

Bachelor and Master Theses in Geoinformation Algorithms for Automated Cartography

Due to the progressive use of digital media, the focus in modern cartography is increasingly shifting from analog maps to digital maps. The ubiquitous availability of digital maps requires the automation of cartographic processes and thus the development of new and innovative algorithms. In particular, maps on devices with small screens (e.g. smartphones and smartwatches) pose new challenges for the visualization of and with spatial data. A typical problem here is to represent map content as complete as possible, while at the same time ensuring that the information remains legible. For this purpose, new algorithms are developed and evaluated in the context of a bachelor or master thesis in the Geoinformation group.

Typical Content and Tasks

A bachelor or master thesis in the field of **Algorithms for Automated Cartography** generally includes the following contents.

- literature review on existing, relevant research
- development of a model including all relevant criteria of the task (e.g. map legibility, information preservation, temporal consistency)
- development and implementation of particular algorithms (e.g. exact algorithms, heuristics etc.)
- selection of data and execution of comprehensive experiments
- detailed evaluation and discussion of results (e.g. comparison between exact and heuristic results)



Figure 1: Two application examples for automation in cartography. Left: Map with labeled POIs on a smartwatch. Right: Generalization of a topographic map.

Contact Persons: Sven Gedicke, Jan-Henrik Haunert