ROYAUME DE BELGIQUE
COMITE NATIONAL
DE GEOGRAPHIE

KONINKRIJK BELGIE
NATIONAAL COMITÉ
VOOR GEOGRAFIE

Contact : Benjamin Wayens, DrSc.
Kontakt : c/o Université libre de Bruxelles,
CP 130/03, avenue F. Roosevelt, 50
1050 Bruxelles – Belgium

Ref : International Cartographic Association (ICA-ACI)

cc. : Prof. Haosheng Huang

The president and
the Secretary General of the
International Cartographic
Association

Brussels, March 2, 2023

Dear President of the International Cartographic Association,
Dear Mr. Tim Trainor,
Dear Secretary-General of the International Cartographic Association,
Dear Dr. Thomas Schulz,

At the meeting of 2023, January 30, the Belgian Committee for Geography, Committee of the Royal Academies of Sciences and Arts of Belgium, unanimously agreed to nominate our colleague Prof. Haosheng Huang as a candidate member of the executive committee (vice-president) for the International Cartographic Association.

We hope that he will receive strong support from the national delegates at the ICA General Assembly in August.

Your sincerely,

Benjamin Wayens, Dr.Sc.
Chair of the Belgian Committee for Geography.

FACULTY OF SCIENCES

DEPARTMENT OF GEOGRAPHY
RESEARCH GROUP CARTOGIS

Prof. dr. Haosheng Huang

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Mr. Tim Trainor
Dr. Thomas Schulz
International Cartographic Association (ICA)

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Dear President of the International Cartographic Association,
Dear Tim,
Dear Secretary-General of the International Cartographic Association,
Dear Thomas,

I would like to submit my candidacy to become a member of the Executive Committee of the ICA.

I am currently a Professor in Cartography and GIScience at Ghent University, Belgium. The research of my research group focuses on Location Based Services (LBS), spatial cognition, and GeoAI. I received my PhD degree in Cartography and Geoinformation at TU Wien in 2013, with a focus on mobile cartography and LBS. Dealing with this topic brought me to the ICA. I participated in my first ICC conference in 2011 in Paris. Since then, I have been active in the ICA, and participated in all the ICC conferences.

Since 2015, I serve as the Chair of the newly founded ICA Commission on LBS, which currently has about 170 active members. In this function, I organize 1 or 2 workshops and conferences each year under the umbrella of the ICA. Furthermore, during 2016-2018, I led the initiative to develop a cross-cutting research agenda on LBS and mobile cartography, which identified key research questions and challenges that are essential for LBS in the next 5 or 10 years. The research agenda has been well-received by the Cartography and GIScience discipline, as well as its sister disciplines, such as computer science. All these make the LBS Commission a very active and successful commission within the ICA.

Looking at my research career, I am very proud and grateful that I am part of the ICA family. My involvement in the ICA activities not only significantly benefits my research career, but also brings me lots of good friends and research collaborators. I look forward to contributing back to the ICA, and helping advance our Cartography and GIScience discipline in the era of AI and mobile information society.

Attached to this letter, you can find my CV (one-page version and a longer one). I also attach the letter of nomination by the Belgian Committee for Geography, Committee of the Royal Academies of Sciences and Arts of Belgium. The Belgian Sub-Committee of Cartography and GIS is part of this committee.

I would be happy to serve the ICA and I am willing to devote adequate time to this.

Yours sincerely,

Haosheng Huang

GHENT UNIVERSITY

Haosheng Huang's short CV

Haosheng Huang is a Professor in Cartography and GIScience at the Research Group CartoGIS at Ghent University, Belgium, since February 2020. He was previously a senior lecturer and research group leader at the GIScience Center at the University of Zurich, Switzerland; a researcher and lecturer (Univ. Ass. Dr. techn.), and research assistant (Projektass) at Research Group Cartography, Vienna University of Technology (TU Wien), Austria; and a visiting scholar at the The University of California, Santa Barbara, USA.

Haosheng Huang received his Ph.D. in Cartography and Geoinformation from Vienna University of Technology in 2013 with Distinction/Honours. He holds MSc and BSc degrees in Computer Science from the South China Normal University in 2006 and 2004 respectively.

Haosheng Huang is currently the Chair of the ICA Commission on Location-Based Services (Since 2015). He is an Associate Editor of the Journal of Location Based Services (Taylor & Francis), and serves on the editorial broad of Geo-spatial Information Science (Taylor & Francis), ISPRS International Journal of Geo-Information (IJGI, MDPI), Journal of Geovisualization and Spatial Analysis (Springer), and Remote Sensing (MDPI). He has been guest editor in several international journals, including IJGIS, CEUS, EPB, IJGI, IJC, JLBS and IJDSN. He has organized several international conferences and workshops, and has served as PC members in many international conferences and workshops.

Haosheng Huang's research interests lie in Cartography and GIScience, particularly on LBS, mobile cartography, spatial cognition, urban informatics, and GeoAI. He has (co-)authored more than 70 refereed research papers published in journals and conference proceedings, and has edited 12 books and conference proceedings. He has also been invited as keynote speakers at several conferences, workshops, and universities.

Detailed CV: https://users.ugent.be/~haohuang/Huang_CV.pdf

Website of the research group CartoGIS: http://cartogis.ugent.be/

Curriculum Vitae

Haosheng HUANG, Prof. Dr.
Research Group CartoGIS
Department of Geography, Ghent University, Belgium
haosheng.huang@ugent.be
https://users.ugent.be/~haohuang/

1. Education

Ph.D. (with Distinction/Honours) in Cartography and Geoinformation — 03/2008 – 09/2013
Department of Geodesy and Geoinformation
Vienna University of Technology (TU Wien), Austria
Advisers: Prof. Georg Gartner, Prof. Martin Raubal (ETH Zurich, Switzerland)
Ph.D. Diss.: Learning from Location Histories for Location Recommendations

MSc in Computer Software and Theory, Department of Computer Science — 09/2004 – 06/2006
South China Normal University, China

