Ivan Brugere

Lead AI Research Scientist

ivan@ivanbrugere.com ivanbrugere
Chicago, IL

Current Objective

I am a Lead AI Research Scientist with 5 years of experience focusing on robustness, fairness and privacy. I am seeking AI scientist roles focusing on Trustworthy AI, with opportunities to collaborate internally and externally, and mentor junior scientists and students. Prior, my PhD (defended 2020) focused on graph topology inference in machine learning, with applications in biological sciences.

Experience

Jan. 2025- **J.P. Morgan Chase & Co.** Lead AI Research Scientist - Trustworthy AI
Working on AI robustness and fairness: explainable and private LLM methods, fair agent-based learning, robust and fair tree-based ensembles. Published in ICML, NeurIPS, TMLR, 12 patents filed.

2021-2024 **J.P. Morgan Chase & Co.** AI Research Scientist

2019-2020 **Salesforce Research** Research Scientist - AI For Good
Worked with several Salesforce non-profit customers and external collaborators. Focused on projects relating to fairness and bias, particularly in AutoML platforms, and novel, structured environments such as graphs/networks.

Summer 2018 **Amazon** Applied Scientist Intern (*Mentor: Alex Smola*)
Designed deep learning graph APIs on MXNet for scalable training as part of the DGL project. Part of the Amazon Web Services AI Platforms team.

Summer 2015 **Microsoft** Data Science Intern (*Mentor: Marcello Hasegawa*)
Developed textual and device models for novelty detection and attribution in the Windows 10 user population.

Summer 2014 **Lawrence Livermore National Laboratory** Research Intern (*Mentor: Brian Gallagher*)
Formulated graph inference problems over several scientific research domains.

2013-2015 **University of Illinois at Chicago** Research Fellow (*Mentor: Prof. Venkat Venkatakrishnan*)
Graph-based models for attribute inference and privacy preservation on real mobile device datasets.

Summer 2013 **Technicolor Research** Research Intern (*Mentor: Fernando Silveira*)
Rule discovery for biometric sensor time series data for actionable analysis of film audiences. Developed methods to discover and visualize dynamic audience communities.

2012-2017 **University of Illinois at Chicago** Research Assistant (*Advisor: Prof. Tanya Berger-Wolf*)
Model selection for graph structure inference and prediction. Focusing on ecology and populations biology domains.

2010-2012 **University of Minnesota** Research Assistant (*Advisor: Prof. Vipin Kumar*)
Time series change detection and anomaly detection on large remote sensing datasets. Focused on incorporating spatial aspects for change significance testing, and domain-driven information retrieval.

2004-2007 **University of Minnesota** Web Applications Developer (Department of Computer Science)

2002-2003 **University of Minnesota** Web Applications Developer (College of Liberal Arts)

Education

2012-2020 **University of Illinois at Chicago** Computer Science PhD (*Advisor: Prof. Tanya Berger-Wolf*)
Thesis: Network Structure Inference: Methodology and Applications.

2009-2012 **University of Minnesota** Computer Science M.S. (*Advisor: Prof. Vipin Kumar*)
Thesis: Approximate Search on Massive Spatiotemporal Datasets.

2007-2009 **The New School** International Affairs M.A.

2002-2007 **University of Minnesota** Computer Science B.S., Cultural Studies and Comparative Literature B.A.

Publications

2024 RashomonGB: Analyzing the Rashomon Effect and Mitigating Predictive Multiplicity in Gradient Boosting
H. Hsu, I. Brugere, S. Sharma, F. Lecue, C.F. Chen (*NeurIPS 2024*)

Interpretable Table Question Answering via Plans of Atomic Table Transformations
G. Nguyen, I. Brugere, S. Sharma, S. Kariyappa, A.T. Nguyen, F. Lecue (*in submission*)

Cross-Domain Graph Data Scaling: A Showcase with Diffusion Models
W. Tang, H. Mao, D. Dervovic, I. Brugere, S. Mishra, Y. Xie, J. Tang (*in submission*)

Investigating the Temporal Association of Biomedical Research on Small Business Funding: A Bibliometric and Data Analytic Approach
R. Khanmohammadi, S. Kaur, C.H. Smiley, T. Alhanai, I. Brugere, A. Nourbakhsh, M.M. Ghassemi (*IEEE TCSS*)

