Junjun Yin, Ph.D

Contact information

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The Pennsylvania State University
State College, PA, 16801, United States

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Current Position

ICS Associate
Penn State Institute for CyberScience

Research Associate
Social Science Research Institute
The Pennsylvania State University, University Park, PA, 16802, USA

Previous Position

Postdoctoral Research Fellow
CyberGIS Center for Advanced Digital and Spatial Studies
Department of Geography and Geographic Information Science
National Center for Supercomputing Applications (NCSA)
University of Illinois at Urbana-Champaign, IL, USA

Research Interests

GIScience; Spatial Analysis and Modeling; Urban Complexity and Human Mobility; (Geo) Visual-Analytics and Data Mining; GeoSpatial Big Data Analytics; GeoComputing; Spatial Interaction; High-performance (cyberGIS), Web and Mobile GIS

Education

2009 - 2013 *Ph.D* in Spatial Information Science, Dublin Institute of Technology, Ireland
Advisors: Dr. James D. Carswell (Dublin Institute of Technology), Dr. Michela Bertolotto (University College Dublin)

2006 - 2009 *MSc* in Geomatics, University of Gävle, Sweden
Advisor: Dr. Bin Jiang (University of Gävle)

2002 - 2006 *BSc* in Electronic Engineering, University of Electronic Science and Technology of China

Academic Experience

2016-present Social Science Big Data Research Scientist, Pennsylvania State University, USA
2016 Lecturer, University of Illinois at Urbana-Champaign, USA
2014-2016 Postdoctoral Research Associate, CyberGIS Center for Advanced Digital and Spatial Studies; Department of Geography and Geographic Information Science; National Center for Supercomputing Applications; University of Illinois at Urbana-Champaign, USA
2013-2014 Senior Demonstrator, Dublin Institute of Technology, Ireland
2007-2008 Research Assistant, Hong Kong Polytechnic University, Hong Kong SAR, China

Research Grants and Projects

Co-PI. "RR: The Generalizability and Replicability of Twitter Data for Population Research". National Science Foundation SOC grant, lead PI: Prof. Guangqing Chi (in review)
PI. "Data Science: Mining sequential mobility patterns from semantic Twitter user trajectories". Microsoft Azure Data Science Research Award, $\$10,000$. Project dates: 05/01/2018—04/30/2019
Co-I. "Cognitive Changes Associated with Hormonal Treatment for Breast Cancer". Health & Environment initiative seed grant award, lead I: Prof. Sheri A. Berenbaum, $49,972. Project dates: 07/01/2017—06/30-2019
Co-PI. "The Generalizability and Replicability of Twitter Data for Population Research". ICS seed grant award, lead PI: Prof. Guangqing Chi, $35,000. Project dates: 07/01/2018—06/30-2019
Co-PI. "Ecological Migration in a Large-Scale Quasi-Experiment Design in China: Implications of Climate Change, Landscape Structure, Ecosystem Services and Government Intervention". IEEE seed grant award, lead PI: Prof. Guangqing Chi, $25,000. Project dates: 04/15/2017—06/30-2018
PI. "Mining Twitter User Demographics as a First-Step in Big Data for Population Research". XSEDE (Extreme Science and Engineering Discovery Environment) Startup computational resource allocation award, 50,000 SUs & 40 TB storage (estimated $2,794.78). Project dates: 03/27/2017—09/26-2018
PI. "A cloud computing enabled GIS platform for the integration and synthesis of multi-layer geospatial data sources in urban studies: Understanding urban dynamics from geospatial Big Data". Microsoft Azure Data Science Research Award, $\$20,000$. Project dates: 12/04/2016—12/03/2017
SP/Research Scientist. "Activity space contexts and measuring environmental exposure in behavioral research". R21 NCI grant (ASCMEE Study), lead PI: Prof. Stephen Matthews.

