

HD Task 4.0 – Proposal

LocalLens App

Introduction

LocalLens is a travel companion app that helps users explore the world through their camera lens. By pointing their phone at landmarks, street signs, or menus, travelers receive real-time, offline information about what they see. The app's unique value lies in its ability to function without internet, using LLaMA 2 to generate culturally rich and localized insights instantly—bridging the gap between discovery and understanding.

Objective

The goal of LocalLens is to make travel more immersive, educational, and accessible—especially in areas with limited internet access. It provides meaningful, real-time information about locations, objects, or texts using LLaMA 2's language capabilities, enabling private, offline exploration anywhere in the world.

Proposed Solution

LocalLens is designed for travelers who seek a deeper connection with the places they visit. The app uses the device camera to scan physical surroundings—monuments, signs, menus, or products—and delivers contextual, informative responses in natural language. Unlike cloud-based services, LocalLens works offline by running a compressed version of LLaMA 2 locally.

The core functionality includes:

- **Monument and Landmark Insights:** Pointing the camera at a historical structure triggers a locally generated narrative describing its background, architectural style, and cultural relevance.
- **Real-time Translation & Etiquette Tips:** Scanning signs or labels activates on-device translation along with etiquette or local knowledge, such as greeting customs or tipping norms.
- **Food & Menu Descriptions:** For unfamiliar dishes, the app generates brief overviews and possible dietary notes.

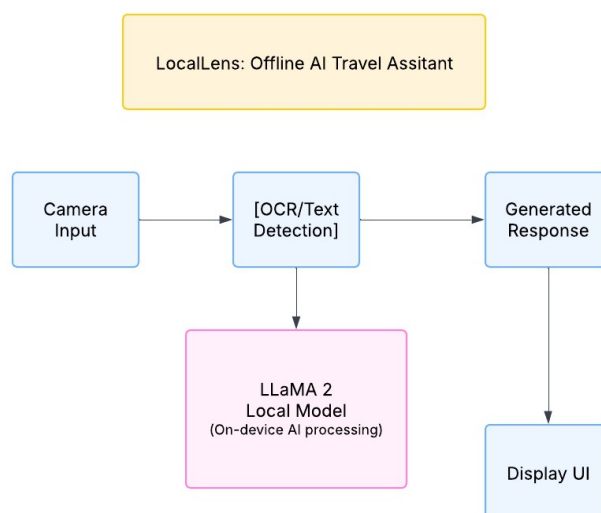
Users interact with the app by tapping on the scanned object or selecting specific content areas for more detail. LLaMA 2's long-context processing enables detailed, culturally aware outputs based on lightweight queries, even without cloud access.

Integration of LLaMA 2 is achieved via quantized models or picoLLM, allowing the 7B model to run efficiently on Android devices with 4–6GB RAM. Benefits include faster response times, data privacy, and uninterrupted use during travel.

The app combines local AI processing with a lightweight UI, offering a smooth, interactive travel experience without dependency on roaming or Wi-Fi.

Technology Stack & Architecture Diagram

- Frontend: Android Studio (Java)
- Backend (On-Device): Quantized LLaMA 2 model via picoLLM or GGUF
- Camera & Image Input: Android CameraX API
- Text Extraction: OCR with ML Kit
- AI Processing: LLaMA 2 Java wrapper or bridge (e.g., llama-cpp)
- Optional Cloud Sync: Firebase (only for storing scan history)



Development Methodology

An Agile methodology will guide development. This approach allows for iterative design and testing, especially since LLaMA 2 integration and on-device AI performance will require continuous tuning. Weekly sprints will prioritize user interface design, model

performance, and offline testing. Agile's flexibility is ideal for a project involving AI feedback loops and dynamic user interactions across different languages and cultural contexts.

Conclusion

LocalLens offers a meaningful and practical application of LLaMA 2 in travel, turning a smartphone into an offline tour guide. By combining real-world exploration with intelligent language generation, the app empowers travelers to learn and connect with cultures in a private, engaging way.