JIN XING

Advanced Analytics Manager, TD Insurance, Toronto, Canada

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RESEARCH INTEREST

Catastrophe Modelling, GeoAI, Smart Cities, CyberGIS and Remote Sensing.

APPOINTMENTS

2022.9~: Advanced Analytics Manager, TD Insurance, Toronto, Canada.

2018.9-2022.9: Lecturer (Assistant Professor) in Geospatial Analysis, School of Engineering, Newcastle University.

EDUCATION

2012 - 2018: Ph.D. in Department of Geography, McGill University, Montreal, Quebec, Canada.
Dissertation: *Scale Handling for Land Use/Cover Change in an Era of Big Data*

2009 - 2012: Master of Science in the School of Computer Science, McGill University, Montreal, Quebec, Canada.
Thesis*: IHC3: An Integrated Hybrid Cloud Computing Cyberinfrastructure for GIS/ RS Research*

SELECTED AWARDS &GRANTS

2022.8 Principal Investigator, A 3D agent-based model for simulating urban redevelopment at the building scale, Natural Environment Research Council, (NE/X006727/1).

2022.5 Principal Investigator, Transfer Learning and Bayesian Inference within Smart Cities, Defence Science and Technology Laboratory, UK Government, (GEO22_DSTL).

2022.3 Principal Investigator, Explainable Geospatial Artificial Intelligence via Public Participation, Newcastle University, (OSR/0539/QRER/0003).

2020.9 Co-Investigator, 5G Enabled Automated Logistics (TS/V01062X/1).

2018.12 Co-Investigator, PAFiC: Precision Agriculture for Family-farms in China, the STFC-NSFC Newton Agri-Tech Joint Programme (ST/N006801/1).

2018.6 Top 5 finalist in the Smart Cities Challenge of Canada, as a member of the Quebec City team.

2018.1 MITACS Acceleration Postdoc Scholarship, Canada.

2017.12 Graduate Research Enhancement and Travel Award**,** Department of Geography, McGill University.

2017.2 Semi-final in the Small & Medium Enterprise Track, Dobson Cup, McGill University: *Remote Sensing for Parking App*.

2016.7	NSF travel grants for NSF Workshop on Geospatial Data Science in the Era of Big Data and CyberGIS; and The Third International Conference on CyberGIS and Geospatial Data Science.
2016.2	Microsoft Azure Research Grant
2015.3	Second Place in ESRI App Challenge 2015
2014.9	Global Environment & Climate Change Center Student Research Award, McGill University
2014.3	Amazon Web Service in Education Research Grant
2013.9	Rathlyn GIS Award, Department of Geography, McGill University
2011.11	Amazon Web Service in Education Research Grant

PEER-REVIEWED JOURNAL PUBLICATIONS

- Chen, L., Fang, Z., **Xing, J.***, & Cai, X. (2024). How can geostatistics help us understand deep learning? An exploratory study in SAR-based aircraft detection. *International Journal of Applied Earth Observation and Geoinformation*, *134*, 104185.
- Chen, L., Li, Z., Song, C., **Xing, J.**, Cai, X., Fang, Z., ... & Li, Z. (2024). Automatic detection of earthquake triggered landslides using Sentinel-1 SAR imagery based on deep learning. *International Journal of Digital Earth*, *17*(1), 2393261.
- Chen, L., Cai, X., Li, Z., **Xing, J.*,** & Ai, J. (2024). Where is my attention? An explainable AI exploration in water detection from SAR imagery. *International Journal of Applied Earth Observation and Geoinformation*, *130*, 103878.
- Zhang, H., He, B., **Xing, J.**, & Lu, M. (2023). Deep spatial and temporal graph convolutional network for rice planthopper population dynamic forecasting. *Computers and Electronics in Agriculture*, *210*, 107868.
- Chen, L., Cai, X., **Xing, J***., Li, Z., Zhu, W., Yuan, Z., & Fang, Z. (2023). Towards transparent deep learning for surface water detection from SAR imagery. *International Journal of Applied Earth Observation and Geoinformation*, *118*, 103287.
- **Xing, J**., & Sieber, R. E.* (2023). Geographically Explainable Artificial Intelligence: Challenges and Opportunities. *Transactions in GIS*.
- Chen, L., Luo, R., **Xing, J.***, Li, Z., Yuan, Z., & Cai, X. (2022). Geospatial transformer is what you need for aircraft detection in SAR Imagery. *IEEE Transactions on Geoscience and Remote Sensing*.
- Zhang, H., He, B.*, **Xing, J.**, & Lu, M. (2022). Spatial and temporal patterns of rice planthopper populations in South and Southwest China. *Computers and Electronics in Agriculture*, 194, 106750.
- Luo, R., **Xing, J.,** Chen, L.*, Pan, Z., Cai, X., Li, Z., ... & Ford, A. (2021). Glassboxing Deep Learning to Enhance Aircraft Detection from SAR Imagery. *Remote Sensing*, 13(18), 3650.
- Luo, R., Chen, L.*, **Xing, J.**, Yuan, Z., Tan, S., Cai, X., & Wang, J. (2021). A Fast Aircraft Detection Method for SAR Images Based on Efficient Bidirectional Path Aggregated Attention Network. *Remote Sensing*. 2021, 13, 2940.
- Cai, X., Chen, L.*, **Xing, J.**, Xing, X., Luo, R., Tan, S., & Wang, J. (2021). Automatic Extraction of Layover From InSAR Imagery Based on Multilayer Feature Fusion Attention Mechanism. *IEEE Geoscience and Remote Sensing Letters*.
- Chen, L., Weng, T.*, **Xing, J.,** Li, Z., Yuan, Z., Pan, Z., Tan, S., Luo, R. (2021). Employing