BSc in Computer Science and Technology, Department of Computer Science — 09/2000 – 07/2004
South China Normal University, China

2. Research Fields

- Geographic Information Science, Cartography
- Location Based Services (LBS), Indoor/Outdoor Navigation Systems
- Spatial Cognition
- Urban Informatics
- GeoAI

3. Academic Experiences

Prof. Dr. in GIScience and Cartography — 02/2020-
Research Group CartoGIS, Department of Geography, **Ghent University**, Belgium

Leader of Research Group "Location Based Services"(since 12.2016), Oberassistent (Senior Researcher/Lecturer) — 07/2016-01/2020
Coordinator, Specialized Master in GIScience Program (01.2018-01.2020)
Geographic Information Science (GIS), Department of Geography, **University of Zurich**

Guest Professor — 03/2017-06/2017
Department of Geodesy and Geoinformation, **Vienna University of Technology**

Adjunct Research Fellow — 10/2016-03/2021
Research Center for Social Informatics, **Kwansei Gakuin University**, Japan

Univ.Ass. Dr. — 03/2014-06/2016
Department of Geodesy and Geoinformation, **Vienna University of Technology**

Research Assistant**,** Research Group Cartography — 08/2010-02/2014

Vienna University of Technology, Austria

Visiting Scholar, Department of Geography 02/2010-07/2010
University of California, Santa Barbara (UCSB), USA

Research Assistant, Research Group Cartography 10/2007-02/2010
Vienna University of Technology, Austria

Doctorate Research Assistant, Guangzhou Institute of Geochemistry 03/2007-09/2007
Chinese Academy of Sciences, China

4. Publications

Journal Articles (: Corresponding author, +: MSc/PhD students supervised)*

1. Zhang, X.+, Liu, X., Chen, K., Guan, F.+, Luo, M., **Huang, H.*** (2023): Inferring building function: A novel geo-aware neural network supporting building-level function classification. *Sustainable Cities and Society*, 89, 104349. doi: 10.1016/j.scs.2022.104349.
2. Tong, Q.+, Dong, W., **Huang, H.** (2023): Perceptions of space and time of public transport travel associated with human brain activities: A case study of bus travel in Beijing. *Computers, Environment and Urban Systems*, 99, 101919. doi: 10.1016/j.compenvurbsys.2022.101919.
3. **Huang, H.***, Mathis, T.+, Weibel, R. (2022): Choose Your Own Route – Supporting Pedestrian Navigation Without Restricting the User to a Predefined Route. *Cartography and Geographic Information Science*, 49(2), 95-114. doi: 10.1080/15230406.2021.1983731.
4. Giannouli, E., Kim, E., Fu, C., Weibel, R., Sofios, A., Infanger, D., Portegijs, E., Rantanen, T., **Huang, H.**, Schmidt-Trucksäss, A., Zeller, A., Rössler, R., Hinrichs, T. (2022): Psychometric Properties of the MOBITEC-GP Mobile Application for Real-Life Mobility Assessment in Older Adults. *Geriatric Nursing*, 48, 273–279. doi:10.1016/j.gerinurse.2022.10.017.
5. Zhang, X.+, Sun, Y., Guan, F.+, Chen, K.,Witlox, F., **Huang, H***. (2022): Forecasting the crowd: An effective and efficient neural network for citywide crowd information prediction at a fine spatio-temporal scale. *Transportation Research Part C: Emerging Technologies*, 143, 103854. doi: 10.1016/j.trc.2022.103854.
6. +Guan, F., Fang, Z.*, Wang, L., Zhang, X., Zhong, H., **Huang, H.*** (2022): Modelling people's perceived scene complexity of real-world environments using street-view panoramas and open geodata. *ISPRS Journal of Photogrammetry and Remote Sensing*, 186, 315-331. doi: 10.1016/j.isprsjprs.2022.02.012.
7. +Zhou, Z., Weibel, R., **Huang, H.***. (2022): Familiarity-dependent computational modelling of indoor landmark selection for route communication: a ranking approach. *International Journal of Geographical Information Science*, 36(3), 514-546. doi: 10.1080/13658816.2021.1946542.
8. Liao, H., Zhao, W., Zhang, C., Dong, W., **Huang, H.** (2022): Detecting Individuals' Spatial Familiarity of Urban Environments Using Eye Movement Data. *Computers, Environment and Urban Systems*, 93, 101758. doi: 10.1016/j.compenvurbsys.2022.101758.
9. +Brühwiler, L., Fu, C., **Huang, H.**, Longhi, L., Weibel, R. (2022): Predicting Individuals' Car Accident Risk by Trajectory, Driving Events, and Geographical Context. *Computers, Environment and Urban Systems*, 93, 101760. doi: 10.1016/j.compenvurbsys.2022.101760.
10. +Zhou, Z., Weibel, R., Richter, K., **Huang, H*.** (2022): HiVG: A hierarchical indoor visibility-based graph for navigation guidance in multi-storey buildings. *Computers, Environment and Urban Systems*, 93, 101751. doi: 10.1016/j.compenvurbsys.2021.101751.