Publications

Peer Reviewed Journals

2018 Gao, Y., Wang, S. Padmanabhan, A., **Yin, J.** and Cao, G. (2018). Mapping Spatiotemporal Patterns of Events Using Social Media: A Case Study of Influenza Trends. *International Journal of Geographical Information Science*, 32(3), pp. 425-449, DOI:10.1080/13658816.2017.1406943

2017 **Yin, J.**, Soliman, A., Yin, D. and Wang, S. (2017). Delineate Urban Boundaries in Great Britain from the Network of Large Scale Twitter User Spatial Interactions. *International Journal of Geographical Information Science*, 31(7), pp. 1293-1313, DOI:10.1080/13658816.2017.1282615

2017 Soliman, A., Soltani, Q., **Yin, J.**, Padmanabhan, A., and Wang, S (2017). Social sensing of urban land use based on analysis of Twitter users' mobility patterns. *PLoS ONE*, 12(7): e0181657. DOI:10.1371/journal.pone.0181657

2017 Zheng, K., Kwan, M.P., Fang, L., **Yin, J.**, Gu, D. and Fu, Y. (2017). A Topology-concerned Spatial Vector Data Model for Column-oriented Databases. *International Journal of Database Theory and Application*, 10(5), pp. 33-46, DOI:10.14257/ijdta.2017.10.5.04

2016 **Yin, J.**, Gao, Y., Du, Z. and Wang, S. (2016). Exploring Multi-Scale Spatiotemporal Twitter User Mobility Patterns with a Visual-Analytics Approach *ISPRS International Journal of Geo-Information*, 5(10):187.

2016 Jiang, B., Ma, D., **Yin, J.** and Sandberg, M. (2016). Spatial Distribution of Tweet Numbers and Densities in Cities. *Geographical Analysis, DOI: 10.1111/gean.12096*

2015 Jiang, B.,**Yin, J.** and Liu, Q. (2015). Zipf's Law for All the Natural Cities around the World. *International Journal of Geographical Information Science, 29(3), pp. 498-522*

2014 Jiang, B. and **Yin, J**. (2014). Ht-Index to Quantify the Fractal or Scaling Structure of Geographic Features. *Annals of the Association of American Geographers*, 104(3), pp. 530–540, DOI:10.1080/00045608.2013.834239

2013 **Yin, J.** and Carswell, J.D. (2013). Spatial Search Techniques for Mobile 3D Queries in Sensor Web Environments. *ISPRS International Journal of Geo-Information*, 2(1): pp.135-154

2010 Carswell, J. D., **Yin, J.** and Gardiner, K. (2010). 3DQ: Threat Dome Visibility Querying on Mobile Devices *GIM International*, 24(8)

2010 Carswell, J.D., Gardiner, K. and **Yin, J.** (2010). Mobile Visibility Querying for LBS. *Transactions in GIS*, 14(6): pp. 791-809, Wiley online library

2009 Jiang, B., **Yin, J.** and Zhao, S. (2009). Characterizing the human mobility pattern in a large street network. *Physical Review E*, 80(2), 021136

2008 Jiang, B., Zhao, S. and **Yin, J.** (2008). Self-organized natural roads for predicting traffic flow: a sensitivity study. *Journal of statistical mechanics: Theory and experiment*, P07008, IOP Publishing

Peer Reviewed Conferences and Lecture Notes

2017 **Yin, J.** (2017). Mining sequential mobility pattern from semantics enriched Twitter user trajectories. *NSF Mobility Workshop on Analyzing Movement and Mobility within Geographic Context*, May 11–12, 2017, The Ohio State University, Columbus, Ohio

2017 Chi, G., **Yin, J.** and Hook, J.V. (2017). Predicting Twitter User Demographics as a First Step in Big Data for Population Research. *The 28th International Population Conference of the International Union for the Scientific Study of Population*, October 29–November 4, 2017, Cape Town, South Africa

2016 **Yin, J.**, Lu, B., Yin, D. and Wang, S. (2016). A scalable visual-analytics approach for studying mobility networks: Revealing hierarchical structures in taxi mobility flows of New York, *The Third International Conference on CyberGIS and Geospatial Data Science*, July 26–28, 2016, Urbana, Illinois

2016 **Yin, J.**, Gao, Y. and Wang, S. (2016). Urban Sensing from Volunteered Citizen Participation

using Mobile Devices. In *Seeing Cities through Big Data: Research, Methods and Applications in Urban Informatics*, Springer

2015 Soliman, A., **Yin, J**, Soltani, K., Padmanabhan, A., and Wang, S. (2015). Where Chicagoans tweet the most: Semantic analysis of preferential return locations of Twitter users, *1st International Workshop on Smart Cities and Urban Analytics 2015, 23rd ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*

