

Motivation

- Pedestrian modeling is a tool for designing and optimizing infrastructures.
- In particular, walking in transportation hubs such as railway stations and airports is the key for an efficient multimodal transport systems.
- Data collections are needed in estimating the demand for these infrastructures.

Data input

Capacity

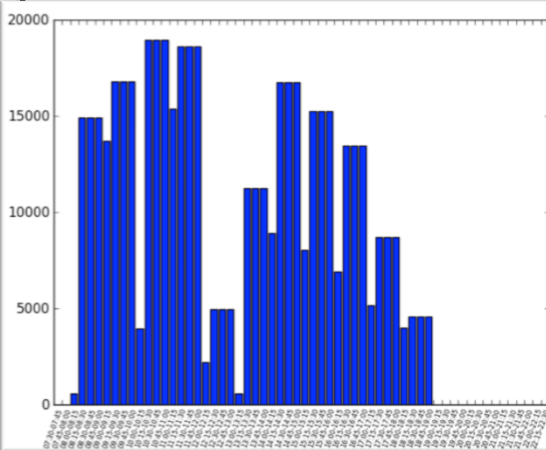
Schedules are common in pedestrian facilities (trains, concerts, classes, opening hours).

WiFi data

Triangulation from access points proposes full coverage and is cheap, but offers low precision.

Pedestrian map

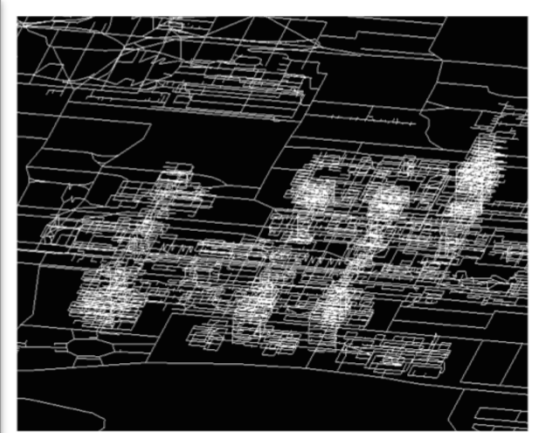
A pedestrian graph allows for computing shortest path and defining pedestrian destinations.



Cumulative number of students having classes per quarter of an hour on EPFL campus.



Density of WiFi access point on campus. We used a tool by Cisco for localization.



3D pedestrian graph of EPFL campus. In the foreground, GC, GR and CM buildings. In the background, the RLC.

Prior

Measurement equation

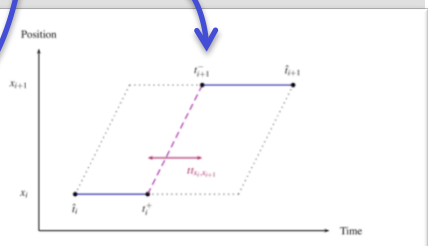
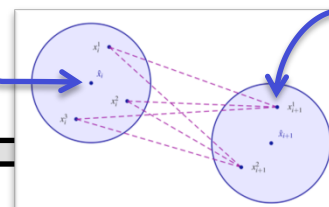
Possible destinations

Activity time

Activity probability

$$P(\text{dest.}|\text{signals}) = \frac{P(\text{dest.}) \cdot P(\text{signals}|\text{dest.})}{\sum P(\text{dest.}) \cdot P(\text{signals}|\text{dest.})}$$

Candidate generation



Results

Time	Destinations	Type	Walking dist. to truth (m)
8:33-10:38	CE1105	Classroom	0
10:40-11:51	GCB3444	Office	7
11:54-12:50	Ornithorynque	Restaurant	0
12:54-13:23	GCB3444	Office	7
13:26-13:58	Satellite	Bar	0
14:00-19:45	GCB3444	Office	7
19:47-19:52	Atelier GM	GM vs metro	366

Conclusion

- Prior is necessary.
- These data can further be used in destination choice models in order to understand pedestrian behavior and forecast demand for future scenarios.
- Possible applications: railway stations, airports, music festivals.

Metro station was not properly covered by WiFi