A Canonical Data Transformation for Achieving Inter- and Within-group Fairness
Z. McBride Lazri, I. Brugere, X. Tian, D. Dachman-Soled, A. Polychroniadou, D. Dervovic, M. Wu (*IEEE TIFS*)

Balancing Fairness and Accuracy in Data-Restricted Binary Classification
Z. McBride Lazri, D. Dervovic, A. Polychroniadou, I. Brugere, D. Dachman-Soled, M. Wu (*in submission*)

2023 Comparing Apples to Oranges: Learning Similarity Functions for Data Produced by Different Distributions
L. Tsepenekas, I. Brugere, F. Lecue, D. Magazzeni (*NeurIPS 2023*)

Bounding the Accuracy Loss for Graphical Model Based Synthetic Data Generation in Privacy-Preserving Machine Learning
Y. Zhou, I. Brugere, D. Dachman-Soled, D. Dervovic, M. Liang, A. Polychroniadou, M. Wu, (*ICML 2023*)

Hyper-parameter Tuning for Fair Classification without Sensitive Attribute Access
A.K. Veldanda, I. Brugere, S. Dutta, A. Mishler, S. Garg (*Transactions on Machine Learning Research*)

2022 Fairness via In-Processing in the Over-parameterized Regime: A Cautionary Tale with MinDiff Loss
A.K. Veldanda, I. Brugere, J. Chen, S. Dutta, A. Mishler, S. Garg (*Transactions on Machine Learning Research*)

2021 Parameterized Explanations for Investor/Company Matching
S. Kaur, I. Brugere, A. Stefanucci, A. Nourbakhsh, S. Shah, M. Veloso (*ICAIF'21*)

GAEA: Graph Augmentation for Equitable Access via Reinforcement Learning
G.S. Ramachandran, I. Brugere, L.R. Varshney, C. Xiong (*AAAI AIES 2021*)

Evaluation of crowdsourced mortality prediction models as a framework for assessing artificial intelligence in medicine
T. Bergquist, T. Schaffter, Y. Yan, T. Yu, I. Brugere et al. (*Journal of the American Medical Informatics Association*)

A continuously benchmarked and crowdsourced challenge for rapid development and evaluation of models to predict COVID-19 diagnosis and hospitalization
Y. Yan, T. Schaffter, T. Bergquist, T. Yu, J. Prosser, Z. Aydin, A. Jabeer, I. Brugere, et al. (*JAMA Network Open*)

2020 Network Structure Inference: Methodology and Applications
I. Brugere (*PhD Thesis*)

2018 Network Structure Inference, A Survey: Motivations, Methods, and Applications
I. Brugere, B. Gallagher, T. Y. Berger-Wolf (*ACM Computing Surveys*)

Network model selection with task-focused minimum description length
I. Brugere, T.Y. Berger-Wolf (*WWW BigNet Workshop on Learning Representations for Big Networks*)

Coordination Event Detection and Initiator Identification in Time Series Data
C. Amornbunchornvej, I. Brugere, A. Strandburg-Peshkin, D. Farine, M.C. Crofoot, T.Y. Berger-Wolf (*ACM TKDD*)

2017 Evaluating Social Networks Using Task-Focused Network Inference
I. Brugere, C. Kanich, T.Y. Berger-Wolf (*SIGKDD MLG Workshop on Mining and Learning in Graphs*)

A General Framework for Task-Oriented Network Inference
I. Brugere, C. Kanich, T.Y. Berger-Wolf (*SIAM SDM Workshop on Inferring Networks from Non-Network Data*)

2016 Both Nearest Neighbours and Long-term Affiliates Predict Individual Locations During Collective Movement in Wild Baboons
D. Farine, A. Strandburg-Peshkin, T.Y. Berger-Wolf, B. Ziebart, I. Brugere, J. Li, M. Crofoot (*Nature Scientific Reports*)

2015 Social Information Improves Location Prediction in the Wild
J. Li, I. Brugere, B. Ziebart, T. Y. Berger-Wolf, M. Crofoot, D. Farine (*AAAI Workshop on Trajectory-based Behaviour Analytics*)

