

Modelling, Management, and Processing of Mobility Data in **Urban Polluted Environment** RENAV Hassan Noureddine Director: Christophe Claramunt

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Research problem

- live in indoor and outdoor environments We where many human activities happen.
- ? In the context of **semantic trajectories**, the management of different mixed indoor and outdoor mobility spaces is still not completely addressed.
- To exploit raw trajectories and **detect complex** events defined as Urban Situational indicators (USIs), a contextual and environmental semantic comprehension is required.
- The domain which is addressed by our framework, is one of the pollution phenomenon that arise in both indoor and outdoor environment.
- Spatio-temporal trajectories will be studied under the dimension of pollution environment.

Our approach propose:

- A **hybrid** model to represent mobility in indoor and outdoor spaces.
- **Positioning data** integration with contextual data.
- Trajectories annotation with **USIs**.
- Real-time processing capabilities.
- Spatio-temporal querying and analysis.

Represent human trajectories by a Heart rate contextual and environmental Pollution abstraction in indoor and outdoor Symbolic Trajectory Room 1 Corridor 1 Room 8 spaces. **RAW TRAJECTORY** (INDOOR) RAW TRAJECTORY Barceiste Mighele (OUTDOOR) Le Jardin de Luxembourg MONNAIE Pont Neuf Underground Street Shop Walking Subway Walking Medium High Medium Low

Semantic trajectory representation

Supervisor: Cyril Ray

Functional approach



- Different sources of data are streamed to represent human trajectories.
- Complex events are detected at the first level of semantics.
- Semantic aggregation is then performed to derive and identify some specific situation of interests.



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Prototype principle

Our goals

Provide an integrated representation of indoor-outdoor spaces.

Design a model oriented to contextualised human based trajectories.

Apply the framework to an urban polluted environment constitutes a proof-of-concept.

Provide to experts and decision makers useroriented capabilities for querying and analysis of an urban environment.