11. [+]Jin, T., Cheng, L., Wang, K., Cao, J., **Huang, H.**, Witlox, F. (2022): Examining equity in accessibility to multi-tier healthcare services across different income households using estimated travel time. Transport Policy, 121, 1-13. doi: 10.1016/j.tranpol.2022.03.014.
12. [+]Jin, T., Cheng, L., Liu, Z., Cao, J., **Huang, H.**, Witlox, F. (2022): Nonlinear public transit accessibility effects on housing prices: Heterogeneity across price segments. *Transport Policy*, 117, 48-59. doi: 10.1016/j.tranpol.2022.01.004.
13. **Huang, H.***, Yao, X., Krisp, K., Jiang, B. (2021): Analytics of location-based big data for smart cities: Opportunities, challenges, and future directions. *Computers, Environment and Urban Systems*, 90, 101712. doi: 10.1016/j.compenvurbsys.2021.101712.
14. [+]Zhou, Z., Weibel, R., Fu, C., Stephan, W., **Huang, H.***. (2021): Indoor Landmark Selection for Route Communication: The Influence of Route-Givers' Social Roles and Receivers' Familiarity with the Environment. *Spatial Cognition and Computation: an Interdisciplinary Journal*, 21(4), 257-289. doi: 10.1080/13875868.2021.1959595.
15. [+]Balmer, M., Weibel, R., **Huang, H.***. (2021): Value of incorporating geospatial information into the prediction of on-street parking occupancy – A case study. *Geo-spatial Information Science*, 24(3), 438-457. doi: 10.1080/10095020.2021.1937337.
16. [+]Huang, M., Fang, Z.*, Weibel, R., Zhang, T., **Huang, H.*** (2021): Dynamic optimization models for displaying outdoor advertisement at the right time and place *International Journal of Geographical Information Science*, 35(6), 1179-1204. doi: 10.1080/13658816.2020.1823396.
17. Fu, C., **Huang, H.**, Weibel, R. (2021): Adaptive simplification of GPS trajectories with geographic context – a quadtree-based approach. *International Journal of Geographical Information Science,* 35(4), 661-688. doi: 10.1080/13658816.2020.1778003.
18. Liu, J., Deng, Y.*, Wang, Y., **Huang, H.**, Du, Q., Fu, R. (2020): Urban Nighttime Leisure Space Mapping with Nighttime Light Images and POI Data. *Remote Sensing*, 12(3), 541, doi:10.3390/rs12030541.
19. **Huang, H.***, Bucher, D., [+]Kissling, J., Weibel, R., Raubal, M. (2019): Multimodal Route Planning with Public Transport and Carpooling. *IEEE Transactions on Intelligent Transportation Systems*, 20(9), 3513-3525, doi: 10.1109/TITS.2018.2876570.
20. [+]Chin Jiaqi, K., **Huang, H.***, Horn, C., Kasanicky, I., Weibel, R. (2019): Inferring Fine-Grained Transport Modes from Mobile Phone Cellular Signaling Data. *Computers, Environment and Urban Systems*, 77. doi: 10.1016/j.compenvurbsys.2019.101348.
21. Münch, M., Weibel, R., Sofios, A., **Huang, H.**, et al. MOBIlity assessment with modern TEChnology in older patients' real-life by the General Practitioner: the MOBITEC-GP study protocol. *BMC Public Health*, 19, 1703 (2019). doi:10.1186/s12889-019-8069-2.
22. [+]Perebner, M., **Huang, H.***, Gartner, G. (2019): Applying user-centered design for smartwatch-based pedestrian navigation system. *Journal of Location Based Services*, 13(3), 213-237, doi: 10.1080/17489725.2019.1610582
23. **Huang, H.***, Cheng, Y., Weibel, R. (2019): Transport Mode Detection Based on Mobile Phone Network Data: A Systematic Review. *Transportation Research Part C: Emerging Technologies*. 101(2019), 297-312. doi:10.1016/j.trc.2019.02.008.
24. Yao, X., **Huang, H.**, Jiang, B., Krisp, J. (2019): Representation and analytical models for locationbased big data. *International Journal of Geographical Information Science*. 33(4), 707-713, doi:10.1080/13658816.2018.1562068.
25. Allahbakhshi, H., Hinrichs, T., **Huang, H.**, Weibel, R. (2019): The Key Factors in Physical Activity Type

Detection Using Real-Life Data: A Systematic Review. Frontiers in Physiology, doi:10.3389/fphys.2019.00075.

26. Liao, H., Dong, W.*, **Huang, H.**, Gartner, G., Liu, H. (2019): Inferring user tasks in pedestrian navigation from eye movement data in real-world environments. *International Journal of Geographical Information Science* , 33(4), 739-763, DOI: 10.1080/13658816.2018.1482554.

27. Capineri, C., **Huang, H.**, Gartner, G. (2018): Tracking Emotions in Urban Space – Two Experiments in Vienna and Siena. Accepted for *Rivista Geografica Italiana*, 125(3),273-288

28. **Huang, H.***, Gartner, G., Krisp, J., Raubal, M., Van de Weghe, N. (2018): Location Based Services: Ongoing Evolution and Research Agenda. *Journal of Location Based Services*, 12(2), 63-93.

29. **Huang, H.***, Gartner, G. (2018): Current Trends and Challenges in Location-Based Services. *ISPRS International Journal of Geo-Information*, 7(6), 199, doi: 10.3390/ijgi7060199.

30. Zang, K., Shen, J.*, **Huang, H.***, Wan, M., Shi, J. (2018): Assessing and Mapping of Road Surface Roughness based on GPS and Accelerometer Sensors on Bicycle-Mounted Smartphones. *Sensor*, 18(3), 914, doi: 10.3390/s18030914

31. Mobasheri, A., **Huang, H.**, Degrossi, L., Zipf, A. (2018): Enrichment of OpenStreetMap Data Completeness with Sidewalk Geometries Using Data Mining Techniques. *Sensor*, 18(2), 509. doi:10.3390/s18020509.

32. [+]Fellner, I., **Huang, H.***, Gartner, G. (2017): "Turn left after the WC, and use the Lift to go to the 2nd floor" - Generation of Landmark-based Route Instructions for Indoor Navigation. *ISPRS International Journal of Geo-Information*, 6(6), 183, doi:10.3390/ijgi6060183.

33. Griffin, A., White, T., Fish, C., Tomio, B., **Huang, H.**, Robbi Sluter, C., Meza Bravo, J., Fabrikant, S., Bleisch, S., Yamada, M., Picanco, P. (2017): Designing Across Map Use Contexts: A Research Agenda. *International Journal of Cartography*. doi: 10.1080/23729333.2017.1315988.

34. **Huang, H.***, (2016): Context-Aware Location Recommendation Using Geotagged Photos in Social Media. *ISPRS International Journal of Geo-Information*, 5, 195, doi:10.3390/ijgi5110195.

35. Gartner, G., **Huang, H.**, (2016): Recent research developments in modern cartography in Europe. *International Journal of Cartography*, 2(1), pp, 1-5, doi:10.1080/23729333.2016.1187908.

