CURRICULUM VITAE

Yang Xu

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EDUCATION

Ph.D. Geography, The University of Tennessee, Knoxville, TN, USA, 2015

Dissertation: *Mobility and Activity Space: Understanding Human Dynamics From Mobile Phone Location Data*

M.S. Geographic Information Science, Wuhan University, Wuhan, China, 2011

B.S. Remote Sensing and Photogrammetry, Wuhan University, Wuhan, China, 2009

RESEARCH INTERESTS

Urban Informatics, Geographic Information Science (GIScience), GIS for Transportation, Spatiotemporal Data Mining, Human Mobility

PROFESSIONAL POSITIONS

2017 - Present Assistant Professor, Department of Land Surveying and Geo-Informatics, The Hong Kong Polytechnic University

2016 - 2017 Joint Postdoctoral Associate, MIT SENSEable City Laboratory, Cambridge, MA, USA

Singapore-MIT Alliance for Research and Technology (SMART), Singapore.

2013 - 2015 Research Intern/Assistant, Oak Ridge National Laboratory (ORNL), Oak Ridge, TN, USA

RESEARCH

A. Grants and Contracts

2020 Hong Kong PhD Fellowship Scheme, *Hong Kong Research Grant Council* (**PI**).

2019 - 2022 "Coupling Mobile Phone and Socioeconomic Datasets: A New Approach to Quantifying Dynamic Social Segregation in A Hybrid Physical-Virtual Space", *Research Grant Council (RGC) of Hong Kong, Early Career Scheme* (**PI**, HK$ 886,800).

2019 - 2021 "Integrating Spatiotemporal Features for Travel Demand Analysis and Forecast of Dockless Bike-Sharing in Urban Areas (时空特征融合的城市共享单车出行规律理解与需求预测方法研究)", *National Natural Science Foundation of China* (**PI**, RMB 251,700).

2019 Hong Kong PhD Fellowship Scheme, *Hong Kong Research Grant Council* (**PI**).

2019 - 2020	"Big Data Analysis on Travel Patterns of Visitors to Jeju", *Jeju Tourism Organization* (Consultancy Project).
2019	"Travel Pattern Analysis of Foreign Visitors Using Mobile Communication Big Data", *Korea Tourism Organization* (Consultancy Project).
2019 - 2020	"Uncover Space-Time Dynamics of Tourist Mobility Patterns from Large-Scale Mobile Positioning Data", *PolyU Hospitality and Tourism Research Centre*, (Co-I, HK$ 241,800).
2018 - 2021	"Big Data as A Testbed for Urban Theories", *Start-up Fund of Hong Kong Polytechnic University* (**PI**, HK$ 800,000).

B. Refereed Journal Articles

2020	**Xu, Y.**, Li, J., Xue, J., Park, S. and Li, Q. Tourism geography through the lens of time use — A computational framework using fine-grained mobile phone data. *Annals of the American Association of Geographers* (in press).
2020	**Xu, Y.**, Li, X., Shaw, S. L., Lu, F., Yin, L. and Chen, B. Effects of data preprocessing methods on addressing location uncertainty in mobile signaling data. *Annals of the American Association of Geographers* (in press)
2020	**Xu, Y.**, Li, J., Belyi, A. and Park, S. Characterizing destination networks through mobility traces of international tourists — A case study using a nationwide mobile positioning dataset. *Tourism Management*, 82, p.104195
2020	Park, S., **Xu, Y.**, Jiang, L., Chen, Z. and Huang, S. Spatial structures of tourism destinations: A trajectory data mining approach leveraging mobile big data. *Annals of Tourism Research*, 84, p. 102973
2020	Tu, W., Mai, K., Zhang, Y., **Xu, Y.**, Huang, J., Deng, M., Chen, L. and Li, Q. Real-time Route Recommendations for E-Taxies Leveraging GPS Trajectories. *IEEE Transactions on Industrial Informatics* (in press).
2020	Zhao, P., **Xu, Y.**, Liu, X. and Kwan, M.P. Space-time dynamics of cab drivers' stay behaviors and their relationships with built environment characteristics. *Cities*, 101, p.102689.
2019	**Xu, Y.**, Belyi, A., Santi, P. and Ratti, C. Quantifying segregation in an integrated urban physical-social space. *Journal of the Royal Society Interface*, 16(160), 20190536.
2019	Yu, H., Fang, Z., Lu, F., Murray, A.T., Zhao, Z., **Xu, Y.** and Yang, X. Massive Automatic Identification System Sensor Trajectory Data-Based Multi-Layer Linkage Network Dynamics of Maritime Transport along 21st-Century Maritime Silk Road. *Sensors*, 19(19), p.4197.
2019	Jia, T., Yu, X., Shi, W., Liu, X., Li, X., and **Xu, Y.** Detecting the regional delineation from a network of social media user interactions with spatial constraint: A case study of Shenzhen, China. *Physica A: Statistical Mechanics and its Applications*, 121719.
2019	Yang, X., Fang, Z., **Xu, Y.**, Yin, L., Li, J. and Lu, S. Spatial heterogeneity in spatial interaction of human movements — Insights from large-scale mobile positioning data. *Journal of Transport Geography*, 78, 29-40
2019	**Xu, Y.**, Chen, D., Zhang, X., Tu, W., Chen, Y., Shen, Y. and Ratti, C. Unravel the landscape and pulses of cycling activities from a dockless bike-sharing system. *Computers, Environment and Urban Systems*, 75, 184-203.
2018	Zhang, X., **Xu, Y.**, Tu, W. and Ratti, C. Do different datasets tell the same story about urban mobility — A comparative study of public transit and taxi usage. *Journal of Transport Geography*, 70, pp.78-90.

