

Designing Anchor-Based Rapid Response Earthquake 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.

In the same time, services for early warning earthquake management, including the delivery of maps of damage buildings and casualties (Guérin-Marthe et al., 2021) are developed at BRGM. A current collaboration between IGN and BRGM proposed to extend these maps as multi-scale maps. The next step, to tackle in this post-doc position, is to enhance the anchors in the multi-scale postseismic rapid response maps, to make them more usable.

Main tasks

Given the needs expressed by firemen in charge of postseismic search and rescue activities, a multi-scale map was designed (see figure below). From this map, the post-doc will have to propose an updated design that encompasses the principles of multi-scale anchors to reduce the disorientation of the map users. Beyond the map design challenge, the main challenge of this research will be the evaluation of the new design, using user surveys and eye-tracking techniques.



Then, the postdoc candidate will have the opportunity to develop projects with the other members of the LostInZoom project (post-doc, PhD students, GI scientists), other than the core topic of the post-doc.

Finally, the postdoc candidate will have a role in the daily animation and communication of the project, along with the Principal Investigator and the other project members. 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 a 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 1.5 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). Visits to Orléans (BRGM) and Montpellier will be frequent.

Contact

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To apply, please send to G. Touya the following documents: 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.
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