Deep Learning for Automatic River Bridge Detection from SAR Images Based on Adaptively Effective Feature Fusion. *International Journal of Applied Earth Observation and Geoinformation*.

- Li, S.*, Blythe, P., Zhang, Y., Edwards, S., **Xing, J.**, Guo, W., ... & Namdeo, A. (2021). Should older people be considered a homogeneous group when interacting with level 3 automated vehicles?. *Transportation Research Part F: Traffic Psychology and Behaviour*, 78, 446-465.
- Wang, J., Xiao, H.*, Chen, L., **Xing, J.,** Pan, Z., Luo, R., Cai, X. (2021). A Multi-scale Deep Neural Network for Water Detection from SAR Images in the Mountainous Areas. *Remote Sensing.*
- Peppa, M. V., Komar, T., Xiao, W.*, James, P., Robson, C., **Xing, J.**, & Barr, S. (2021). Towards an End-to-End Framework of CCTV-Based Urban Traffic Volume Detection and Prediction. *Sensors*, 21(2), 629.
- Zhang, Y*., Caldwell, G. S., Blythe, P. T., Zealand, A. M., Li, S., Edwards, S., **Xing, J.,** ... & Sallis, P. J. (2020). Co-digestion of microalgae with potato processing waste and glycerol: effect of glycerol addition on methane production and the microbial community. *RSC Advances*, 10(61), 37391-37408.
- Tan, S., Chen, L.*, Pan, Z., **Xing, J.,** Li, Z., & Yuan, Z. (2020). Geospatial Contextual Attention Mechanism for Automatic and Fast Airport Detection in SAR Imagery. *IEEE Access*.
- Chen, L., Zhang, P., **Xing, J.*,** Li, Z., Xing, X., & Yuan, Z. (2020). A Multi-scale Deep Neural Network for Water Detection from SAR Images in the Mountainous Areas. *Remote Sensing.*
- Chen, L., Tan, S., Pan, Z., **Xing, J.,** Xing, X., & Yuan, Z*. (2020). A New Framework for Automatic Airports Extraction from SAR Images Using Multi-level Dual Attention Mechanism. *Remote Sensing*, 12(3), 560.
- Chen, L., Weng, T., **Xing, J.*,** Pan, Z., Xing, X., & Yuan, Z. (2020). A new deep learning network for automatic bridge detection from SAR images based on balanced and attention mechanism. *Remote Sensing*, 12(3), 441.
- **Xing, J**.*,Sieber, R. E., & Roche, S. (2020). Rethinking Spatial Tessellation in an era of Smart Cities. 2020 Special Issue of the *Annals of the American Association of Geographers* on the topic of Smart Spaces and Places.
- Zhang, P., Chen, L.*, Li, Z., **Xing, J.**, Xing, X., & Yuan, Z. (2019). Automatic Extraction of Water and Shadow from SAR Images Based on a Multi-Resolution Dense Encoder and Decoder Network. *Sensors*, 19(16), 3576.
- Chen, L., Cui, X., Li, Z., Yuan, Z.*, **Xing, J.,** Xing, X., & Jia, Z. (2019). A new Deep Learning Algorithm for SAR Scene Classification Based on Spatial Statistical Modeling and Features Re-calibration. *Sensors*, 19(11), 2479.
- **Xing, J**.*, Sieber, R. E., & Caelli, T. (2018). A Scale Invariant Change Detection Method for Land Use/Cover Change Research Algorithm. *ISPRS Journal of Photogrammetry and Remote Sensing.*
- **Xing, J**.*, & Sieber, R. E. (2016). A land use/land cover change geospatial cyberinfrastructure to integrate big data and temporal topology. *International Journal of Geographical Information Science*, 30(3), 573-593.

