AUTOMATION OF PROCESSING GNSS TRACK RECORDS FOR DESIGNING INTENSITY MAPS
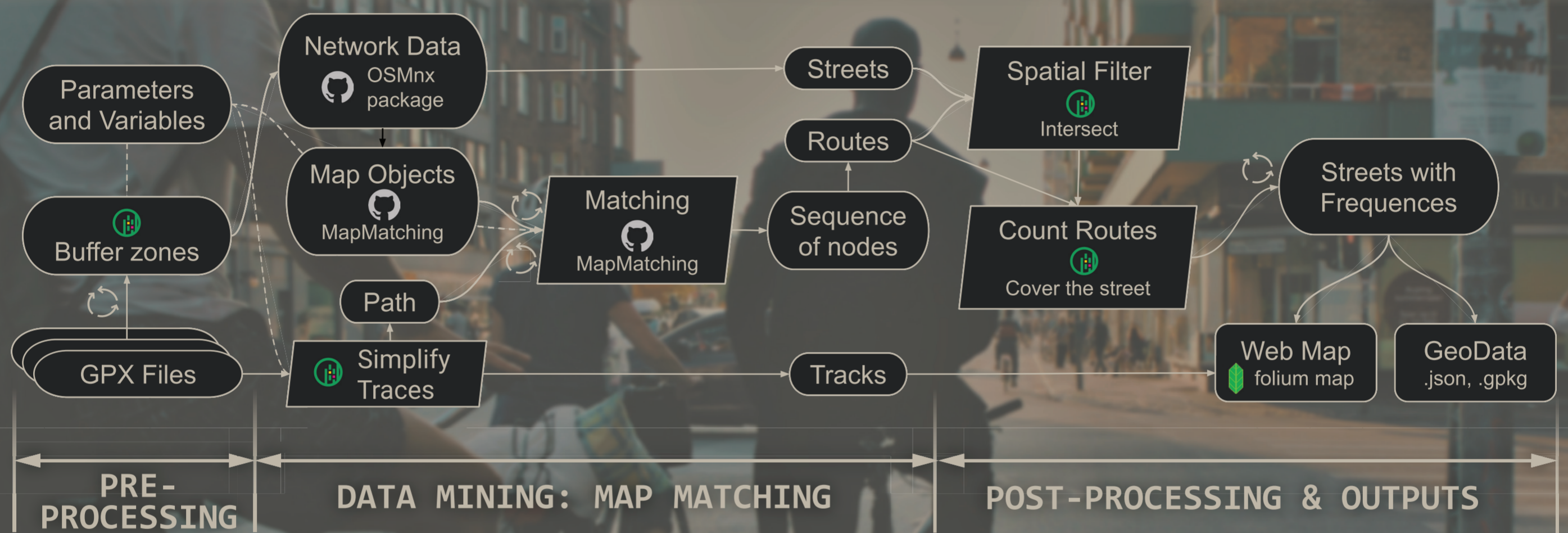
Diploma Thesis

Objectives

(1) Automation of spatial analyses of GNSS trajectory data on street network.

(2) Implementation of possible appropriate quantitative geovisualization.

(3) Assessment of results (1) and (2) and possibilities for further use.

Methodology

(1) Tool development: design data processing, debugging.

(2) Tool testing and assessment in three case studies.

(3) Distribution of the tool for different user groups.

Parameters and Variables

Network Data — OSMnx package

Buffer zones

Map Objects — MapMatching

Matching — MapMatching

Streets

Routes

Sequence of nodes

Spatial Filter — Intersect

Count Routes — Cover the street

Streets with Frequences

Path

GPX Files

Simplify Traces

Tracks

Web Map — folium map

GeoData — .json, .gpkg

PRE-PROCESSING **DATA MINING: MAP MATCHING** **POST-PROCESSING & OUTPUTS**


TESTING AND ASSESSMENT

Optimal parameterisation tested in three different environments.

Generally, the correctness rate for the map matching in the case study areas is above 90 %.

CASE STUDY OLOMOUC — GPX2INTENSITY — COPERNICUS MASTER IN DIGITAL EARTH — With the support of the Erasmus+ Programme of the European Union

165,2 km / 107,2 km

199,3 km / 132,9 km

91,8 km

DOCUMENTATION AND DISTRIBUTION

GPX2INTENSITY

Tool *gpx2intensity* is distributed in Jupyter Notebook and in the web applictaion via Voilà. Appropriate information for users is provided.

jupyter + voilà
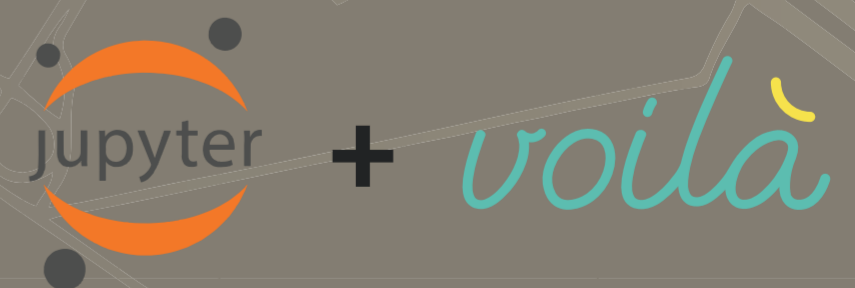
The poster is Attachment 8 to Diploma Thesis.

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Illustrative picture of urban mobility by Unsplash.

The QR code links to GitHub repository that serves as a portal to Attachments of the Diploma thesis.

Palacký University Olomouc

PARIS LODRON UNIVERSITÄT SALZBURG

COPERNICUS MASTER IN DIGITAL EARTH

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