SMART INDIA HACKATHON 2025

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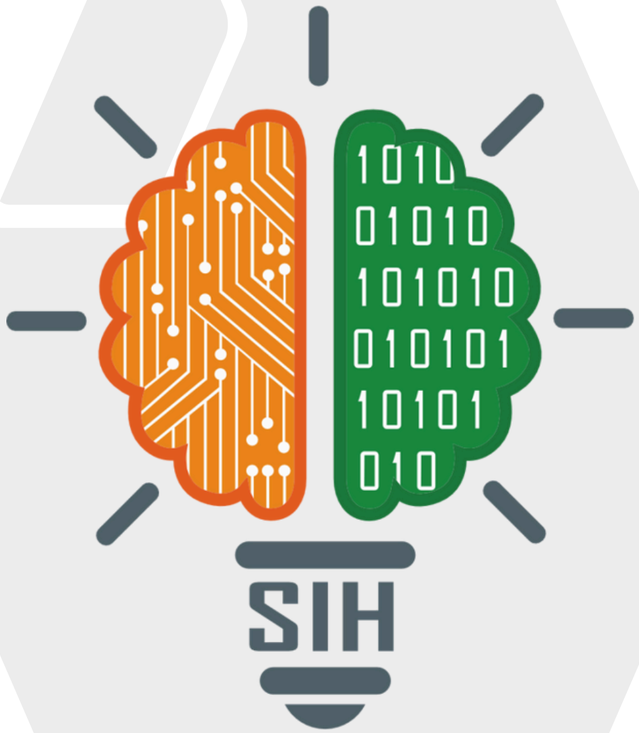
- **Problem Statement ID:** 25082
- **Problem Statement Title:** (PS 81) Development of a travel related software app that can be installed on mobile phones that could capture trip related information
- **Theme:** Travel & Tourism
- **PS Category:** Software
- **Team Name:** Team Unskilled



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Idea Explanation

- An app to track trip chain data and share with government, including an AI bot that also takes voice input uses RAG (LangChain + ChromaDB etc.) to pull live travel, weather & govt-data.
- Builds full itineraries + trip chains from user inputs (budget, duration, destinations, companions), stores data, exports PDF.
- Features live location updates danger zone updates, emergency/SOS alerts, public transport tracking, Transport ticket/hotel uploads and past trip analytics.

How It Addresses the Problem

- Replaces costly, low-coverage manual surveys with high-volume automated + minimal user input data.
- Captures richer, more accurate trip chain & transport mode details.
- Enables NATPAC / govt to access real-time + historic mobility patterns for better planning & response.

Innovation & Uniqueness

- AI recommendations for destinations, activities, and restaurants. Real-time group collaboration and expense sharing.
- Safety features: SOS alerts and live location tracking. Centralized document management for tickets and bookings. Dynamic updates on weather, transport, and local events..

APP LINK:https://expo.dev/accounts/kislay04/projects/yatra/builds/e411be00-2a07-4e9b-baa7-674a2bbcf73b

APP FEATURES

All in one Trip/ Travel assistant

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Live timed danger/ safety/ risky zone location updates

Trip Chain Tracker (live & summary download for govt database)

Smart GPS Trip detection

Tripsy: AI Trip assistant

AI Trip Planning

Live public transport track chain on trip for safety

Gps tracking Live location news/ updates

Trip Safety/ Emergency Ensured

Hotel booking Train/flight ticket upload

Track group trips/ members' location and group chain

- Easy trip chain data access for the government & user
- User safety ensured and recorded at every step
- AI trip planning & recommendations
- Live location updates/ news/ weather/ safety updates/ transport tracking
- Group trip chain, addition hotel booking & trip/flight ticket saved in database

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TECHNICAL APPROACH

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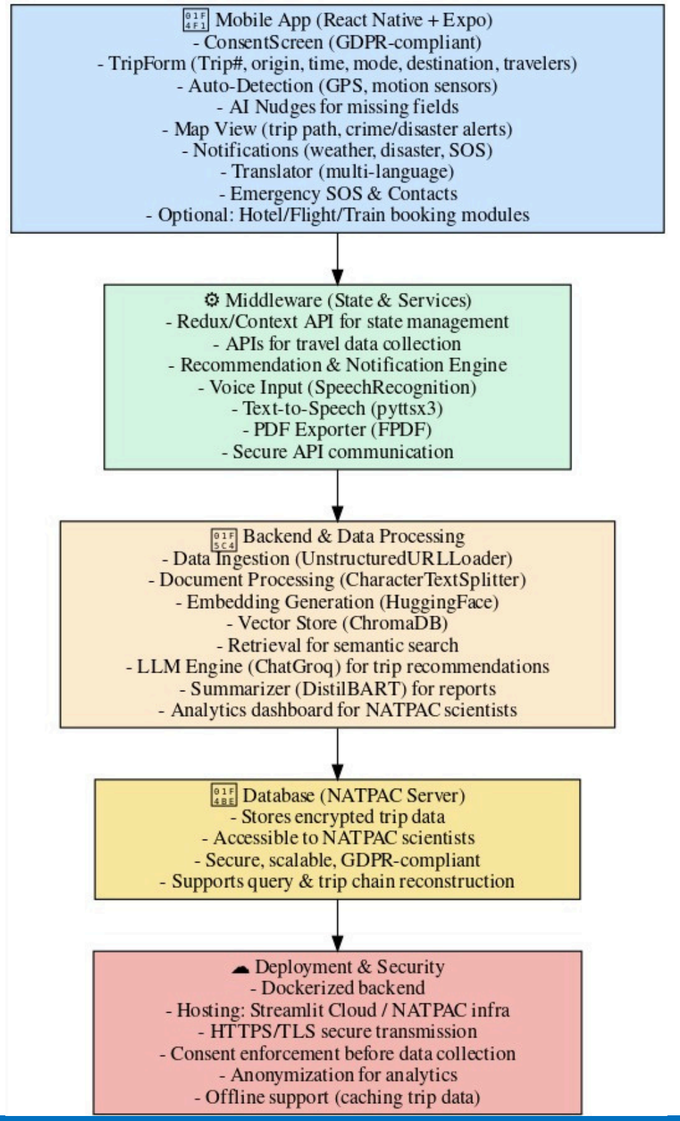
- **Technologies used:** React native, node.js, Generative AI, RAG, Langchain, transformers, fastapis, docker (ffmpeg, espeak), conversationalbuffermemory, chromadb, huggingface for vector embedding, Groq api key, react native, typescript
- **Methodology and process for implementation:**