36. **Huang, H.***, Klettner, S., Schmidt, M., Gartner, G., Leitinger, S., Wagner, A., Steinmann, R. (2014): AffectRoute – Considering people's affective responses to environments for enhancing route planning services. *International Journal of Geographical Information Science,* 28(12), pp. 2456-2473.

37. **Huang, H.***, Gartner, G. (2014): Using trajectories for collaborative filtering based POI recommendation. *International Journal of Data Mining, Modelling and Management,* 6(4), pp. 333-346.

38. **Huang, H.***, Gartner, G., Turdean, T. (2013): Social media data as a source for studying people's perception and knowledge of environments. *Mitteilungen der Österreichischen Geographischen Gesellschaft (Transactions of Austrian Geographical Society)*, 155, pp. 291-302.

39. Klettner, S., **Huang, H.**, Schmidt, M., Gartner, G. (2013): Crowdsourcing affective responses to space. *Kartographische Nachrichten - Journal of Cartography and Geographic Information*, 2013, no.2&3.

40. **Huang, H.***, Schmidt, M., Gartner, G. (2012): Spatial Knowledge Acquisition with Mobile Maps, Augmented Reality and Voice in the Context of GPS-based Pedestrian Navigation: Results from a Field Test. *Cartography and Geographic Information Science*, 39(2), pp. 107-116.

41. **Huang, H.***, Gartner, G. (2012): Collective Intelligence Based Route Recommendation for Assisting Pedestrian Wayfinding in the Era of Web 2.0*. Journal of Location Based Services*, 6(1), pp.1-22.

42. Gartner, G., **Huang, H.**, Millonig, A., Schmidt, M., Ortag, F. (2011): Human-centred mobile pedestrian navigation system. *Mitteilungen der Österreichischen Geographischen Gesellschaft (Transactions of*

Austrian Geographical Society), 153, pp. 237-250.

43. **Huang, H.**, Li, Y., Gartner, G., Wang, Y. (2011): An SVG-based method to support spatial analysis in XML/GML/SVG-based WebGIS. *International Journal of Geographical Information Science*, 25(10), pp. 1561-1574.

Books, Edited Volumes and Proceedings

1. Basiri, A., Gartner, G., **Huang, H.** (eds.) (2021): *LBS 2021: Proceedings of the 16th International Conference on Location Based Services*. TU Wien, doi: 10.34726/1741.

2. Gartner, G., **Huang, H.** (eds.) (2019): *15th International Conference on Location Based Services (LBS 2019)*. Adv. Cartogr. GIScience Int. Cartogr. Assoc., vol 2, Copernicus Publications.

3. Gartner, G., **Huang, H.** (eds.) (2019): *Adjunct Proceedings of the 15th International Conference on Location-Based Services*. TU Wien, doi: 10.34726/lbs2019.

4. Kiefer, P., **Huang, H.**, Van de Weghe, N., Raubal, M. (eds.) (2018): *Progress in Location-Based Services 2018*. Lecture Notes in Geoinformation and Cartography, Berlin/Heidelberg, Springer.

5. Kiefer, P., **Huang, H.**, Van de Weghe, N., Raubal, M. (eds.) (2018): *Adjunct Proceedings of the 14th International Conference on Location Based Services*. ETH Zurich, doi:10.3929/ethz-b-000224043.

6. Gartner, G., **Huang, H.** (eds.) (2017): *Progress in Location-Based Services 2016*. Lecture Notes in Geoinformation and Cartography, Berlin/Heidelberg, Springer.

7. Capineri, C., Haklay, M., **Huang, H.**, Antoniou, V., Kettunen, J., Ostermann, F., Purves, R. (eds.) (2016*): European Handbook of Crowdsourced Geographic Information*. London: Ubiquity Press, DOI: http://dx.doi.org/10.5334/bax.

8. Gartner, G., **Huang, H.** (eds.) (2016): *Proceedings of 13th International Conference on Location Based Services*, Vienna, Austria, November 14-16, 2016, ISBN 978-1-907075-02-5.

9. Gartner, G., **Huang, H.** (eds.) (2016): *Special issue on EuroCarto 2015*. International Journal of Cartography, 2(1).

10. Gartner, G., Jobst, M., **Huang, H.** (eds.) (2016): *Progress in Cartography*. Springer Lecture Notes in Geoinformation and Cartography, ISBN 978-3-319-19601-5.

11. Gartner, G., **Huang, H.** (eds.) (2015): Proceedings of the 1st ICA European Symposium on Cartography, Vienna, Austria, November 10-12, 2015, ISBN 978-1-907075-03-2.

12. Gartner, G., **Huang, H.** (eds.) (2015): *Progress in Location-Based Services 2014*. Springer Lecture Notes in Geoinformation and Cartography, ISBN 978-3-319-11878-9.

13. **Huang, H.**, Hahn, J., Claramunt C., Reichenbacher, T. (eds.) (2014): *Proceedings of the 1st International Workshop on Context-Awareness in Geographic Information Services* (CAGIS 2014), in conjunction with GIScience 2014, Vienna, Austria, 23 September 2014.

14. Gartner, G., **Huang, H.** (eds.) (2014): *Special issue on 11th Int. Conf. LBS*. Journal of Location Based Services, 8(3).

