR (Optical Character Recognition) on manuscripts and image tagging is highly feasible.
•**Beacon Tech:** Bluetooth Low Energy (BLE) beacons are inexpensive and have a long battery life, making them ideal for indoor positioning.

Operational Feasibility:

•**Target Audience:** Tourists (domestic & international), researchers, students, and the Sikkimese diaspora.
•**Value Proposition:**

- Centralized, reliable platform for tourism planning.
- Digital preservation of at-risk cultural assets.
- Creates a new, accessible way to engage with Sikkim's culture.

Key Challenges & Solutions:

•**Challenge:** Limited internet in remote monasteries.

- **Solution:** Robust offline mode in the mobile app is a core feature.

•**Challenge:** Gaining the trust and cooperation of monastery authorities.

- **Solution**: Demonstrate clear benefits (preservation, global reach) and potentially offer a revenue-sharing model from premium features or donations.

•**Challenge:** The sheer scale of digitizing 200+ monasteries.

- **Solution:** A phased rollout, starting with 5-10 pilot monasteries. Empower and train local youth in 360° photography to scale the project.

Legal & Ethical Feasibility:

•**Permissions:** Formal MOUs (Memorandum of Understanding) with monastery administrations and the Ecclesiastical Department of Sikkim are critical.
•**Data Privacy:** Compliance with data protection laws (like GDPR for international users) is essential.
•**Cultural Sensitivity:** A participatory approach, involving monks and local communities in content creation and narration, is non-negotiable.

IMPACT

Enhanced Tourism: Makes trip planning easier and the on-site experience richer, attracting a wider range of tourists and extending their stay.

Global Accessibility: Opens up Sikkim's spiritual heritage to people worldwide who cannot travel, including students, researchers, and the elderly.

Digital Preservation: Creates a permanent digital backup of invaluable murals, manuscripts, and architecture that are vulnerable to time and natural disasters.

Community Empowerment: Provides opportunities for local communities to participate in the digital economy as guides, content creators, and archivists.

BENEFITS

- **Economic Growth:** Directly boosts the local tourism economy by promoting longer and more engaged visits. Creates skilled work for local youth.
- **Cultural Preservation:** Promotes sustainability by digitally preserving fragile heritage, reducing the physical strain on the actual sites while increasing their global significance.
- **Educational Advancement:** Serves as a vital academic resource for universities and schools studying Buddhist art, history, and architecture.
- **Promotes Mindful Tourism:** By educating visitors beforehand, the platform encourages more respectful and culturally aware interactions at these sacred sites.

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