- **Xing, J**.*, Sieber, R. E., & Kalacska, M. (2014). The challenges of image segmentation in big remotely sensed imagery data. *Annals of GIS*, 20(4), 233-244.

CONFERENCE PROCEEDINGS

- Burke, R., **Xing, J**.*, Ford, A., & Dawson, R. (2022). A Geospatial Modelling Framework to Assess Flood Risk Under Future Scenarios of Urban Form. *ACM SIGSPATIAL 2022,* November 1-4, 2021, Seattle, Washington, USA.
- **Xing, J**.*, & Sieber, R. (2021). Integrating XAI and GeoAI. *GIScience 2021,* September 27-30, 2021, Poznań, Poland.
- **Xing, J**.*, & Sieber, R. (2021). Challenges of Using XAI for Geographic Data Analytics. In *The 1st International Workshop on Methods, Models, and Resources for Geospatial Knowledge Graphs and GeoAI*, September 27, 2021, Poznań, Poland.
- **Xing, J**.*, & Sieber, R. (2018). Propagation of Uncertainty for Volunteered Geographic Information in Machine Learning. *GIScience 2018,* Melbourne, Australia.
- **Xing, J**.*, & Sieber, R. (2016). Scale Verification in GyberGIS: A Case Study in Road Change Detection. In *The Third International Conference on CyberGIS and Geospatial Data Science*, July 26-28, 2016, Urbana, Illinois, USA.
- **Xing, J**.*, & Sieber, R. (2016). Geospatial CyberInfrastructure in Land Use/Cover Change Research. Position Paper on *NSF Workshop on Geospatial Data Science in the Era of Big Data and CyberGIS*, July 25-26, 2016, Urbana, Illinois, USA.
- **Xing, J**.*, & Sieber, R. (2014). Sampling based image splitting in large scale distributed computing of earth observation data. In *Geoscience and Remote Sensing Symposium (IGARSS), 2014 IEEE International* (pp. 1409-1412). IEEE.

SELECTED PRESENTATIONS & POSTERS

2024.11 **Xing, J.,** (2024). The Challenges of Using Emerging Technologies and AI for Flood Risk Assessment, Green Citizen Symposium, Thrive & Transform: A Resilient Journey at Seneca, November 5-7, 2024, Toronto, Ontario, Canada.

2022.2 **Xing, J**., & Sieber, R. (2022). Scale Challenges in Explainable GeoAI. Presentation at the *Association of American Geographers* Annual Conference. February 25- March1, 2022, Online.

2019.4 **Xing, J**., James, P., & Barr, S., (2019). Employing Deep Learning for Real-Time Sewage Level Prediction within Smart Cities. Presentation at the *Association of American Geographers* Annual Conference. 3-7 April. Washington DC, USA.

2018.8 **Xing, J**., & Roche, S., (2018). Geospatial Blockchain: An Efficient Approach to Track Volunteered Geographic Information. Presentation at the International Geographic Union Annual Conference. 6-10 August, Quebec City, Quebec, Canada.

2018.8 Zheng, Z., & **Xing, J**. (2018). Investigating Bias in the Applications of Random Forest to Semantic Place Recognition - Extended Abstract. *GIScience 2018*.

2018.8 **Xing, J**., & Sieber, R. (2018). Propagation of Uncertainty for Volunteered Geographic Information in Machine Learning. *GIScience 2018*.

2018.4 **Xing, J**., & Sieber, R., (2018). Deploying Computer Vision Algorithms within CyberGIS for Big Data Analytics. Presentation at the *Association of American Geographers*

Annual Conference. 10-14 April. New Orleans, LA.

2018.4 Lumley, S., **Xing, J**., & Sieber, R., (2018). Web Mapping for Data Visualization: Does Mercator Matter?. Poster at the *Association of American Geographers* Annual Conference. 10-14 April. New Orleans, LA.

2016.7 **Xing, J**., & Sieber, R. (2016). Scale Verification in GyberGIS: A Case Study in Road Change Detection. Presentation at *The Third International Conference on CyberGIS and Geospatial Data Science*, July 26-28, 2016, Urbana, Illinois, USA.

2016.7 **Xing, J**., & Sieber, R. (2016). Geospatial CyberInfrastructure in Land Use/Cover Change Research. Presentation at *NSF Workshop on Geospatial Data Science in the Era of Big Data and CyberGIS*, July 25-26, 2016, Urbana, Illinois, USA.

2015.12 **Xing, J**., & Sieber, R. (2015). Multi-Scale Change Detection Research of Remotely Sensed Big Data in CyberGIS. Presentation at the *American Geophysical Union 2015 Fall Meeting*, 2015, San Francisco, CA, USA.