2014 **Yin, J.** and Wang, S. (2014). Understanding the Evolvements of Natural Cities from Nighttime Light Images: A CyberGIS-Enhanced Approach to Large Scale Geospatial Data Analysis, *The Second International Conference on CyberGIS and Geodesign*, August 19-21, 2014, Redlands, California

2014 **Yin, J.**, Gao, Y. and Wang, S. (2014). CyberGIS Enabled Urban Sensing from Volunteered Citizen Participation using Mobile Devices. *NSF Workshop on Big Data and Urban Informatics 2014*

2013 Truong-Hong, L., Thi, T.T.P, **Yin, J.** and Carswell, J.D. (2013). Detailed 3D building models for Google Earth integration. In *Proceedings of the 13th International Conference on Computational Science and Its Applications (ICCSA 2013)*, Ho Chi Minh City, Vietnam: Springer(∗Best paper award)

2013 Thi, T.T.P, Truong-Hong, L., **Yin, J.** and Carswell, J.D. (2013). Exploring Spatial Business Data: A ROA based eCampus application. In *Proceedings of the 11th International conference on Web and Wireless Geographical Information Systems*, Banff, AB: Springer Berlin Heidelberg, pp. 164-179

2012 **Yin, J.** and Carswell, J.D. (2012). Effects of Variations in 3D Spatial Search Techniques on Mobile Query Speed vs Accuracy. *Web and Wireless Geographical Information Systems*, Naples, Italy. (∗*Best paper award*)

2012 Carswell, J.D. and **Yin, J.** (2012). Mobile Spatial Interaction in the Future Internet of Things. In *Proceedings of the 20th International Conference on Geoinformatics (GEOINFORMATICS)*, 2012, pp. 1-6

2012 **Yin, J.** and Carswell, J.D. (2012). MobiSpatial: Open-source for Mobile Spatial Interaction. *SAC, 12 Proceedings of the 27th Annual ACM Symposium on Applied Computing*, pp. 572-573

2012 **Yin, J.** and Carswell, J.D. (2011). Touch2Query enabled mobile devices: A case study using OpenStreetMap and iPhone. *Web and Wireless Geographical Information Systems*, pp. 203-218, Springer

2009 Gardiner, K., **Yin, J.** and Carswell, J.D. (2009). EgoViz: A mobile based spatial interaction system. *Web and Wireless Geographical Information Systems*, pp. 135-152, Springer

Books

2009 **Yin, J.** (2009), *The Topological Patterns of Urban Street Networks: Exploring the topological patterns of urban street networks from analytical and visual perspectives*, VDM: Germany, ISBN: 3639161734

Invited talks

2018 **Yin, J.** (2018). Geo-Complexity and Human mobility: Through the lens of spatial Big Data to understand urban dynamics. February 1st, 2018, University of Denver, Denver, CO

80208,USA

2018 **Yin, J.** (2018). Hadoop. Software in the Humanities and Social Sciences Workshop. February 28th, 2018, The Penn State University, University Park, PA 16802, USA

Presentations

2017 **Yin, J.** (2017). A mobility network approach to modeling urban spatial interactions: Insights from the movement Big Data in New York City. The Association of American Geographers Annual Meeting, April 5 – 9, 2016, Boston, Massachusetts, USA

2016 **Yin, J.** and Wang, S. (2016). Mining Mobility Patterns From Semantic Twitter User Trajectories. The Association of American Geographers Annual Meeting, March 29 – April 2, 2016, San Francisco, California, USA

2015 **Yin, J.** and Wang, S. (2015). Finding community structures of UK cities based on large-scale Twitter user mobility patterns, *Association of American Geographers Annual Meeting, Chicago, 2015*, April 21-25, 2015, Chicago, Illinois, USA

2011 **Yin, J.** (2011), Web-service based Mobile Geospatial Application Development using Python, *PyCon 2011*, Dublin, Oct 8-9

Teaching Experience as Instructor

2016 - GEOG 479: Advanced Topics in GIS – CyberGIS, Spring, 2016, *Lecturer*, Department of Geography and Geographic Information Science, UIUC

2015 - Parallel Databases, *workshop/short course series*, CyberGIS Center, UIUC

2015 - Interactive Visualization of Large-scale Movement Data using Apache Spark, *Summer school series*, CyberGIS Center, UIUC

2015 - Introducing the CyberGIS Toolkit in high performance computing environment, *workshop/short course series*, CyberGIS Center, UIUC

