

Analyzing Geo-Spatial Trails: Visualizing and Comparing Movement Hypotheses

Martin Becker¹, Philipp Singer² Florian Lemmerich²,
Andreas Hotho^{1,3}, Denis Helic⁴, and Markus Strohmaier^{2,5}

¹ University of Würzburg, Germany

{becker,hotho}@informatik.uni-wuerzburg.de

² GESIS, Cologne, Germany

{philipp.singer,florian.lemmerich,markus.strohmaier}@gesis.org

³ L3S Research Center, Hannover, Germany

{philipp.singer,markus.strohmaier}@gesis.org

⁴ Graz University of Technology, Graz, Austria

dhelic@tugraz.at

⁵ University of Koblenz-Landau, Mainz, Germany

Abstract. Understanding the way people move through urban areas is an important problem that has implications for a range of societal challenges such as city planning, public transportation, or crime analysis. We present a visualization tool called VizTrails for exploring and understanding such human movement [2]. For the explored movement, we utilize the Bayesian approach HypTrails to formulate and compare different hypotheses explaining the underlying processes [1]. VizTrails features aggregated statistics of trails for geographic areas on a map, e.g., the number of users passing through or the locations commonly visited next. Amongst other tools, VizTrails also allows to visualize the results of SPARQL queries in order to relate the observed statistics with its geo-spatial context, e.g., considering a city's points of interest. The insights from exploring the corresponding trajectories and features can be directly applied to modelling hypotheses about how the observed patterns can be explained. Then, the Bayesian approach HypTrails allows to compare the plausibility of such hypotheses with each other.

References

1. Becker, M., Singer, P., Lemmerich, F., Hotho, A., Helic, D., Strohmaier, M.: Photowalking the city: Comparing hypotheses about urban photo trails on flickr, <http://dmir.org/pub/2015/photowalking-socinfo.pdf>, under review
2. Becker, M., Singer, P., Lemmerich, F., Hotho, A., Helic, D., Strohmaier, M.: Viz-trails: An information visualization tool for exploring geographic movement trajectories. In: Proceedings of the 26th ACM Conference on Hypertext & Social Media. pp. 319–320. HT '15, ACM, New York, NY, USA (2015)

Copyright © 2015 by the papers authors. Copying permitted only for private and academic purposes. In: R. Bergmann, S. Görg, G. Müller (Eds.): Proceedings of the LWA 2015 Workshops: KDML, FGWM, IR, and FGDB. Trier, Germany, 7.-9. October 2015, published at <http://ceur-ws.org>