COMP3900: Computer Science Project

System and Software for Smart Vehicle Parking Management Project Report

INSTALLATION MANUAL

Submitted by T16A-Cherry (AutoSpot) on 14 August 2025

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1. Running the Backend:

Using Docker Compose

1. Install **Docker** and **Docker Compose**.
   a. Download from: https://docker.com/products/docker-desktop
2. From the backend project root, start all services (backend + MongoDB):
   docker-compose up --build
3. The backend will run at
- API base: http://localhost:8000
- API documentation: http://localhost:8000/docs
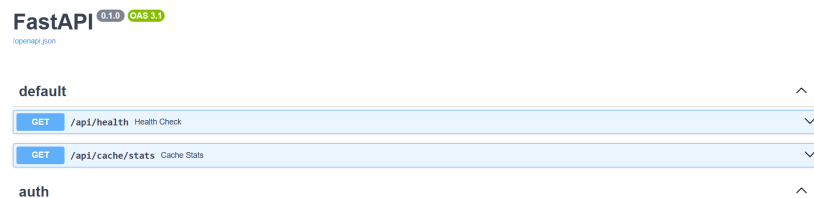
Running Locally with Python

1. Install dependencies
   pip install -r requirements.txt
2. Create a *.env* file in the backend directory with the following content:
   MONGODB_URL=mongodb://localhost:27017
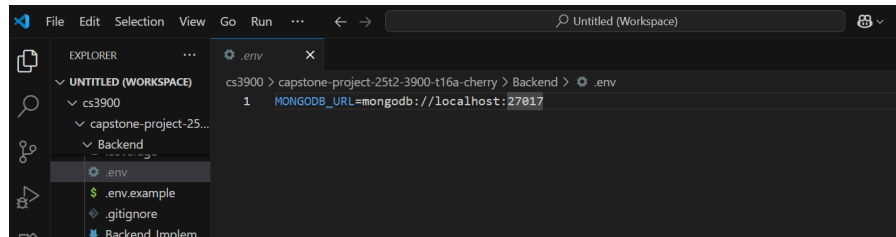
3. Start the server using the following command in terminal:
   uvicorn app.main:app --reload --port 8000
4. Access the API documentation at http://localhost:8000/docs
5. Load Sample Data (if needed):
   python -m app.examples.local_mongodb_storage

2. Running the Database:

Downloading MongoDB Compass:

- (for better visualisation of how data is stored)
- Download MongoDB Compass here:
  https://www.mongodb.com/products/tools/compass
- Add a new connection
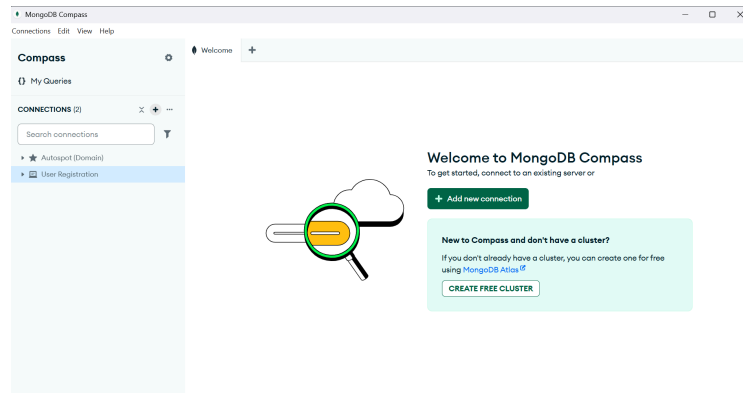
- Fill in the following for the local database and then click 'Save & Connect'

- Data can be viewed through Autospot (Local) -> parking_app
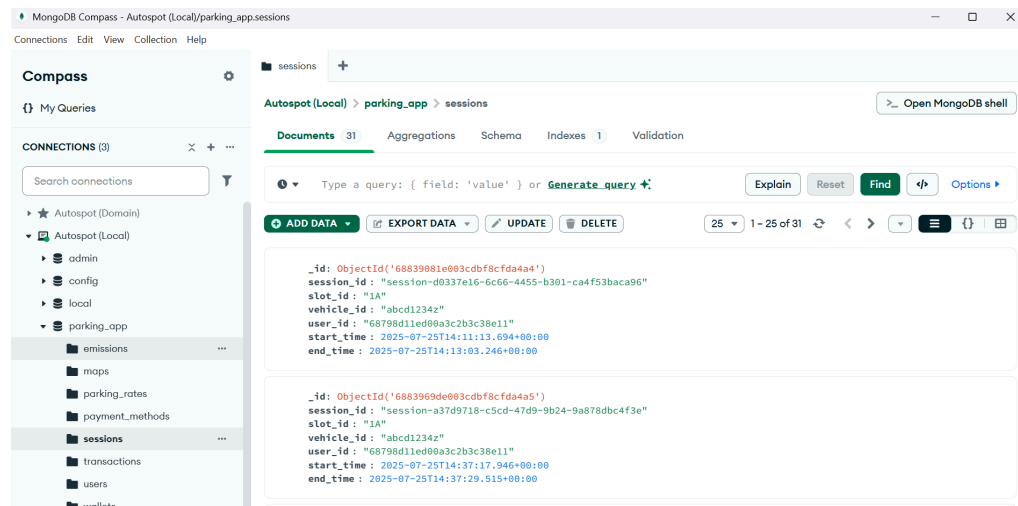
- Press 'Find' or the refresh button to get the latest updates saved to the database.

3 . **Running the Frontend:**

Setting up the Emulator (Android Studio):
1. Install Android Studio https://developer.android.com/studio

2. Open Android Studio -> Tools -> SDK Manager:
- Install the latest Android SDK
- Install Android SDK Build-Tools and Android Emulator
3. Go to Device Manager -> Add a new device -> Create Virtual Device
- Select 'Medium Phone' (Medium Phone API 36.0)
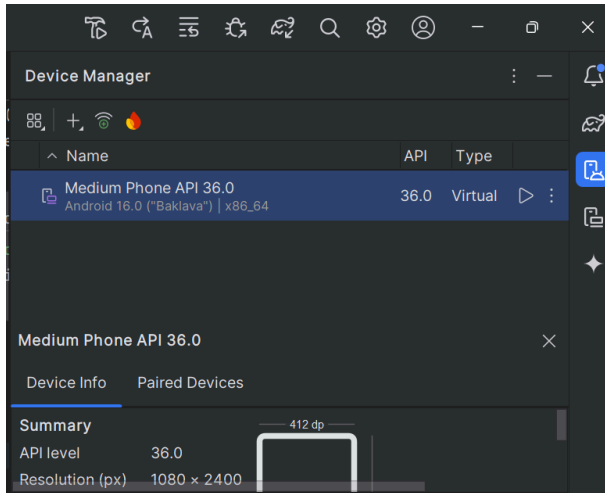
Installing Flutter:
1. Download Flutter from https://docs.flutter.dev/get-started/install and add it to your system PATH
2. Verify the installation by running:
   flutter doctor
3. In Android Studio -> File -> Settings -> Plugins:
   - Install Flutter and Dart plugins
   - Restart Android Studio
4. Open a terminal and navigate to:
   cd Frontend/autospot
5. Install dependencies and run the app:
   flutter pub get
   flutter run

4 . Accessing the Domain sites:

A. FastAPI documentation
- https://api.autospot.it.com/docs
B. Frontend interface
- https://autospot.it.com/

5．Sample Map(example map) and QR code (Entrance):

A. Stores Example map in MongoDB:
  - python -m Backend.app.examples.local_mongodb_storage

B. Example entrance QR code: