Spatial DB Project

My Big Fat Greek Truckjectories

Team:  Nicolas Lehmann (4093195)

04.02.2016

Instructors:

Prof. Dr. Agnès Voisard, Daniel Kreßner

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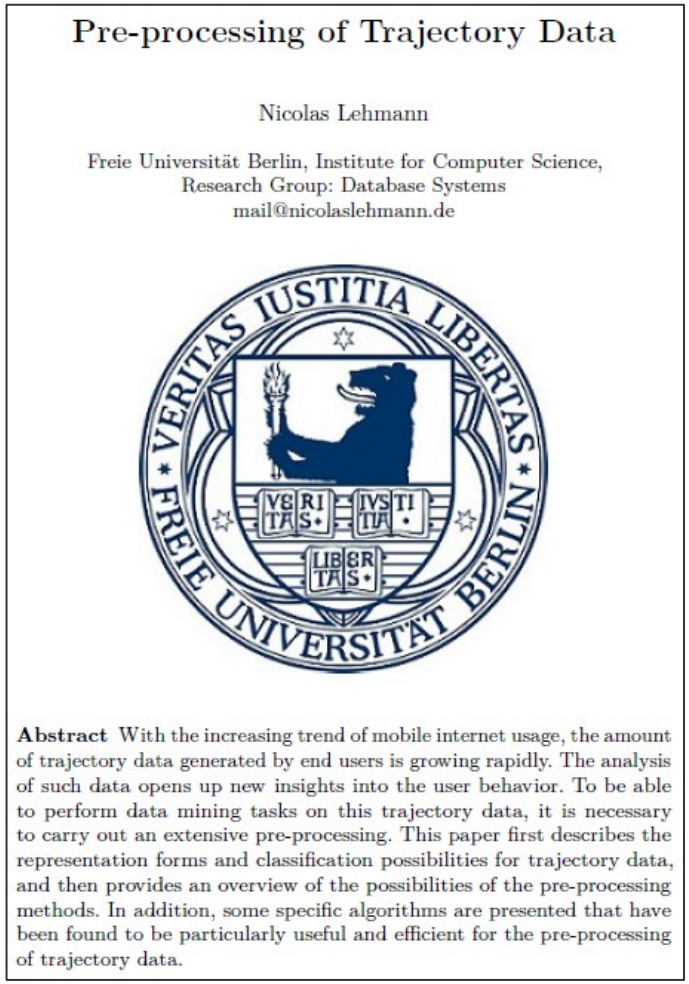
1 My Big Fat Greek Truckjectories?



Pre-processing of Trajectory Data

Nicolas Lehmann

Freie Universität Berlin, Institute for Computer Science,
Research Group: Database Systems
mail@nicolaslehmann.de

Abstract With the increasing trend of mobile internet usage, the amount of trajectory data generated by end users is growing rapidly. The analysis of such data opens up new insights into the user behavior. To be able to perform data mining tasks on this trajectory data, it is necessary to carry out an extensive pre-processing. This paper first describes the representation forms and classification possibilities for trajectory data, and then provides an overview of the possibilities of the pre-processing methods. In addition, some specific algorithms are presented that have been found to be particularly useful and efficient for the pre-processing of trajectory data.