Book Chapters

1. **Huang, H.** (in press, invited): Location Based Services. In: Springer Handbook of Geographic Information (2nd edition), edited by Kresse, W. and Danko, D., Springer.
2. Gennady Andrienko, Natalia Andrienko, Fabian Patterson, Siming Chen, Robert Weibel, **Haosheng Huang**, Christos Doulkeridis, Harris Georgiou, Nikos Pelekis, Yannis Theodoridis, Mirco Nanni, Leonardo Longhi,

Athanasios Koumparos, Ansar Yasar, Ibad Kureshi (2021): Visual Analytics for Characterizing Mobility Aspects of Urban Context. In: Shi W., Goodchild M.F., Batty M., Kwan MP., Zhang A. (eds) *Urban Informatics*. Springer, Singapore. https://doi.org/10.1007/978-981-15-8983-6_40

3. **Huang, H.**, Gao, S. (2018): Locaton-Based Services. In: *The Geographic Information Science & Technology Body of Knowledge* (1st Quarter 2018 Edition), John P. Wilson (Ed). doi: 10.22224/gistbok/2018.1.14.
4. Brovelli, M., Mooney, P., Biagi, L., Brambilla, M., Celino, I., Ciceri, E., Dorigatti, N., **Huang, H.**, Minghini, M., Venkatachalam, V. (2018): Mapping Parties at FOSS4G Europe: Fun, Outcomes and Lessons Learned. In: Bordogna G., Carrara P. (eds.) *Mobile Information Systems Leveraging Volunteered Geographic Information for Earth Observation*. Earth Systems Data and Models, Springer, doi: https://doi.org/10.1007/978-3-319-70878-2_1.
5. **Huang, H.**, Gartner, G. (2016): Using mobile crowdsourcing and geotagged social media data to study people's affective responses to environments. In: Capineri, C., Haklay, M., Huang, H., Antoniou, V., Kettunen,J., Ostermann, F. and Purves, R. (eds.) *European Handbook of Crowdsourced Geographic Information*, pp. 385–399. London: Ubiquity Press. doi: http://dx.doi.org/10.5334/bax.ab.
6. Klettner, S., **Huang, H.**, Schmidt, M., Ortag, F., Gartner, G. (2013): Smart citizens - the potential of humans in smart cities. In H. Widmann, eds. *Smart City - Viennese Expertise based on Science and Research*, Schmid-Verlag, pp. 194-199.
7. **Huang, H.**, Gartner, G. (2012): A Technical Survey on Decluttering of Icons in Online Map-based Mashups. In M.P. Peterson, eds., *Online Maps with APIs and WebServices*, Springer.
8. **Huang, H.**, Li, Y., Gartner, G. (2011): A load balancing method to support spatial analysis in XML/GML/SVG-based WebGIS. In S. Li, S. Dragicevic, & B. Veenendaal, eds. *Advances in Web-based GIS, Mapping Services and Applications*. CRC Press, pp. 153-168.
9. **Huang, H.** (2011). Supporting Smart Mobile Navigation in a Smart Environment. In S. A. Ahson & M. Ilyas, eds. *Location-Based Services Handbook: Applications, Technologies, and Security*. CRC Press, pp. 109-129.
10. **Huang, H.**, Gartner, G. (2010): A Survey of Mobile Indoor Navigation Systems. In G. Gartner & F. Ortag, eds. *Cartography in Central and Eastern Europe*. Springer, pp. 305-319.

Peer-reviewed Conference Full Papers

1. Tyler Thrash, Sara Lanini-Maggi, Sara I. Fabrikant, Sven Bertel, Annina Bruegger, Sascha Crede, Cao Tri Do, Georg Gartner, **Haosheng Huang**, Stefan Muenzer, and Kai-Florian Richter (2019): The future of geographic information displays from GIScience, cartographic, and cognitive science perspectives. 14th International Conference on Spatial Information Theory (COSIT 2019), doi: 10.4230/LIPIcs.COSIT.2019.19.
2. Wang, W., **Huang, H**., Gartner, G. (2018): Considering existing indoor navigational aids in navigation services. In P. Fogliaroni et al., eds. Proceedings of Workshops and Posters at the 13th International Conference on Spatial Information Theory (COSIT 2017). Springer, doi: 10.1007/978-3-319-63946-8_33.
3. Ostermann, F., **Huang, H.**, Andrienko, G., Andrienko, N., Capineri, C., Farkas, K., Purves, R. (2015): Extracting and Comparing Places using Geo-Social Media. ISSDQ 2015 - The 9th International Symposium on Spatial Data Quality.
4. Cao, Y., **Huang, H.**, Gartner, G. (2014): A Signal-Loss-Based Clustering Method for Segmenting and Analyzing Mixed Indoor/Outdoor Pedestrian GPS Trajectories. In C. Liu, eds. *Principle and Application Progress in Location-Based Services*. Springer, pp. 3-19.
5. **Huang, H.**, Gartner, G. (2012): Using Context-aware Collaborative Filtering for POI Recommendation in

Mobile Guides. In G. Gartner & F. Ortag, eds. *Advances on Location Based Services*. Springer, pp. 131-146.

6. **Huang, H.**, Gartner, G. (2011): Incorporating Context-Aware Collaborative Filtering into Location Based Services. In *Proc. of the 25th International Cartographic Conference*. Paris, France.
7. **Huang, H.**, Gartner, G. (2010): Collaborative Filtering Based Route Recommendation for Assisting Pedestrian Wayfinding. In *Proc. of LBS 2010*. Guangzhou, China.
8. **Huang, H.**, Gartner, G. (2009): Collective intelligence based mobile navigation in a smart environment. In *Proc. of LBS 2009*. Nottingham, UK.
9. **Huang, H.**, Gartner, G. (2009): Using Activity Theory to Identify Relevant Context Parameters. In G. Gartner & K. Rehrl, eds. *Location Based Services and TeleCartography II*. Springer, pp. 35-45.
10. **Huang, H.**, Li, Y., Gartner, G. (2008): SVG-Based Spatial Information Representation and Analysis. In M. Bertolotto et al., eds. *Web and Wireless Geographical Information Systems*. Springer, pp. 17-26.

