Appendix C: Installation and User Guide

C.1 Overview

The repository is organized as:

- `frontend/` — Flutter mobile app (primary target: iOS).
- `backend/` — FastAPI server exposing REST endpoints.
- `models/nlu_model/` — NLU training code and a lightweight inference service

C.2 Prerequisites

- **OS for iOS dev:** macOS 13+
- **Xcode:** 18+ (with iOS Simulator); CocoaPods 1.13+ (`sudo gem install cocoapods`)
- **Flutter SDK:** 3.x (Dart 3.x). Verify with `flutter --version`
- **Python:** 3.11 with `pip` (recommend using `virtualenv`)
- **Git**
- **Google Cloud keys:**
    - Maps **SDK for iOS** (for the embedded map in Flutter)
    - **Places API** and **Directions API** keys (used by the backend)
- **OpenAI API keys:**

C.3 API KEYs and Address Modification:

1. Clone Github Repository
2. iOS Maps SDK key: path: ios/Runner/Info.plist, find the <key>GMSApiKey</key> and modify
3. Backend API keys：path: app/config/config.py, find and modify google_maps_api_key, openai_api_key, openai_base_url, openai_model,mongo_db(optinal)
4. Model address: nlu_basic_model_url, mongo_uri

C.4 Backend Setup (FastAPI)

Enter the backend folder and enter the terminal, enter the command：(create your python env first):

pip install -r requirements.txt
python -m uvicorn app.main:app --host 192.168.0.207 --port 8000 --reload

C.5 NLU: Train and Serve（Flask）

For **Train**
Enter the models/nlu_model folder and enter the terminal:
pip install -r requirements.txt
python train.py

For **Deployment**
Enter the models/nlu_model folder and enter the terminal:
python app.py --host 0.0.0.0 --port 4000

C.5 Frontend App

Enter the Frontend folder and enter the terminal:
flutter pub get
flutter run

If running on a physical device:

1. Open `ios/Runner.xcworkspace` in Xcode.
2. Set a unique **Bundle Identifier** and your **Apple Team** (signing).
3. Build & run on your device.

C.6 Run Order (Dev)

1. **Start NLU** service (`models/nlu_model/app.py` on port 9000).
2. **Start Backend** (`uvicorn` on port 8000), with `NLU_BASE_URL` pointing to #1.
3. **Run Frontend** (`flutter run`) with `backendBaseUrl` pointing to #2.