2014 Modeling and Analysis of Spatiotemporal Social Networks
I. Brugere, V. M.V. Gunturi, and S. Shekhar (*Encyclopedia of Social Network Analysis and Mining*)

2012 Approximate Search on Massive Spatiotemporal Datasets
I. Brugere, K. Steinhaeuser, S. Boriah, and V. Kumar (*IEEE ICDM Workshop on Spatial and Spatiotemporal Data Mining SSTDM*)

2011 Incorporating Natural Variation into Time Series-Based Land Cover Change Identification
V. Mithal, A. Garg, I. Brugere, S. Boriah, V. Kumar, M. Steinbach, C. Potter, and S. Klooster (*NASA Conference on Intelligent Data Understanding*)

A Study of Time Series Noise Reduction Techniques in the Context of Land Cover Change Detection
X. Chen, V. Mithal, S.R. Vangala, I. Brugere, S. Boriah, and V. Kumar (*NASA Conference on Intelligent Data Understanding*)

A Novel Time Series Based Approach to Detect Gradual Vegetation Changes in Forests
Y. Chamber, A. Garg, V. Mithal, I. Brugere, M. Lau, V. Krishna, S. Boriah, M. Steinbach, V. Kumar, C. Potter, and S. Klooster (*NASA Conference on Intelligent Data Understanding*)

GOPHER: Global Observation of Planetary Health and Ecosystem Resources
A. Garg, V. Mithal, Y. Chamber, I. Brugere, V. Chaudhari, M. Dunham, V. Krishna, S. Krishnamurthy, S. Vangala, S. Boriah, M. Steinbach, V. Kumar, A. Cho, JD Stanley, T. Abraham, J. C. Castilla-Rubio, C. Potter, and S.A. Klooster (*IEEE Geoscience and Remote Sensing Symposium IGARSS*)

Scholarships and Awards

Scholarships	2014-2016	NSF IGERT Electronic Security and Privacy Fellowship
	2014-2016	University of Illinois at Chicago, Chancellor's Graduate Research Fellowship
	2014	Google Lime Scholarship
Awards	2017	IEEE ICDM Travel Award SIAM SDM Travel Award
	2016	ACM Tapia Celebration of Diversity in Computing, Travel Award ACM SIGKDD Broadening Participation in Data Mining Travel Award ACM WSDM Travel Award
	2015	IEEE ICDM Travel Award ACM Ubicomp Broadening Participation Travel Award ACM SIGKDD Ram Kumar Memorial Travel Award SIAM CSE Travel Award supported by the Sustainable Horizons Institute Fifty for the Future Award supported by the Illinois Technology Foundation
	2014	ACM BCB Travel Award ACM SIGKDD Broadening Participation in Data Mining Travel Award ACM Tapia Celebration of Diversity in Computing, Travel Award

Service

Tutorials	2018	Modeling Data with Networks + Network Embedding: Problems, Methodologies and Frontiers I. Brugere, B. Perozzi, P. Cui, W. Zhu, J. Pei, T.Y. Berger-Wolf (*KDD 2018*)
Workshops	2023	NLP and Network Analysis in Financial Applications (*ACM ICAIF'23*)
	2019	PhD Forum (*IEEE ICDM'19*)
	2017	NetInf'17: First Workshop on Inferring Networks from Non-Network Data (*SIAM SDM'17*)
	2016	Inferring Networks from Non-Network Data (*SIAM AM'16*)
PC Member/Reviewer	2018-Present	AAAI, CIKM, FAccT, ICDM, ICLR, IJCAI, KDD, PAKDD, SDM, TheWebConf, WSDM (*Conference*) ACM CSUR, IEEE TKDE, ACM TKDD, KAIS (*Journal*)
Community		ACM Tapia Celebration of Diversity in Computing 2020 Accessibility Committee Bloomberg Data For Good Exchange Program Committee Google Lime campus ambassador University of Washington-AccessSTEM volunteer ACM SIGKDD Broadening Participation in Data Mining Coordinator, Mentoring Co-Chair (2014, 2016, 2017)
Teaching		Teaching Assistant: Computer Algorithms I (Senior-level)

Links

ivan@ivanbrugere.com
LinkedIn
ORCiD
ivanbrugere
Google scholar