Semi-automatic Analysis Of Historical Maps

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Sponsorship

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Project

SoDUCo: **So**cial **D**ynamics in **U**rban **Co**ntext
Ultimate Goal: To better understand urban dynamics (eg. Paris from 1789-1950)
Urban dynamics: Evolution of cities

Importance of historical map

- There are many historical maps that can be used for different purposes.
- The rich information in old maps can be analysed for better understand the evolution of territory.
- For the future regional city planning.

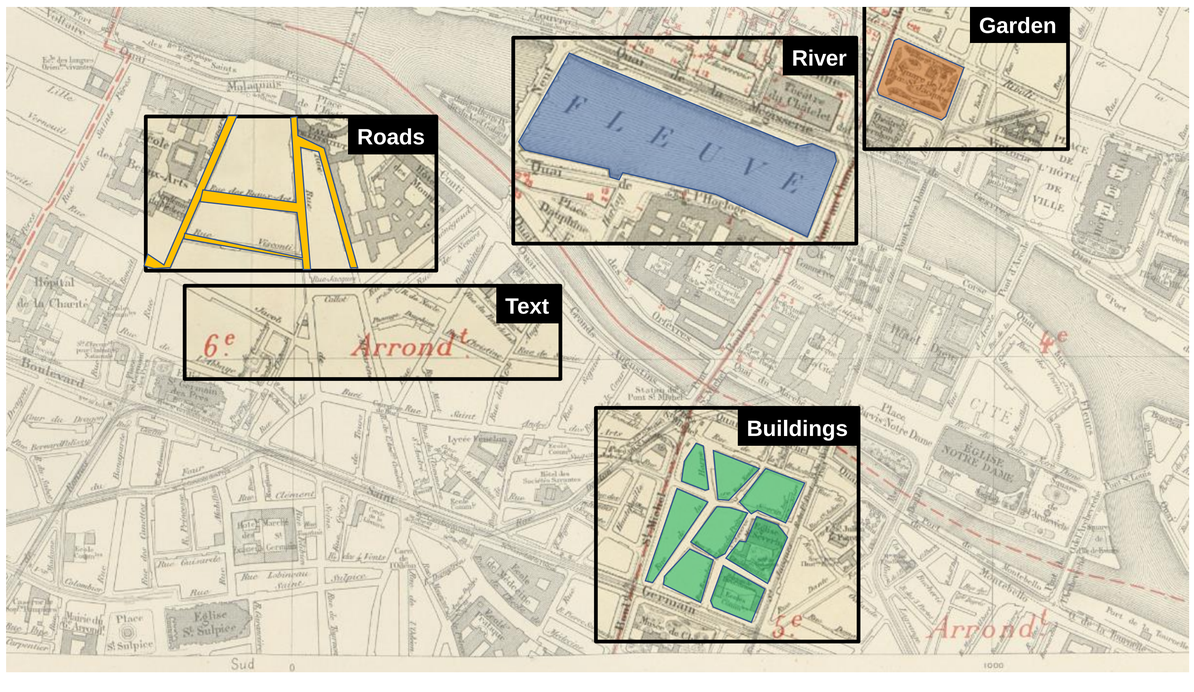
Goals

This research is separated into three sub-task.

1. Vectorized objects in the historical maps: Change raster maps into vectorized maps which can be scaled
2. Geo-reference process: Assign each pixel in the maps with geographical coordinates
3. expected output & historical use: Geo package format which can import to QGIS and be used by historian