2018   Zhu, J., **Xu, Y.**, Fang, Z., Shaw, S.L. and Liu, X. Geographic Prevalence and Mix of Regional Cuisines in Chinese Cities. *ISPRS International Journal of Geo-Information*, 7(5), p.183.

2018   **Xu, Y.**, Belyi, A., Bojic, I. and Ratti, C. Human mobility and socioeconomic status: Analysis of Singapore and Boston. *Computers, Environment and Urban Systems*. 72, 51-67.

2017   Tu, W., Cao, J., Yue, Y., Shaw, S.L., Zhou, M., Wang, Z., Chang, X., **Xu, Y.** and Li, Q., 2017. Coupling mobile phone and social media data: a new approach to understanding urban functions and diurnal patterns. *International Journal of Geographical Information Science,* 31(12), 2331-2358.

2017   Fang, Z., Yang, X., **Xu, Y.**, Shaw, S.L. and Yin, L., 2017. Spatiotemporal model for assessing the stability of urban human convergence and divergence patterns. *International Journal of Geographical Information Science,* 31(11), 2119-2141.

2017   **Xu, Y.**, Belyi, A., Bojic, I. and Ratti, C. How Friends Share Urban Space: An Exploratory Spatiotemporal Analysis Using Mobile Phone Data. *Transactions in GIS,* 21(3), pp.468-487.

2017   **Xu, Y.**, Wang, D., Janjusic, T., Wu, W., Pei, Y. and Yao, Z., 2017. A Web-based Visual Analytic Framework for Understanding Large-scale Environmental Models: A Use Case for The Community Land Model. *Procedia Computer Science*, *108*, pp.1731-1740.

2017   **Xu, Y.**, Wang, D., Iverson, C., Walker, A. and Warren, J. Building a Virtual Ecosystem Dynamic Model for Root Research. *Environmental Modelling & Software*, 89(C), 97-105.

2016   Yang, X., Fang, Z., **Xu, Y.**, Shaw, S-L., Zhao, Z., Yin, L., Zhang, T. and Lin Y. Understanding Spatiotemporal Patterns of Human Convergence and Divergence Using Mobile Phone Location Data. *ISPRS International Journal of Geo-Information*, 5(10), 177.

2016   **Xu, Y.**, Shaw, S-L., Fang, Z. and Yin, L. Estimating Potential Demand of Bicycle Trips from Mobile Phone Data — An Anchor Point Based Approach. *ISPRS International Journal of Geo-Information*, 5(8), 131.

2016   He, H., Wang, D., **Xu, Y**. and Tan, J. Data synthesis in the Community Land Model for ecosystem simulation. *Journal of Computational Science*, 13, 83-95.

2016   **Xu, Y.**, Shaw, S-L., Zhao, Z., Yin, L., Lu, F., Chen, J., Fang, Z. and Li, Q. Another Tale of Two Cities — Understanding Human Activity Space Using Actively Tracked Cellphone Location Data. *Annals of the American Association of Geographers,* 106(2), 489-502.