Database	trip number, origin, time, mode, destination etc		Sentiment Analysis	crime rate to red mark area	Disaster Update
FORM	MAP	Recommendation System	Trip Review/Feedback Voice Recording (NPL)	Notification System • recommendation • live updates (earthquake) • weather prediction	app preview/ pdf - cache file download
Trip Details	AI Help Desk	Locally Defined Emergency Contacts SOS CTA	Translator	Public Transport details/ booking optional (future safe) AI driven bot SOS	



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FEASIBILITY AND VIABILITY

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Feasibility

- Technologies like RAG, vector DBs + APIs are proven; mobile OS allow background tracking.
- DigiPIN gives a 10-character code per 4×4 m grid, works offline, precise geo-addressing
- India's DPDP Act mandates consent, data minimization, right to withdraw → supports legal viability.

Challenges & Risks

- Battery drain and location inaccuracy (e.g. indoors, remote).
- Cost/scalability of real-time APIs, DBs, servers.
- Ensuring privacy, managing consent, legal compliance.

Strategies to Overcome challenges

Use consent-first design; allow opt-out; minimal data collection.

- Use DigiPIN + reduced GPS usage; cache data; enable offline support.
- Scale infrastructure gradually; lean open-source tools; efficient DB indexing.
- Use a centralized Consent Manager registered under the DPDP Act, which serves as the single point of contact to collect, manage, review, and withdraw user consent in an auditable and transparent manner

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IMPACT AND BENEFITS

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Potential Impact on Target Audience

- Citizens get better travel planning: faster, cheaper, safer trips via real-time updates & SOS features.
- Increased trust: transparency over travel data, control over consent, improved safety in emergencies.
- Enhanced mobility choices: public transport, routes, and options that adapt to user needs (companions, budget, destination).
- Better preparedness: Live alerts and evacuation planning for disasters/emergency situations while travelling.
- Enhances group travel experience by enabling real-time collaborative itineraries, live schedule updates, safety alerts, and centralized document coordination, keeping everyone informed, connected, and secure

Benefits of the Solution

- Helps transportation planners (like NATPAC) make data-driven decisions: route design, infrastructure investment, demand forecasting.
- Reduces congestion and lowers travel time & costs across the system.
- Helps Government agency manage crowd and record data more efficiently
- Economic benefit: boosts tourism, local businesses; reduces cost of operating transport and emergency services.
- Social benefit: safer travel, inclusion of vulnerable users, more equitable access to transit and mobility services.

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RESEARCH AND REFERENCES

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Datasets

App trip logs (collected): anonymized GPS traces, timestamps, trip events (start/stop), user-provided trip metadata (origin, destination, purpose).
OpenStreetMap (OSM): base maps, POIs, routing & administrative boundaries. (openstreetmap.org)
GTFS feeds: public transit schedules for route matching and trip reconstruction
Disaster / incident feeds: GDACS, EM-DAT, GDELT for global incident / disaster alerts. (gdacs.org · emdat.be · gdeltproject.org)
Crime / local incident datasets: state/city open-data portals (e.g., local police data / data.gov) or Kaggle crime datasets for alert training. (kaggle.com)
Ground-truth / evaluation data: human-labeled alert relevance, user feedback logs, curated trip reports for summarization eval.

Reseach Models

Embeddings & models: Sentence-BERT / transformer embeddings; BART / DistilBART for summarization (Hugging Face model hub). (huggingface.co)
Vector DBs & retrieval: ChromaDB, FAISS, Milvus for semantic search.
Pipelines & helpers: LangChain / Haystack (document loaders, splitters, RAG patterns).
Speech / TTS: Google Speech-to-Text, Vosk / DeepSpeech for recognition; pyttsx3 / gTTS for TTS.
Mapping & client: Mapbox / Leaflet / MapLibre; React Native + Expo for mobile.
Deployment / infra: Docker, Streamlit (analytics), HTTPS/TLS, NATPAC infra.

Reference

Lewis, M. et al., BART: Denoising Sequence-to-Sequence Pre-training for NLG, 2019.
Lewis, P. et al., Retrieval-Augmented Generation (RAG), 2020.
Reimers, N. & Gurevych, I., Sentence-BERT: Sentence Embeddings using Siamese BERT, 2019.
Johnson, J., Douze, M., & Jégou, H., Billion-scale similarity search with FAISS, 2017.
GDPR — Regulation (EU) 2016/679 (data protection & consent). (gdpr.eu)
OWASP Foundation — OWASP Top 10 (security guidance). (owasp.org)
ChromaDB / Hugging Face / LangChain documentation (tool & model references). (chroma.github.io · huggingface.co · langchain.com)