1.1 Implementation of the used algorithms in my paper *„Pre-processing of Trajectory Data“*

1.2 Greece, Trajectories, Trucks = The Greek Trucks Dataset

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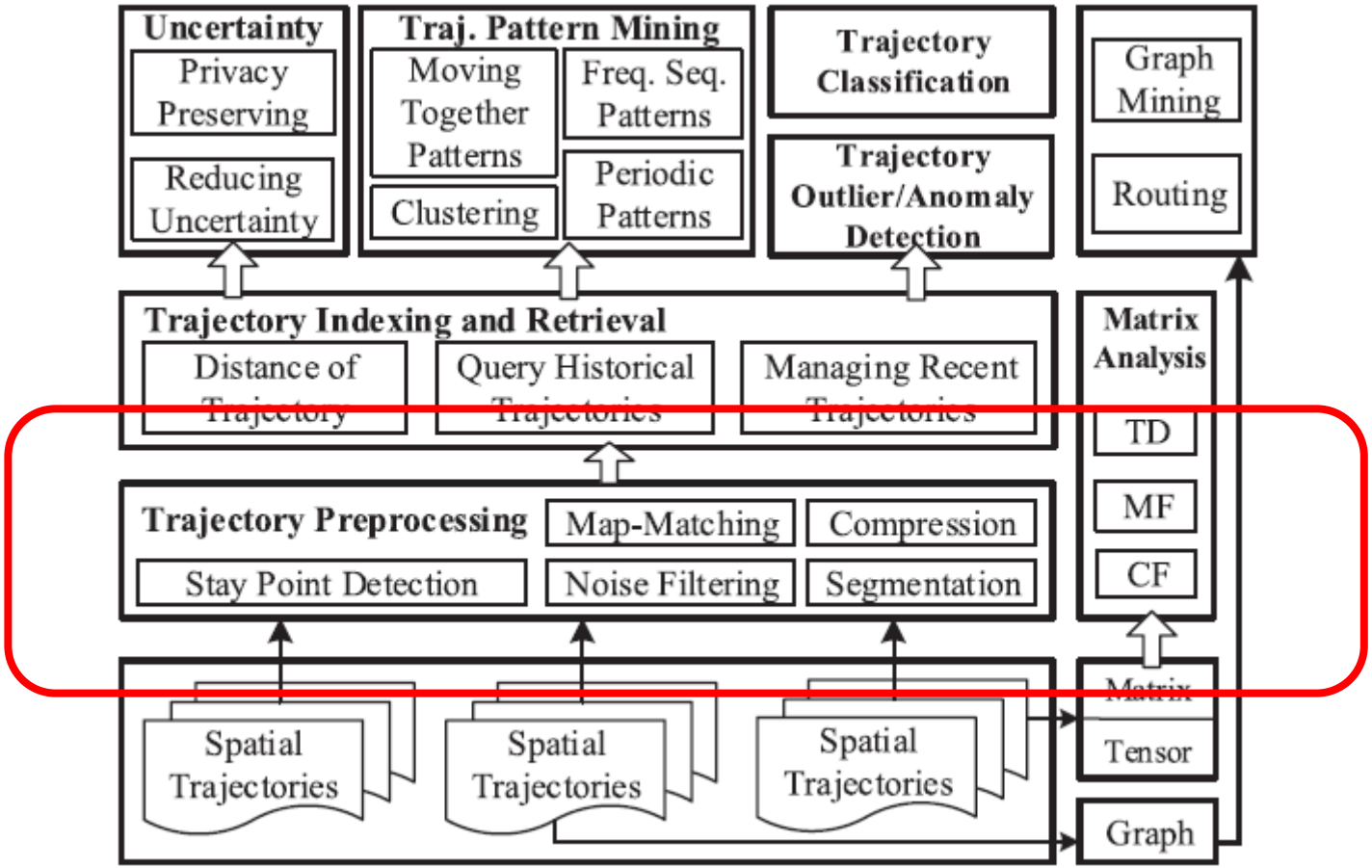
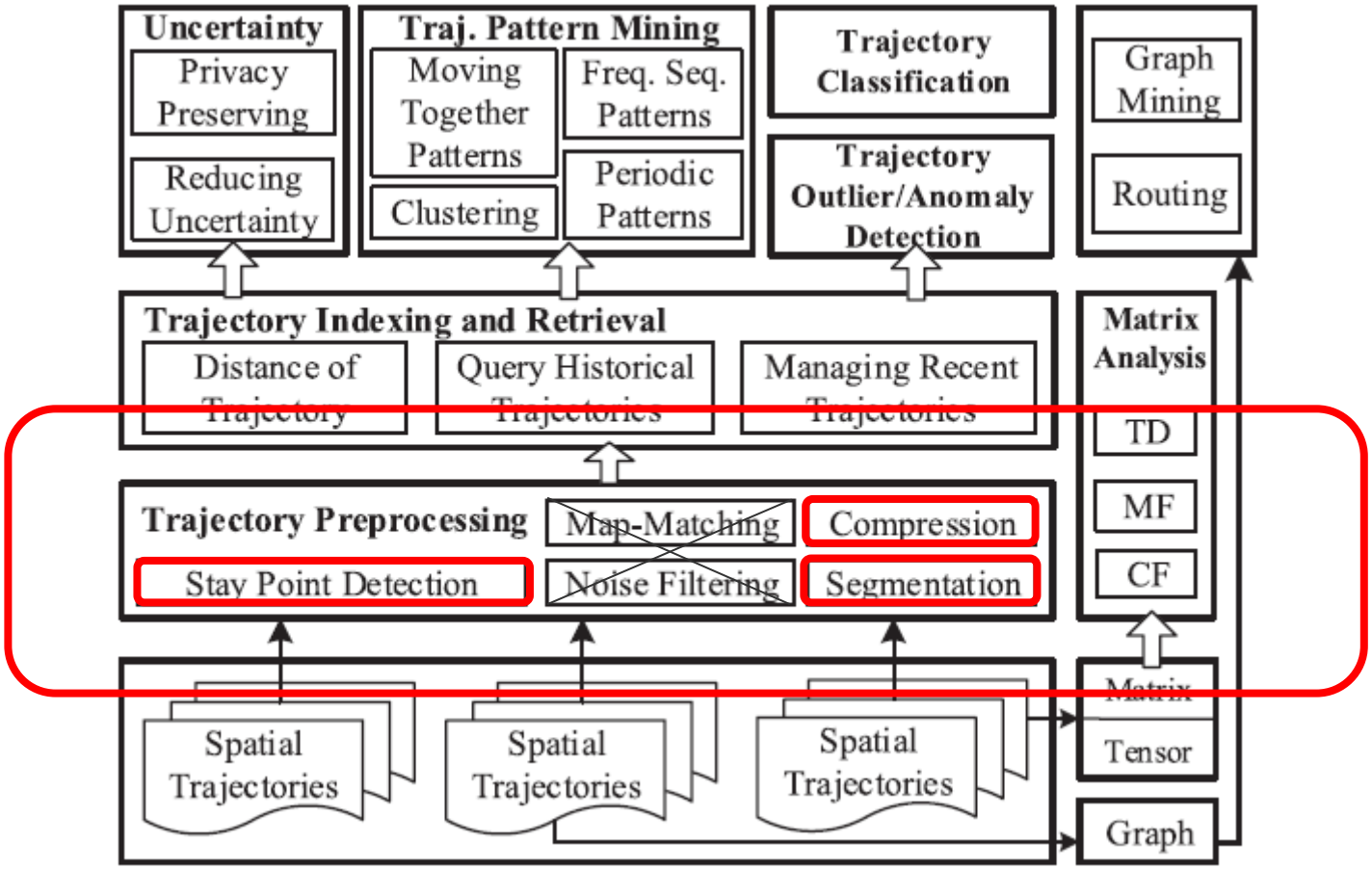
2 Trajectory Data Mining – Pre-processing