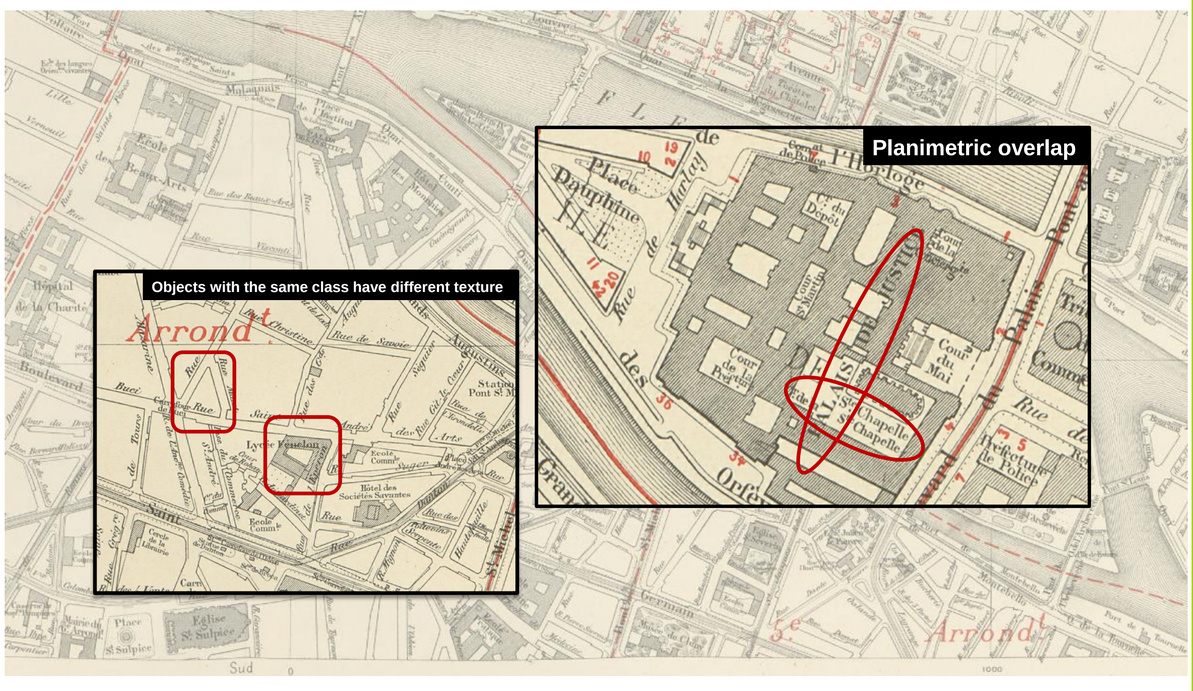
Informations / features in historical maps[1]

- Lines
  - Roads
  - Elevation contour
- Text
  - Marks
  - Regions
- Land cover
  - Buildings
  - punctual objects like churches, mill

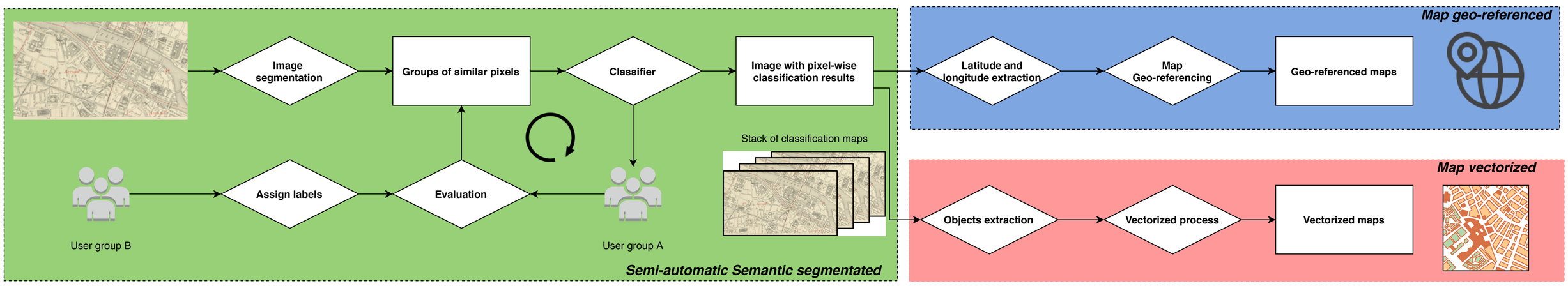


Issues & Challenges

1. The primary method for extracting information in historical maps still highly rely on the manual process.
2. Most of the maps do not have ground truth.
3. Texture information for identifying classes in maps is sometime ambiguous. (Objects with the same class have a different texture)
4. The texture of some maps is difficult to analyze.
5. There are existing many planimetric overlapped in maps.
6. The generalizability of existing systems is not robust for different map resources.
7. The evaluation might takes as much time as comparing with extracting content manually.



Methodology



Bibliography

[1] P-A Herrault, David Sheeren, Mathieu Fauvel, and Martin Paegelow. Automatic extraction of forests from historical maps based on unsupervised classification in the cielab color space. In *Geographic information science at the heart of Europe*, pages 95–112. Springer, 2013.