Project Proposal – Team 11

Travel Companion App

Project Overview

Travelers often feel overwhelmed when visiting new destinations, whether within their own country or abroad. Travelers have to rely on several services for planning, navigation, recommendations, and communication. Most of the existing travel services require constant internet access, making them unreliable in areas with poor connectivity or high roaming fees. The fragmentation of these services disrupts trip planning and negatively impacts the travel experience.

There is a need for a lightweight, offline-first travel companion that centralizes essential travel functions, enabling travelers to explore new places with ease.

Project Scope

Must-Haves:

- Offline-first - works without internet; sync when connected
- Itinerary Planning
- Interactive map
- Local Language Cheat Sheet (e.g 100 or so most popular words or phrases)
- Curated List of must-see places or food to try
- Travel LLM

Nice-to-Haves:

- Connects you with other tourists in area
- Trip sharing with friends
- Integration with restaurant review sites of many countries (e.g. China: Dianping, Japan: Tabelog, etc)

Stretch goals:

- Offline translations

Project Objectives

1. Implement robust local data storage for offline functionality
2. Develop a scalable backend that can handle 100,000 concurrent users
3. Create an intuitive user interface
4. Use best practices to secure user data
5. Have at least 70% code coverage with test-cases
6. The app shall launch in less than 3 seconds
7. Gracefully handle all exceptions

Specifications

User Interface (UI) Design

- Platform - Mobile App
- Key Screens:
    - Onboarding - Register/Login
    - Home/Dashboard
    - Itinerary Builder
    - Travel LLM Chat
    - Recommendations
    - Interactive Map
    - Language Guide
    - Social Connect
    - Travel Log

Backend & APIs

- Database Tables:
    - Users
    - Destinations
    - Places
    - Trips
    - Itinerary Items
    - Recommendations
    - Reviews
    - Connections
    - Messages

- API Routes:
    - /auth
    - /users
    - /destinations
    - /places
    - /recommendations
    - /trips
    - /connections
    - /messages
    - /offline-pack
    - /sync
- Authentication
    - JWT with authentication and refresh token
    - Google and Apple OAuth

Data & AI Model (Dataset source and Model architecture).

- Finetune a LLM to build travel plans and answer questions related to those plans
- Model - Qwen 2.5
- Dataset source - Hugging Face and Kaggle

Tech Stack

- **Frontend:** React Native - Expo
- **Backend:** ElysiaJS, Prisma, Eden Treaty
- **Database:** PostgreSQL, MongoDB, SQLite
- **AI/ML (if applicable):** llama.cpp, PyTorch
- **Cloud & Hosting:** AWS, Neon (database), Upstash (redis cache), Cloudflare

Hardware Requirements

- Android and iOS smartphones

Software Requirements

- Specify required tools, SDKs, and platforms.
- Mapbox SDK - map integration
- Zustand - state management
- Nativewind - styling similar to TailwindCSS

- llama.cpp - running LLM models

Project Timeline

Phase	Duration	Tasks			Status/Deliverable
		Front end	Back end	General	
Phase 1	2/13 - 2/20 (1 Week)	Project proposal, AI tool research, Initial UI designs, Reading documentation, Github Setup			● Project Proposal ● Github Link ● Rough Design of Figma UI/UX
Phase 2	2/21 - 2/27 (1 Week)	Backend API and Database specifications, Finalize Figma UI/UX designs			● Architecture Diagram ● UI design ● Project Specifications
Phase 3	2/28 - 3/20 (3 Weeks)	Development and initial implementation, Unit testing, Offline logic implementation			Functional Alpha (MVP) ● UI with complete navigation ● Working itinerary builder, recommendations and language guide ● Map integration ● Offline city packs
Phase 4	3/21 - 4/03 (2 Weeks)	Finetuning LLM, Implementing social connect, Syncing logic, Integrating reviews, Group trip planning, More testing, Implement push notifications			Beta Version ● Travel LLM ● Connect with other travelers ● Background sync with backend ● Bug fixes from previous version
Phase 5	4/04 - 4/17 (2 Weeks)	Query optimization, Cashing queries/responses, Cloudflare CDN, Error handling			● Bug fixes ● Performance metrics ● Polished UX

Phase 6	4/18 - 4/24 (1 Week)	User Acceptance testing, Non-functional requirements testing	QA Test Report
Phase 7	4/25 - 5/01 (1 Week)	Final testing, deployment, and presentation	Final Demo & GitHub Handover.

Team Leader Rotation

Duration	Team Leader
02/09 - 02/28	Darius Rafeh
03/01 - 03/22	Varun Mange
03/23 - 04/12	Allen Paul
04/13 - 05/01	Kapil Yadav

Project Team

Role	Team Member	Responsibilities
UI/UX	Darius	Figma designs
Frontend Developer	Varun, Darius	UI development
Backend Developer	Allen, Kapil	API & Database
ML Engineer	Varun	AI/ML models
QA Tester	Allen	Testing & validation

Links

- **GitHub Repository**: https://github.com/heavydriver/travel-companion
- **Agile Board (GitHub Project)**: https://github.com/users/heavydriver/projects/2
- **Design Document**: https://stitch.withgoogle.com/projects/619461338009262390