2 Trajectory Data Mining – Pre-processing



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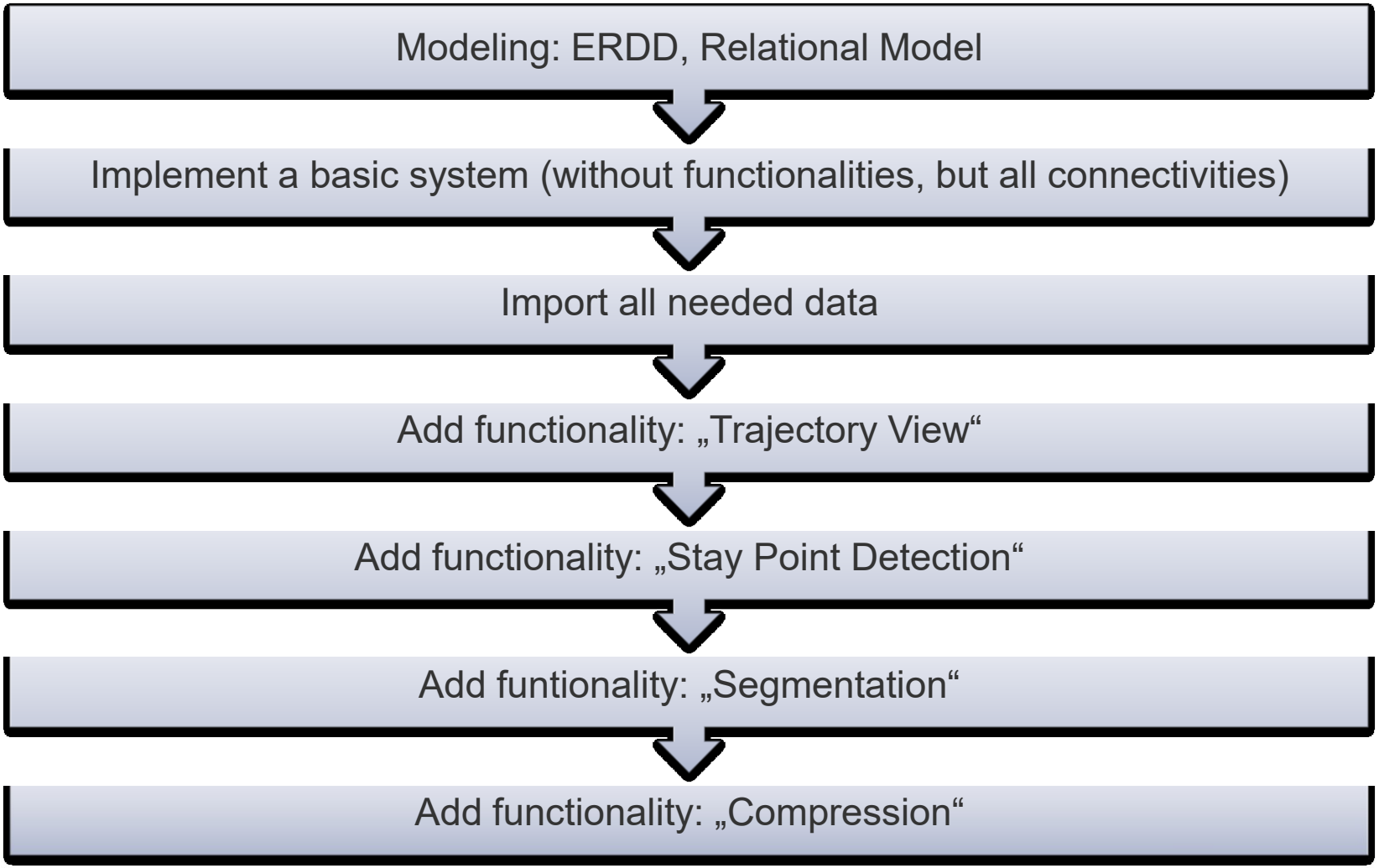
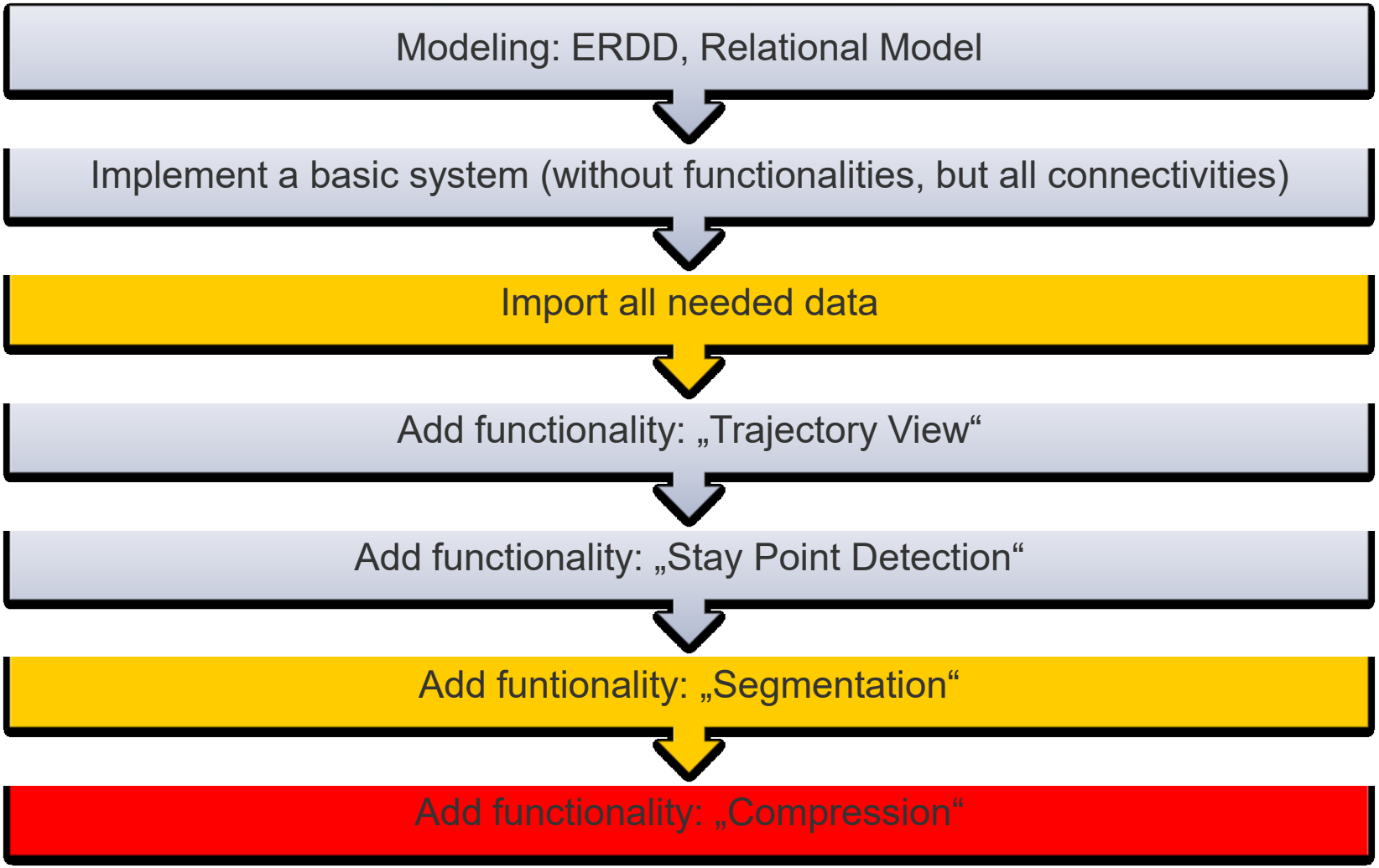
3.1 Project Design: Planing



