Design Specification

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1 Overview

EagleNav is a cross platform mobile application that provides accessible campus navigation. The system consists of a Flutter mobile frontend, a backend API, and read only integration with university accessibility and building data.

2 UI/UX Pages and Components

- **Landing Page** – Start navigation, saved routes, settings.
- **Login/SSO Page (Optional)** – Imports schedule data.
- **Map Page** – Interactive map, accessibility overlay.
- **Route Selection Page** – Start/end selection and route options.
- **Turn-by-Turn Navigation** – Visual, audio, and haptic guidance.
- **Alerts Page** – Displays campus accessibility notifications.
- **Saved Routes Page** – Locally stored user shortcuts.
- **Settings Page** – Accessibility preferences and app controls.

3 System Components

- **Mobile Frontend (Flutter)** – UI, map rendering, local storage.
- **Backend API** – Routing, alerts, building data endpoints.
- **University Data Services** – Accessibility + building metadata.

4 Dependencies and Libraries

4.1 Frontend (Flutter)

- `flutter_map` or `google_maps_flutter`
- `http`
- `provider`
- `shared_preferences`
- `geolocator`
- `flutter_tts`

4.2 Backend

Python:

- `fastapi`, `uvicorn`, `requests`

Or Node:

- `express`, `axios`, `cors`

4.3 System Requirements

- Flutter SDK

- Android SDK

- Python 3.10 or Node.js 18+

- Git

5 Docker Container Requirements

- Base image: `python:3.10` or `node:18`

- Install Flutter SDK + Android command line tools

- Install backend libraries (FastAPI or Express)

- System tools: `curl`, `git`, `openjdk-11-jdk`

- Environment variables:

  - `API_KEY`
  - `UNIVERSITY_DATA_ENDPOINT`

6 Conclusion

This design spec outlines the essential UI pages, major components, dependencies, and Docker requirements needed for EagleNav to run consistently in development or deployment environments.