Short Papers in Conference & Workshop Proceedings

1. Zhou, Z., Weibel, R., **Huang, H.** (2021): Varying salience in indoor landmark selection for familiar and unfamiliar wayfinders: evidence from machine learning and self-reports. 11th International Conference on Geographic Information Science (GIScience 2021). DOI: 10.25436/E24S34.
2. Zhou, Z., Weibel, R., Richter, K., **Huang, H.** (2021): Towards a hierarchical indoor data model from a route perspective. 16th International Conference on Location Based Services (LBS 2021). DOI: 10.34726/1742.
3. Guan, F., Fang, Z., **Huang, H.** (2021): Representation and modelling of the complexity of street intersections for navigation guidance. 16th International Conference on Location Based Services (LBS 2021). DOI: 10.34726/1743.
4. Tong, Q., Dong, W., **Huang, H.** (2021): Varying salience in indoor landmark selection for familiar and unfamiliar wayfinders: evidence from machine learning and self-reports. 16th International Conference on Location Based Services (LBS 2021). DOI: 10.34726/1745.
5. Münch, M., Weibel, R., Zeller, A., **Huang. H.**, Infanger, D., Portegijs, E., Rantanen, T., Mundwiler, J., Conrow, L., Sofios, A., Schmidt-Trucksäss, A., Hinrichs, T. (2019): MOBITEC-GP - Mobility Assessment with Modern Technology in Older Patients' Real-Life by the General Practitioner. In 11th congress of the SGS/4S, Fribourg, Switzerland.
6. **Huang, H.** (2018): Transport mode detection using cellular network data. In Mobile Tartu 2018, Tartu, Estonia.
7. Allahbakhshi, H., **Huang, H.**, Weibel, R. (2018): A Study Design for Physical Activity Reference Data Collection Using GPS and Accelerometer. In AGILE 2018, Lund, Sweden.
8. **Huang, H.** (2017): Indoor Semantic Wayfinding. In ICC 2017, Washington DC, USA.
9. **Huang, H.** (2017): Context-Aware POI Recommendation in Location-Based Services. In ICC 2017, Washington DC, USA.
10. **Huang, H.** (2015): Context-Aware Location Recommendation Using Geotagged Photos in Social Media. In *Proc. of LBS 2015*, Augsburg, Germany.
11. **Huang, H.** (2015): Designing across Human Abilities and Map Use Contexts. In *ICC 2015 pre-conference workshop on "Envisioning the Future of Interactive Cartography Research"*, Curitiba, Brazil.
12. **Huang, H.** (2015): Using Social Media Data to Study People's Perception and Knowledge of Environments. In *Proc. of the 27th International Cartographic Conference*, Rio de Janeiro, Brazil.
13. **Huang, H.**, Klettner, S., Schmidt, M., Gartner, G. (2014): Considering Affective Responses towards Environments for Enhancing Location Based Services. In *Int. Arch. Photogramm. Remote Sens. Spatial Inf.*

Sci., XL-4, pp. 93-96.

14. Klettner, S., **Huang, H.**, Schmidt, M., Gartner, G. (2013): Acquisition and Cartographic Applications of Subjective Geodata. In *Proc. of the 26th International Cartographic Conference*, Dresden, Germany.
15. **Huang, H.**, Schmidt, M., Gartner, G. (2012): Evaluating three interface technologies in assisting pedestrians' spatial knowledge acquisition. In *Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci.*, XXII ISPRS Congress, Melbourne.
16. Ortag, F., **Huang, H.** (2011): Location-Based Emotions Relevant for Pedestrian Navigation. In *Proc. of International Cartographic Conference 2011*, Paris, France.
17. **Huang, H.**, Gartner, G., Schmidt, M., Li, Y. (2009): Smart Environment for Ubiquitous Indoor Navigation. In *Proc. of Inter. Conf. on New Trends in Information and Service Science*, Beijing, China.
18. Gartner, G., **Huang, H.**, Ortag, F., Millonig, A. (2009): Strategies of Context-based and Semantic Adaptive Route Communication. In *AGILE Workshop on Adaptation in Spatial Communication*, Bremen, Germany.

5. Invited Talks and Keynote Presentations

1. Human-Centered Location Based Services, invited presentation at Applied AI in Transportation: System Development, Institut Teknologi Bandung, Indonesia, 10 November 2021
2. Geography-Aware Mobility Analytics and Prediction, invited presentation at Applied AI in Transportation: Data and Algorithm, Institut Teknologi Bandung, 27 October 2021
3. Data Modelling and Processing in Map-Based Mobile Services. Keynote presentation at 16th International Conference on Geoinformation and Cartography, Zagreb, Croatia, 24-27 September 2020.
4. Location Based Science – The Science Behind Location Based Services. Keynote presentation at Mobile Tartu 2020, Tartu, Estonia, 30 June 2020.
5. Location Based Services: Ongoing Evolution and Research Agenda. Invited presentation at ZhengZhou University, Zhengzhou, China, 27 Dec. 2018.
6. Human-Centered Location-Based Services. Invited talks at Nanjing Normal University (Nanjing, China, 24 Dec. 2015), Beijing Normal University (Beijing, China, 28 Dec. 2015) and Tongji University (Shanghai, China, 30 Dec. 2015).
7. Location-Based Services. Invited talk at Research Seminar at Institute of Software Technology and Interactive Systems, Faculty of Informatics, TU Wien, Austria. 15 April 2015.
8. EmoMap: Acquisition and Application of People's Affective Responses to Environments. **Invited talk at OECD (Organisation for Economic Co-operation and Development) Workshop** "Using Technology to engage citizens". Paris, France. 18 Sep 2014.
9. Modelling People's Affective Responses. Invited talk at 1st Siena Workshop on well-being and happiness. Siena, Italy. 22 May 2014.
10. EmoMap: Emotional Mapping. Presentation at European Commission Joint Research Centre "Citizen Science and Smart Cities Summit". Ispra, Italy. 5-7 Feb 2014.
11. Location Based Services and Pedestrian Navigation. Invited talk at the 3rd International Workshop of "Geotym" Project. Brno, Czech Republic. 24 Sep 2012.
12. Incorporating context-aware collaborative filtering into Location Based Services (ICA travel award).

Presentation at the 25th International Cartographic Conference ICC. Paris, France. 3-8 July 2011.