3.2 Project Design: Problems



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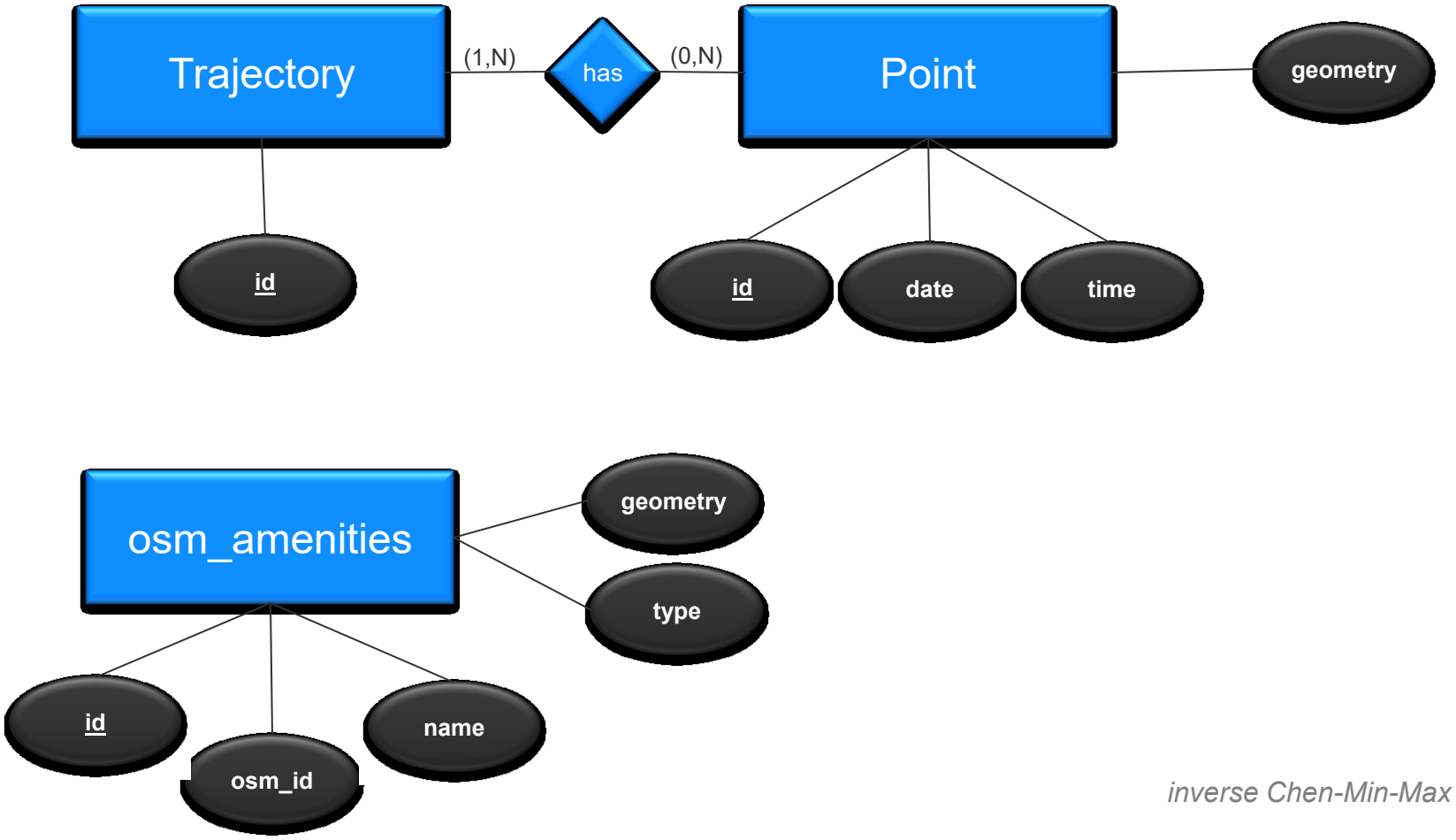
4.1 Modeling: ERDD



inverse Chen-Min-Max notation

4.2 Modeling: Relational Model

Point(id:*integer*, date:*date*, time:*time*,
geometry:*POINT(SRID4269)*)**;**

Trajectory(id:*integer*)**;**

hasTP(tid*:*integer*, pid*:*integer*)**;**

osm_amenities(id:*serial*, osm_id:bigint,
name:*varchar*, type:*varchar*,
geometry:*POINT(SRID3857)*)**;**

