The Usefulness of Map Generalisation in PanScalar Maps

Postdoc position in Geographic Information Science

Context

LostInZoom is starting a research project funded by a Europe Research Council Consolidator grant. It is usual for all of us, in our daily use of multi-scale maps, to feel lost for a few seconds because the map has changed after we zoom in or out. To make smoother zooming interactions, the aim of the project is to change the way we zoom in on maps by using landmarks salient at different scales to anchor the multi-scale representations (see figure below).

This idea is based on the anchor-point theory of spatial cognition (Couclelis, 1987), which states that a person's mental representation of space is composed of fragments at different scales that are tied by landmarks called anchor-points. The project is based on an interdisciplinary approach between geovisualisation, spatial cognition, and human computer interaction.
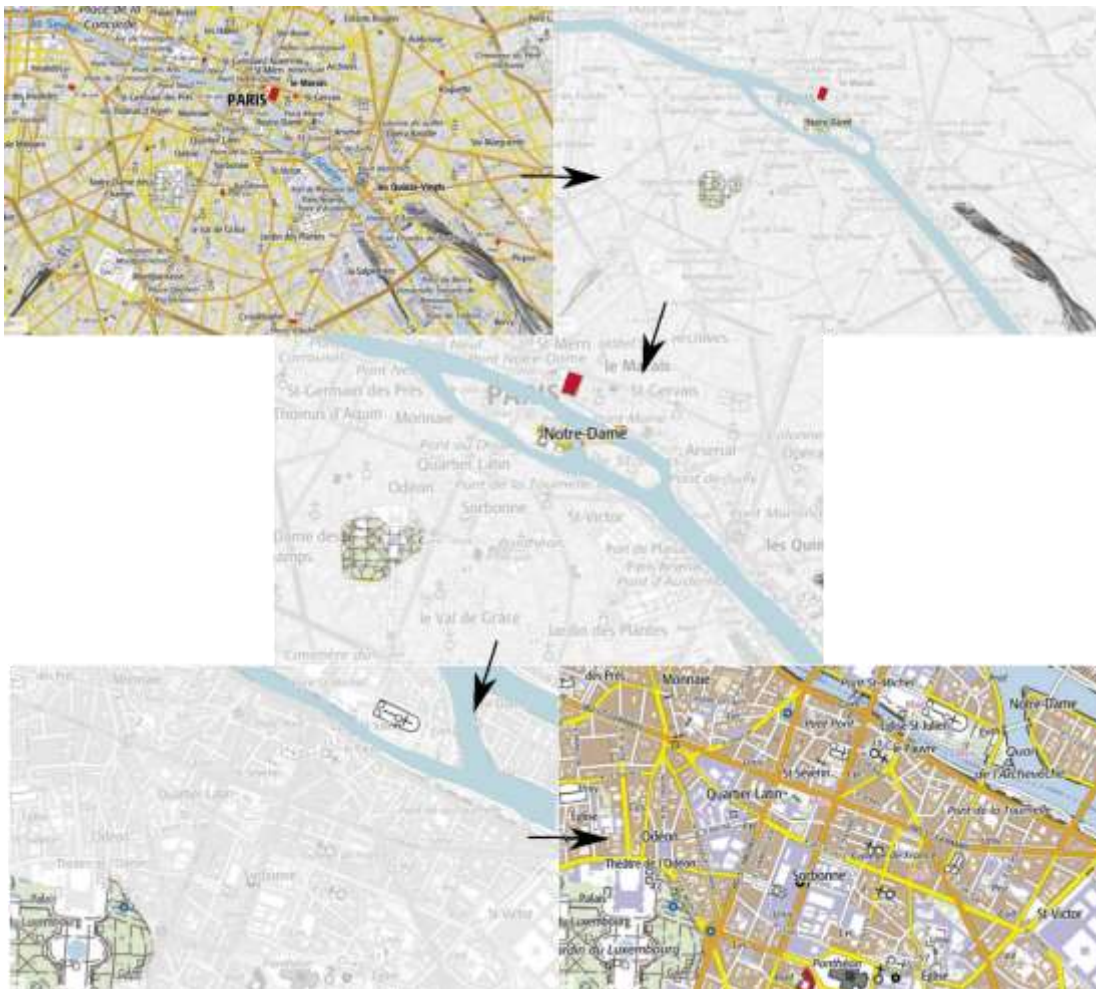
Multi-scale visualisation is a long-time research topic at the LASTIG lab. In particular, LASTIG researchers have investigated the automation of map generalisation, i.e. the process to generate small scale legible maps from more detailed maps at larger scales. LostInZoom will build upon LASTIG's past research to design this novel way of zooming on maps.

Main tasks

The LostInZoom project will use an experimental approach to explore the potential of anchor-based zooming, and the main task of the postdoc will be to conduct psychology based surveys with a wide range of users. These surveys have two goals: (1) better understand the cognition of current multi-scale maps when a user zooms; (2) assess novel map design proposals to improve the smoothness of zooming using multi-scale anchors. In particular, the use of eye-tracker devices should play an important role in these surveys. These surveys will particularly focus on the role played by map generalisation to make zooming smoother or not.

Then, the postdoc candidate will have a central role in the management of the project, assisting the Principal Investigator and the other project team members (PhD students, other postdocs) in their research.

Finally, the postdoc candidate will have a key role in the daily animation and communication of the project, along with the Principal Investigator. It involves the co-organisation of weekly meetings, updating the project website, co-organisation of workshops. Teaching duties are also possible at ENSG if the candidate wishes.

Candidate profile

We are looking for candidate with a PhD in geographical information science, or in cognitive sciences, with a taste for cartography and geovisualisation.

Wage conditions

The postdoc is a **full-time 2 year position**, with a salary depending on the experience of the candidate.

Work place

The postdoc will take place at the LASTIG lab, in the buildings of ENSG, the French school of GI science (6-8 Avenue Blaise Pascal, Champs-sur-Marne, France). Foreign travels to visit collaborators of the LostInZoom project will be possible.

Contact

Guillaume Touya, senior researcher, PI of LostInZoom, LASTIG, IGN, ENSG, Univ Gustave Eiffel. guillaume.touya@ign.fr

To apply, please send to G. Touya the following documents before September 15th, 2022: CV, cover letter, and some references.

Bibliography

Couclelis, H., R. G. Golledge, N. Gale, and W. Tobler. 'Exploring the Anchor-Point Hypothesis of Spatial Cognition'. Journal of Environmental Psychology 7, no. 2 (June 1987): 99–122. https://doi.org/10.1016/s0272-4944(87)80020-8.

Dumont, Marion, Guillaume Touya, and Cécile Duchêne. 'Designing Multi-Scale Maps: Lessons Learned from Existing Practices'. International Journal of Cartography 6, no. 1 (28 January 2020): 121–51. https://doi.org/10.1080/23729333.2020.1717832.

Touya, Guillaume. 'Finding the Oasis in the Desert Fog? Understanding Multi-Scale Map Reading'. Tokyo, Japan, 2019. https://generalisation.icaci.org/downloads/abs2019/Abs2019_paper_5.pdf.