2016   Zhao, Z., Shaw, S-L., **Xu, Y.**, Lu, F., Chen, J. and Yin, L. Understanding the Bias of Call Detail Records in Human Mobility Research. *International Journal of Geographical Information Science*, 30(9), 1738-1762.

2015   **Xu, Y.**, Shaw, S-L., Zhao, Z., Yin, L., Fang, Z. and Li. Q. Understanding aggregate human mobility patterns using passive mobile phone location data: a home-based approach. *Transportation*, 42(4), 625-646.

2014   Wang, D., **Xu, Y.**, Thornton, P., King, A., Steed, C., Gu, L. and Schuchart, J. A functional test platform for the Community Land Model. *Environmental Modelling & Software*, 55, 25-31.

2014   Wang, D., Schuchart, T., Janjusic, T., Winkler, F., **Xu, Y.** and Kartsaklis. Toward Better Understanding of the Community Land Model within the Earth System Modeling Framework. *Procedia Computer Science*, 29, 1515-1524.

2011   **Xu, Y.**, Li, Q. and Tang, L. Road Damage Detection from Remote Sensing Imagery Based on Road Network Vector Data. *Bulletin of Surveying and Mapping*, 4, 14-16 (in Chinese).

C. Book Chapters

2019   **Xu, Y.** and Ratti, C. Conquer the Divided Cities. *Towards a New Enlightenment: A Transcend Decade.* pp.428-455. BBVA Open Mind, Spain.

2019   Liu, X., **Xu, Y.** and Ye, X. Outlook and Next Steps: Integrating social network and spatial analyses for urban research in the new data environment. In *Cities as Spatial and Social Networks*, pp. 227-238. Springer, Cham.

2018   **Xu. Y.**, Shaw, S-L., Lu, F., Chen, J. and Li, Q. Uncovering the Relationships Between Phone Communication Activities and Spatiotemporal Distribution of Mobile Phone Users. In *Human Dynamics Research in Smart and Connected Communities,* pp. 41-65, Springer, Cham.

D. Conference Proceedings

2020   Luo, Y., Xiang, L., **Xu, Y.** and Gui, Z., 2020. Road Network Extraction from GPS Trajectories–A Tensor Voting Based Algorithm. *Proceedings of the GISRUK 2020, London.*

2015   **Xu, Y.**, Shaw, S-L., Yin, L. and Zhao, Z. Understanding Individual Daily Activity Spaces Based on Large Scale Mobile Phone Location Data. *Proceedings of The 13th International Conference on GeoComputation.* Dallas, Texas, USA. pp. 256-261.

2014   **Xu, Y.**, Wang, D., Janjusic, T. and Xu, X. A Web-based Visual Analytic System for Understanding the Structure of Community Land Model. *Proceedings of The 13th International Conference on Software Engineering Research and Practice.* Las Vegas, NV. USA. pp. 3-9.

2014   Wang, D. and **Xu. Y**. Software Engineering for Scientific Application: Effort Report on The Community Land Model within the Earth System Modeling Framework. *Proceedings of The 7th International Congress on Environmental Modelling and Software.* San Diego, CA, USA.

2012   **Xu, Y.**, Shaw, S-L., Chen, J., Li, Q., Fang, Z. and Li, Y. Uncover Repeated Spatiotemporal Behavioral Patterns Embedded in GPS-based Taxi Tracking Data. *Proceedings of The 7th International Conference on Geographic Information Science* (Extended abstract). Columbus, OH, USA.

E. Presentations Delivered at Professional Conferences

2020   *"A new approach to understanding spatial and social-network segregation in cities"*, Virtual Symposium on Big Data and Neighborhood Change, The University of Sydney & University of California, Berkeley, August 10-25.

2019   *"Unravel the Landscape and Pulses of Cycling Activities From A Dockless Bike-Sharing System – A case study of Singapore"*, presentation at the 26th ITS World Congress, Singapore, October 21-25.

2019   *"Uncover Spatiotemporal Dynamics of Cycling Activities From A Dockless BikeSharing System"*, presentation at the 16th International Conference on Computers in Urban Planning and Urban Management (CUPUM), Wuhan, China, July 8-12.

2019   *"Unravel the Landscape and Pulses of Cycling Activities From A Dockless Bike-Sharing System"*, presentation at the 2nd International Conference on Urban Informatics (ICUI), Hong Kong, China, June 24-26.