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5 Technologies

5.1 PostgreSQL 9.4.x with PostGIS 2.x

5.2 Apache Webserver („httpd“)

5.3 PHP 5.x with PostgreSQL extension

5.4 Twitter-Bootstrap 3.x (JQuery)

5.5 Javascript (Leaflet)

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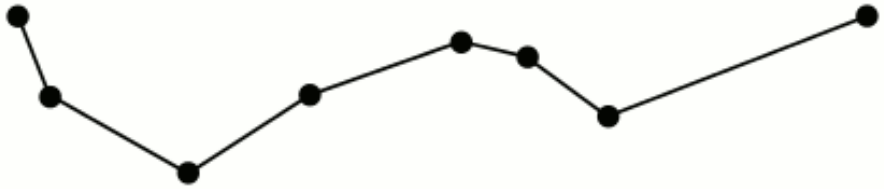
6.1 Project Status

DONE	IN PROGRESS
Trajectory View ✓	Compression *(Douglas-Peucker algorithm)* ✗
Segmentation *(Time-interval based)* ✓	
Stay Point Detection ✓	

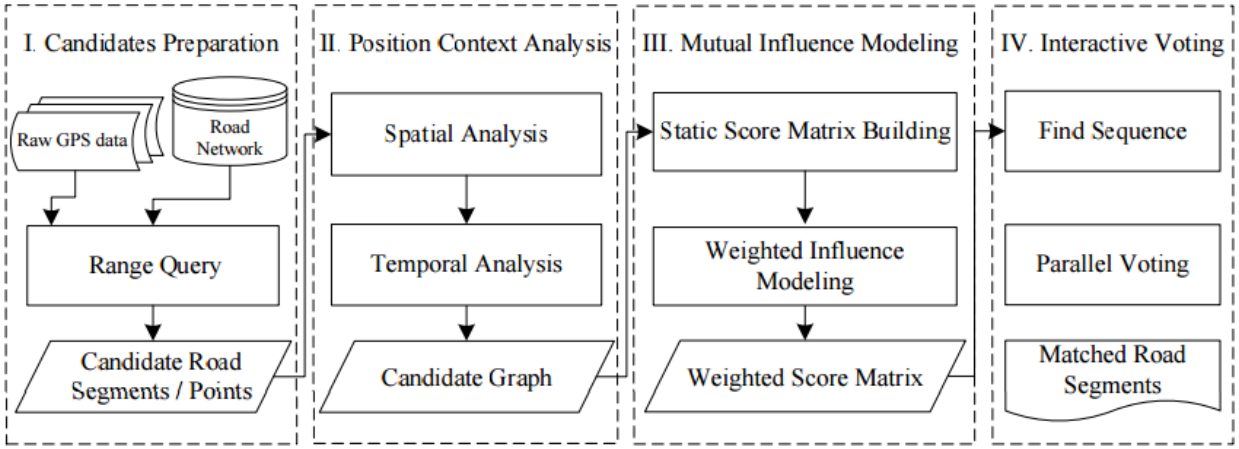
6.1.1 Douglas-Peucker algorithm could also be used for segmentation.

6.2 Further Steps

6.2.1 Compression with Douglas-Peucker algorithm



6.2.2 Map-Matching with IVMM algorithm



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7 Live Demo: „Truckjectory Tool“

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8 References

8.1 Nicolas Lehmann,

„Pre-Processing of Trajectory Data“,

Freie Universität Berlin, January 2016

(Seminar paper: Data Visualization and Data Mining)

8.2 The Greek Dataset

(http://chorochronos.datastories.org/?q=node/5)

All links last followed on 04.02.2016, 12 pm.

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That‘s it!

Any questions so far?