2015 - Taming with geospatial Big Data with Hadoop, *workshop/short course series*, CyberGIS Center, UIUC

2014 - Getting to know CyberGIS, *workshop/short course series*, CyberGIS Center, UIUC

2014 - 2016 Education and outreach at the CyberGIS Commons, *secretary*, University of Illinois at Urbana-Champaign, 2014 - 2016

2013 Programming in C, *senior demonstrator/assistant lecturer*, Dublin Institute of Technology, 2013 - 2014

2013 Object oriented programing for game development, *senior demonstrator/assistant lecturer*, Dublin Institute of Technology, 2013 - 2014

2013 User interface design and GUI programing with Java, *senior demonstrator/assistant lecturer*, Dublin Institute of Technology, 2013 - 2014

Skills

Programing languages:Java, Python, Objective-C, Matlab, R, JavaScript, NoSQL
High performance computing: Apache Hadoop, Apache Spark, MongoDB
Mobile and Web development: iOS and Android, Cesium 3D Globe, D3.js
Spatial databases: PostGIS, Oracle Spatial, SpatiaLite

Honors and Awards

2013 *Fiosraigh Head of School Research Award*: for excellence in research, Dublin Institute of Technology

2013 *EU Future Internet Award*: for excellence in Future Internet research

2009 *PhD scholarship from Science Foundation Ireland (SFI)*: StratAG PhD scholarship

2006 *Outstanding Graduate Student Award*: University of Electronic Science and Technology of China

2006 *Best Undergraduate Dissertation Award*: Department of Electronic Engineering, University of Electronic Science and Technology of China

2005 *National Undergraduate Electronic Design Contest: Second prize*:Embedded system for Multi-channel and frequency wave generating, (Team: Junjun Yin, Yu Chen and Xia Yu)

Service to the Profession

Guest editor

Guest editor for Special Issue of "Chinese Sociological Dialogue": Spatiotemporal Big Data and Sustainable Social Development (2017)

Program committees

Session Co-chair for Advances in Spatial Interaction Models and Methods in the Big Data Era I, Spatiotemporal Symposium, 2018 AAG Annual Meeting, New Orleans, April 10 – April 14, 2018
Session Co-chair for Big Movement Data for Geospatial Analytics on Urban Interactions, Symposium on Human Dynamics in Smart and Connected Communities, 2017 AAG Annual Meeting, Boston, Massachusetts, April 5 - April 9, 2017
Session Chair for Understanding Urban Dynamics Based on Movement Big Data, 2016 AAG Annual Meeting, San Francisco, California, March 29 - April 2, 2016
Program committee member for International Conference on Location-based Social Media Data, Athens, Georgia, USA, March 5-7, 2015

Reviewer for Journals

Reviewer for *International Journal of Geographical Information Science (IJGIS)* (2010, 2014, 2015, 2016, 2017, 2018)
Reviewer for *Computers, Environment and Urban Systems (CEUS)* (2009, 2010, 2013, 2014, 2015, 2016, 2017)
Reviewer for *EPJ Data Science* (2017)
Reviewer for *GeoJournal* (2018)
Reviewer for *Geographical Analysis* (2016, 2017)
Reviewer for *Cluster Computing* (2017)
Reviewer for *Journal of Geographical Systems* (2016, 2017)
Reviewer for *Demography* (2016, 2017, 2018)
Reviewer for *Environment and Planning B: Planning and Design* (2016, 2017)

Reviewer for *Science China Information Science* (2015)
Reviewer for *PLOS One* (2013, 2015, 2017)
Reviewer for *Cities* (2014)
Reviewer for *ISPRS International Journal of Geo-Information* (2013, 2014, 2015)
Reviewer for *Journal of Location Based Services* (2013)

Reviewer for Conferences

Reviewer for GIScience 2014, 2016
Reviewer for UbiComp 2016

Referees

Dr. Shaowen Wang
Professor and Centennial Scholar
CyberGIS Center for Advanced Digital and Spatial Studies
CyberInfrastructure and Geospatial Information Laboratory
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Dr. James D. Carswell
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Dr. Guangqing Chi
Associate Professor
Department of Agricultural Economics, Sociology, and Education (112E Armsby)
Population Research Institute (803 Oswald)
The Pennsylvania State University, University Park, PA 16802

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