2018   *"Human Mobility and Socioeconomic Status: Analysis of Singapore and Boston"*, presentation at The 2018 Annual Meeting of the American Association of Geographers. New Orleans, USA, April 10-14.

2017   *"How Friends Share Urban Space – Evidence From Mobile Phone Data"*, presentation at The 2017 Esri User Conference. San Diego, CA, USA, July 10-14.

2017	"*How Friends Share Urban Space – An Exploratory Spatiotemporal Analysis Using Mobile Phone Data*", presentation at The 2017 Annual Meeting of the American Association of Geographers. Boston, USA, April 5-9.
2016	"*Comparing Home Detection Methods Through Multi-Source Geo-Social Data*", Future Urban Mobility Symposium 2016, National University of Singapore, Singapore, July 25-26 (Poster Presentation).
2015	"*Understanding Individual Daily Activity Spaces Based on Large Scale Mobile Phone Location Data*", presentation at the GeoComputation 2015 Conference, Dallas, Texas, USA, May 20-23.
2014	"*Understand Individual and Aggregate Human Mobility Patterns from Mobile Phone Location Data — A Case Study in Shenzhen, China*", presentation at The 2014 Annual Meeting of the Association of American Geographers, Tampa, Florida, USA, April 8-12.
2014	"*A Web-based Visual Analytic System for Understanding the Structure of Community Land Model*", presentation at The 2014 International Conference on Software Engineering Research and Practice, Las Vegas, NV, USA, July 21-24.
2013	"*Exploring spatiotemporal changes of user generated content from Flickr data*", presentation at The 2014 Annual Meeting of the Association of American Geographers, Los Angeles, CA, USA, April 9-13.
2012	"*Uncover Repeated Spatiotemporal Behavioral Patterns Embedded in GPS-based Taxi Tracking Data*", presentation at The 2012 International Conference on Geographic Information Science, Columbus, OH, USA, September 18-21.

F. Invited Talks and Guest Presentations

2019/11	Invited talk at the School of Urban Informatics, Shenzhen University ("*Quantifying segregation in an integrated urban physical-social space*")
2019/11	Invited talk at the School of Resource and Environmental Sciences, Wuhan University ("*Big Data for Smart Urban Mobility*")
2019/06	Invited talk at the School of Urban Informatics, Shenzhen University ("*Urban Informatics – Some Practice and Thoughts*")
2019/06	Invited talk at the School of Resource and Environmental Sciences, Wuhan University ("*Urban Informatics and Applications for Smart Cities*")
2019/06	Invited talk at the School of Urban Design, Wuhan University ("*Urban Informatics and Applications for Smart Cities*")
2019/06	Invited talk at the Central China Normal University ("*Urban Informatics and Applications for Smart Cities*")
2019/04	Invited DBA Public Lecture at the Faculty of Business, The Hong Kong Polytechnic University, Hong Kong ("*Future of Urban Sensing and Smart Cities*")
2019/04	Invited talk at the FCE Translational Research Forum on Sustainable Urban Development in the Greater Bay Area, The Hong Kong Polytechnic University, Hong Kong ("*Big Data for Sustainable Urban Mobility*")
2018/10	Invited talk at the Hong Kong FinTech Week – FinTech and Beyond, Hong Kong, China ("*Latest Research Progress in Smart Cities*").
2018/06	Invited talk at Sinagpore-MIT Alliance for Research and Technology (SMART), Singapore ("*Quantifying Urban Dynamics Using Large-Scale Mobility Datasets*").
2018/03	Invited speech at the Workshop on Urban and Transport Analytics, Hong Kong Baptist University ("*Urban Analytics – A Mobile Phone Data Perspective*").

2018/01	Invited seminar talk at the Institute of Space & Earth Information Science, Chinese University of Hong Kong ("*Urban Sensing – A Mobile Phone Data Perspective*").
2017/11	Invited speech at 2017 中国地理信息科学理论与方法学术年会 ("*Sensing Urban and Social Dynamics Using Large-Scale Mobile Phone Data*").
2017/06	Invited keynote speech at 2017 EmTech Hong Kong Conference ("*SENSEable Cities*").
2016/10	Invited seminar talk at Sinagpore-MIT Alliance for Research and Technology (SMART), Singapore ("*How Friends Share Urban Space: Evidence from Mobile Phone Data*").
2016/06	Invited presentation at School of Remote Sensing and Information Engineering, Wuhan University, Wuhan, China ("*Mobility and Activity Space: Understanding Human Dynamics from Mobile Phone Location Data*").
2016/04	Invited presentation at the 3rd Wuhan University International Forum for Interdisciplinary Sciences and Engineering, Wuhan, China ("*Mobility and Activity Space: Understanding Human Dynamics from Mobile Phone Location Data*").

