

Project Assignment – ENA-LS (WS 2025/2026)

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Title: Safe & Cool Routes Brno

Goal:

Location-based service for Brno helping citizens (esp. children and parents) plan safer and cooler walking/cycling routes to schools and daily destinations. It addresses **pedestrian safety** (speeding, poor lighting) and **urban heat stress** (lack of shade).

Functions:

Web/mobile app with **SafetyScore** and **HeatComfortScore**, offering **Safer**, **Cooler**, and **Shortest** route options. Users can report hazards (missing crossings, dark spots) to improve municipal data.

Datasets

A) City portal (data.brno.cz)

1. Pedestrian crossings (Prechody pro chodce)
2. Sidewalk inventory (Pasport BKOM)
3. Street lighting poles (Stozary verejneho osvetleni)
4. Noise level map 2022 (Uroven hluku 2022, MZ CR setreni)
5. Urban greenery (trees/shrubs) (Pasport zelene)

B) External sources

1. CHMU – Air quality (PM2.5, NO2)
2. CSU – Census 2021 (vulnerability index)
3. OpenStreetMap – street/footpath network

C) Team datasets

1. HazardObservations_Brno (40) – unsafe spots
2. SchoolEntrances_Brno (30) – school access points
3. CoolSpots_Brno (25) – fountains, shade, refuges

Methodology:

Datasets normalized into **SafetyScore** and **HeatComfortScore**. Routing minimizes $risk_cost = 100 - SafetyScore$ and applies *heat-aware weighting*.

Impact:

Safer school commutes, less heat exposure, improved walkability and citizen participation.