6. Research Projects

Research Projects (PI or Co-PI)

1. Project "Modelling street-level urban sunlight and greenery for healthcare and mobility studies" (promoter), UGent BOF — 2021-2025
2. Project "Adaptive Cartography for Human-Centered Location Based Services" (PI, promoter), UGent BOF, 210,000 EUR — 2020-2024
3. Project "Mobile eye-tracking glasses and electroencephalography (EEG)" (PI, promoter), UGent BOF, 45,272.18 EUR — 2020-2022
4. Project "Testing & optimising a mobile app in Belgium for the prevention and management of COVID-19 infections" (co- promoter), FWO - The Research Foundation – Flanders. — 2020-2021
5. Project "Big Data for Mobility Tracking Knowledge Extraction in Urban Areas" (Track & Know) (UZH co-applicants: R. Weibel, H. Huang), with 13 partners, EU Horizon 2020, budget at UZH 386,423.75 EUR — 2018-2020
6. Project "Mobility assessment with modern technology in older patients' real-life by the General Practitioner" (MOBITEC-GP) (co-applicant), Velux Stiftung, budget at UZH 89,345 CHF — 2018-2021
7. Project "Semantic Wayfinding for Indoor Navigation" (PI), UZH Forschungskredit, 54,096 CHF — 2018-2019
8. Project "Context-aware Collaborative Filtering in LBS" (PI), Austrian Marshall Plan Foundation, 6400 EUR — 2010

Research Projects (Participating)

1. Project "Fem2Map: Promoting the participation of women in user-generated geodata collection", funded by Austrian Research Promotion Agency (FFG) — 2012-2014
2. Project "EmoMap: Mapping Urban Emotion", funded by Austrian FFG — 2011-2013
3. Project "Ways2navigate: Pedestrian Navigation with Mobile Maps, Voices and Augmented Reality", funded by Austrian FFG — 2011-2012
4. Project **"**UCPNavi: Ubiquitous Cartography for Pedestrian Navigation**",** funded by Austrian Science Fund (FWF) — 2017-2010

7. Awards

Government Award for Outstanding Students Abroad, Ministry of Education, China — 2011

Best Poster Award**,** Final Conference (RGS, London) of EU COST IC1203 and TD1202 — 2016

Distinction/Honours for PhD dissertation ("mit Auszeichnung bestanden" in German)	2013
ISPRS Congress 2012 Travel Award International Society for Photogrammetry and Remote Sensing (ISPRS)	2012
ÖFG Travel Awards, Austrian Research Association	2011, 2012, 2013
ICA Travel Award, International Cartographic Association	2011
First prize of outstanding student presentation, LBS 2010 (Guangzhou, China)	2010

8. Courses Taught

Ghent University, Belgium C001059 **Cartography** (Lecturer-in-charge, BSc course) C003867 **Geo-Programming** (Lecturer-in-charge, BSc course) C003530 **Geodesy** (Lecturer-in-charge, BSc course) C004178 **Geographical Information Architecture** (Lecturer-in-charge, MSc) C004363 **ICT** (Lecturer-in-charge, MSc) C004368 **Data Management** (Lecturer-in-charge, MSc) C001668 **Introduction to GIS and Surveying Engineering** (w/ A. De Wulf, N. Van de Weghe) (BSc)	Since 2020 (yearly)
University of Zurich, Switzerland GEO 884 **Location-Based Services** (MSc course) GEO 874 **Introduction to Databases** (w/ R.Meile) (MSc course) GEO 875 **Spatial Database** (w/ R.Meile) (MSc course) GEO 662 **Project Planning, Execution and Management** (w/ R.Weibel)(MSc)	2016-2020 (yearly)
TU Wien, Austria 126.099 **Location-Based Services** (w/ G.Gartner, G.Retscher, K.Rehrl) (MSc) 126.102 **Cartography Information Systems** (BSc/MSc) 126.101 **Programming Cartographic Tasks (Web Mapping)** (BSc/MSc)	2012-2016 (yearly)

9. PhD Students Supervised (*: co-supervised)

Tong Qin (PhD, in progress, UGent, funded by UGent): Spatial Cognition and Adaptive Cartography based on mobile eye-tracking and mobile EEG. (Supervisors: Haosheng Huang, Nico Van de Weghe, Wim Fias)

Xiaobing Wei (PhD, in progress, UGent, funded by CSC and UGent): Modelling street-level urban sunlight and greenery for healthcare and mobility studies (Supervisors: Haosheng Huang, Nico Van de Weghe)

Xucai Zhang (PhD, in progress, UGent, funded by CSC): Extending deep neural network embeddings with geographic knowledge and transportation models for human mobility studies (Supervisors: Haosheng Huang, Frank Witlox)

Aji Gao (PhD, in progress, UGent, funded by CSC and UGent; joint PhD with Wuhan University): The automatic generalization of multi-scale map representation: A deep learning-based approach (Supervisors: Haosheng Huang, Tinghua Ai)

Fangli Guan (PhD, in progress, UGent, funded by CSC; joint PhD with Wuhan University): Human-centred

navigation guidance based on Streetview images (Supervisors: Haosheng Huang, Zhixian Fang)

*Lars De Sloover (PhD, in progress, UGent, funded by UGent): Spatial-temporal data analysis and visualization (Supervisors: Nico Van de Weghe, Haosheng Huang)

*Tanhua Jin (PhD, in progress, UGent, funded by CSC): Public transport analytics based on big and open data (Supervisors: Frank Witlox, Haosheng Huang, Long Chen)

*Zhicheng Zhan (PhD, in progress, UGent, funded by CSC): Automatic Generation and Modelling of Indoor Networks (Supervisors: Nico Van de Weghe, Haosheng Huang)

Zhiyong Zhou (PhD, 2022, UZH, funded by UZH FK and UZH): Computational Hierarchy Modeling of Indoor Spaces for Navigation Guidance in Buildings (Supervisors: Haosheng Huang, Robert Weibel)

*Meysam Aliakbarian (PhD, 2021, UGent, funded by Swiss SNSF): Abstraction and Cartographic Generalization of Geographic User-Generated Content (Supervisors: Robert Weibel, Ross Purves, Haosheng Huang)

10. PhD Examination Committee Members

Laure De Cock, 2021, UGent, Adaptive mobile indoor route guidance. The next big step