2015.11 **Xing, J**., & Sieber, R. (2015). A Land Use/Land Cover Change Geospatial CyberInfrastructure to Integrate Big Data and Temporal Topology, Presentation at 2015 *GIS in Education and Research Conference*, Toronto, ON. Canada.

2014.11 **Xing, J**., & Sieber, R. (2014). Graph based big data analysis in change detection. Poster on *Interdisciplinary Workshop on Geospatial Computing (IWGC-2014)*, 2014, Kitchener, Ontario, Canada.

2014.7 **Xing, J**., & Sieber, R. (2014). Sampling based image splitting in large scale distributed computing of earth observation data. Presentation *at IEEE Geoscience and Remote Sensing Symposium (IGARSS)*, Quebec City, Quebec, Canada.

2013.4 **Xing, J**., Sieber, R., & Kalacska, M., (2013). Big Data in Intelligent Geographic Image Analysis: Challenges and Approaches. Presentation at the *Association of American Geographers* Annual Conference. 9-13 April. Los Angeles, CA.

PROFESSIONAL SERVICES

2020-2024 Committee Member, Urban Geography Research Group of Royal Geographical Society, United Kingdom.

2020-2022 Geospatial Commission Consultant, Cabinet Office, UK government.

2020~ Grant Reviewer, Netherlands Space Office.

2020~ Grant Reviewer, Medical Research Council, United Kingdom.

2020~ Grant Reviewer, Engineering and Physical Sciences Research Council, United Kingdom.

2019~ Grant Reviewer, Natural Environment Research Council, United Kingdom.

2019.4 Chair, Symposium on Frontiers in Geospatial Data Science: Geospatial Artificial Intelligence: Machine Learning and Deep Learning, *Association of American Geographers* Annual Conference. 3-7 April. Washington DC, USA.

2019.2 Guest editor, Special Issue "Deep Learning Approaches for Urban Sensing Data Analytics", *Remote Sensing*.

2018-2019 Committee Member, GISRUK 2019, United Kingdom**.**

2015.10 Guest lecturer, *Geospatial CyberInfrastructure and CyberGIS*, GEOG506, McGill University.

2014.9 Guest lecturer, *Land Use/Cover Change Detection Algorithms*, GEOG535, McGill

University.

SUPERVISION EXPERIENCE

2022-2024: Dr. Adam Booth, "ADviSA: Adaptive Data-driven Smart Transportation through AI", School of Engineering, Newcastle University.

2021-2024: Dr. Richard Burke, "Simulating Urban Evolution at the Building Scale with an Agent-Based Model", School of Engineering, Newcastle University.

2020-2023: Miss. Yumeng Zhang, "Rescuing Historical Climate Records using Deep Learning Techniques", Co-supervision with Professor Renee Sieber, Department of Geography, McGill University.

2018-2019: Dr. Lifu Chen, visiting scholar, School of Electrical and Information Engineering, Changsha University of Science & Technology.

TEACHING EXPERIENCE

Newcastle University

2019-2022 Instructor, CEG8717, Dissertation in Geospatial Data Science

2019-2022 Instructor, CEG8705, Geospatial Information Systems

2019-2022 Instructor, CEG8704, Advanced Geospatial Information Systems

2019-2022 Instructor, CEG8716, Geospatial Informatics with Projects

2018-2022 Instructor, CEG2704, Geospatial Information Systems: Theory and Application

2018-2022 Instructor, CEG3716, Geospatial Informatics

2018-2022 Instructor, CEG3305, Computational Engineering Analysis

2018-2022 Instructor, CEG3799, Individual Research Project

2018-2022 Instructor, CEG2720, Geospatial Engineering Practice and Research

2018-2022 Instructor, CEG1711, Tutorial Study Skills for Geospatial Engineering

McGill University

2023.9-2024.1 Co-Instructor, MATH527: Statistical Data Science Practicum, Department of Mathematics and Statistics, McGill University

2017.9-2018.1 Co-Instructor, GEOG506: Advanced GIScience, Department of Geography, McGill University.

2016.6 Instructor, McGill Summer CAMP on GEOWEB & Climate Modelling, McGill University.

2014.6 Instructor, McGill Summer CAMP on GEOWEB & Climate Modelling, McGill University

LANGUAGES

English (Fluent), French (Intermediate), and Chinese (Mother Language)

PROFESSIONAL MEMBERSHIP

Engineering and Physical Sciences Research Council Peer Review College, United

Kingdom

Royal Geographical Society with the Institute of British Geographers (RGS-IBG)

American Association of Geographers (AAG)

American Geophysical Union (AGU)

Institute of Electrical and Electronics Engineers (IEEE)

Association for Computing Machinery (ACM)