HONORS AND AWARDS

2020	*Fast Company's Innovation by Design Award* (Honorable Mention, Data Design Category; Awarded Project: "Singapore Calling")
2020	*LSGI's Awards for Excellent Performance / Achievement in Teaching,* Department of Land Surveying and Geo-Informatics, The Hong Kong Polytechnic University
2020	Successful recruitment of awardee of the *Hong Kong PhD Fellowship Scheme*
2019	Successful recruitment of awardee of the *Hong Kong PhD Fellowship Scheme*
2018	*LSGI's Awards for Excellent Performance / Achievement in Teaching,* Department of Land Surveying and Geo-Informatics, The Hong Kong Polytechnic University
2015	*Exceptional Professional Accomplishment Award*, Department of Geography, The University of Tennessee, Knoxville
2015	*NSF Travel Award*, The 13th International Conference of GeoComputation
2015	*Graduate Student Publication Award*, Department of Geography, The University of Tennessee, Knoxville
2014	*Graduate Student Publication Award*, Department of Geography, The University of Tennessee, Knoxville
2011	*Outstanding Graduate Student*, Wuhan University, China
	Second-class Scholarship for Graduate Student, Wuhan University, China
2007	*First-class Undergraduate Scholarship*, Wuhan University, China
2006	*First-class Undergraduate Scholarship*, Wuhan University, China

TEACHING

A. University Courses Offered

The Hong Kong Polytechnic University (2017 – present)

CE634	Urban Big Data
LSGI544	Urban Science and Systems

LSGI3431A	System Customization and Development
LSGI3243A	Geospatial Database
LSGI3292A	Internet GIS and Web Services
LSGI4653A	Utility Data Management

SERVICE

A. Reviewer of Manuscripts for the Following Journals

Annals of the American Association of Geographers

Applied Geography

Cities

Computers, Environment and Urban Systems

Ecosystem Services

Environment and Planning B: Urban Analytics and City Science

IEEE Transactions on Systems, Man, and Cybernetics: Systems

International Journal of Applied Earth Observations and Geoinformation

International Journal of Geographical Information Science

International Journal of Sustainable Transportation

Journal of Geographical Systems

Journal of Rural Studies

Journal of The Royal Society Interface

Journal of Transport Geography

Transactions in GIS

Transportation Research Part A: Policy and Practice

Transportmetrica A: Transport Science

Travel Behaviour and Society

B. Guest Editor for the Following Journals

| 2020 | Special issue on "Human Dynamics Research in the Age of Smart and Intelligent Systems", *ISPRS International Journal of Geo-Information* |

C. Organizer/Chair for Conference Sessions and Workshops

2020	Chair, Co-Organizer, Symposium on Human Dynamics Research: Spatial-Social Networks and Network Science, Annual Conference of American Association of Geographers, Denver, USA, April 6-10.
2019	Co-Organizer, Workshop on "Smart Mobility and Big Data", RISUD Annual International Symposium, Hong Kong, China, November 25-26.
2018	Chair, Co-Organizer, Symposium on New Horizons in Human Dynamics Research: Spatial-Social Networks in GIS (I), Annual Conference of American Association of Geographers, New Orleans, USA, April 10-14.

2018   Co-Organizer, Symposium on New Horizons in Human Dynamic Research: Time-Geography – a way of thinking, Annual Conference of American Association of Geographers, New Orleans, USA, April 10-14.

D. Service to the Professional Society

Board Member, Chinese Professionals in Geographic Information Sciences (CPGIS), 2018 - present

E. Service to the University

Program leader, MSc in Urban Informatics and Smart Cities, Department of Land Surveying and Geo-Informatics, The Hong Kong Polytechnic University, 2020 – present;

Deputy program leader, MSc in Geomatics, Department of Land Surveying and Geo-Informatics, The Hong Kong Polytechnic University, 2018 – present;

Department program exchange officer, Department of Land Surveying and Geo-Informatics, The Hong Kong Polytechnic University, 2018 – present