Merve Keskin, 2020, UGent, Exploring the Cognitive Processes of Map Users Employing Eye Tracking and EEG

Lieselot Lapon, 2020, UGent, Unraveling the global-scale cognitive map: a worldwide study

11. MSc Students Supervised (*: co-supervised)

Ongoing: Jietse Corneillie (UGent), Martha Doffemont (UGent), Evert Van Bever (UGent)

Finished: Lotte Vandeweghe (2021, UGent), Tim Waldburger (2020, UZH), Michael Balmer (2019, UZH), Gian Raphael Prinz (2019, UZH), Olivier Niklaus (2019, UZH), Thomas Mathis (2019, UZH), Darryl Schumacher (2018, UZH), Melanie Willimann (2018, UZH), Kimberley Chin (2018, UZH), Benedikt Steger (2018, UZH), *Junyan Li (2017, TU Munich), Martin Perebner (2017, TU Wien),*Julian Kissling (2017, UZH), *Irene Fellner (2016, TU Wien), *Timea Turdean (2014, TU Wien), *Markus Sommer (2014, TU Wien), *Wangshu Wang (2014, TU Wien), *Connie Kwok (2013, TU Wien)

11. Community Services

Chair, Commission on Location Based Services, International Cartographic Association (ICA)	2015 - 2023
Associate Editor, Journal of Location Based Services, Taylor & Francis	2019 - Present
Member of **editorial board**, Remote Sensing, MDPI	2022 – Present
Member of **editorial board**, Geo-spatial Information Science, Taylor & Francis	2020 – Present
Member of **editorial board**, ISPRS International Journal of Geo-Information, MDPI	2019 – Present
Member of **editorial board**, Journal of Geovisualization and Spatial Analysis, Springer	2016 – Present
Member of **editorial board**, Urban Planning, Cogitatio	2018 – 2022

Member of **editorial board**, Journal of Location Based Services, Taylor & Francis 2013 – 2019

Editorship of Special Issues:

- Environment and Planning B: Urban Analytics and City Science (special issue on "Urban Analytical Approaches to Combatting Covid-19", 2022)
- Geo-Spatial Information Science (special issue on "Adaptive cartography and spatial cognition in the mobile information era", 2022)
- Computers, Environment and Urban Systems (special issue on "Geospatial Big Data Analytics for Smart Cities", 2021)
- ISPRS International Journal of Geo-Information (special issue on "Recent Trends in Location Based Services and Science")
- ISPRS International Journal of Geo-Information (special issue on "Deep Learning and Computer Vision for GeoInformation Sciences")
- International Journal of Geographical Information Science (special issue on "Representation and Analytical Models for Location-based Social Media Data and Tracking Data")
- ISPRS International Journal of Geo-Information (special issue on "Location Based Services")
- International Journal of Distributed Sensor Networks (special issue on "Ubiquitous Localization and Context-Awareness")
- Journal of Location Based Services (special issue on LBS 2014, 8(3))
- International Journal of Cartography (special issue on EuroCarto 2015, 2(1))

Conferences/workshops/special sessions organized: LBS 2023 (Ghent), LocBigDataAI 2023 (Cape Town), ICA Symposium on Geospatial Approaches to Combating Covid-19 (Italy), LBS 2021 (UK, online) , Workshop on Indoor Cartography 2020 (Czech Republic), LBS 2019 (Austria), LocBigData 2019 (Japan), Mobile Map UX 2019 (China), LBS 2018 (Switzerland), LSMTD 2017 (USA), LBS 2016 (Austria), Special session on LBS at ISPRS Congress 2016 (Czech Republic), EuroCarto 2015 (Austria), Special session on LBS at MMT 2015 (Australia), LBS 2014 (Austria), Workshop Context-Aware Services @ GIScience 2014 (Austria), COST ENERGIC 3rd MC meeting (Austria)

PC member in Conferences/workshops (in the last five years): LBS 2022 (Germany), EuroCarto 2022 (Austria), ICC 2021 (Italy), LocalRec 2021 (China), MDM 2020 (France), W2GIS 2020 (China), ARIC 2019 (USA), GSES & GeoAI-UC 2019 (China), ICC 2019 (Japan), LocalRec 2019 (USA), DataMod 2019 (Portugal), LSAUC 2019 (Ireland), W2GIS 2019 (Japan), GISTAM 2019 (Greece), GIScience 2018 (Australia), LocalRec 2018 (USA), W2GIS 2018 (Spain), GISTAM 2018 (Portugal), ET4S 2018 (Switzerland), LocalRec 2017 (USA), SemGeoSoc 2017 (Switzerland), GeoSpatial Science Conference 2017 (Mexico), ICC 2017 (USA), W2GIS 2017 (China), GISTAM 2017 (Portugal)

Referee for Journals (in the last five years)**:** ACM Transactions on Intelligent Systems and Technology; Advances in Mechanical Engineering; Annals of GIS; Annual Reviews in Control; Cartographic Perspectives; Cartography and Geographic Information Science; Computers, Environment and Urban Systems; Cyberpsychology; EPJ Data Science; Geografie; Geoinformatica; Geomatica; IEEE Access; IEEE Intelligent Transportation Systems Magazine; IEEE Transactions on Learning Technologies; IEEE Transactions on Multimedia; IEEE Transactions on Visualization and Computer Graphics; Information Visualization; International Journal of Cartography; International Journal of Disaster Risk Reduction; International Journal of Geographical Information Science; ISPRS International Journal of Geo-Information; Journal of Ambient Intelligence and Humanized Computing; Journal of Artificial Intelligence Research; Journal of Geographical

Systems; Journal of Information Science; Journal of Location Based Services; Journal of Maps; Journal of Spatial Information Science; Journal of Spatial Science; KI - Künstliche Intelligenz; Pervasive and Mobile Computing; KN - Journal of Cartography and Geographic Information; Sensor; Spatial Cognition & Computation; Sustainable Cities and Society; The Cartographic Journal; Transactions in GIS; Transportation Research Part C; Urban Planning

Referee for Grant: Mitacs, German Research Foundation (DFG)