

Ivan Brugere

AI Research Scientist

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Current Objective

I am an AI Research Scientist focusing on fairness, robustness, and graph-based learning. I am seeking research roles in industry focusing on high-impact fair and robust applications. My PhD (defended 2020) focused on data science methodologies for inferring and validating graphs derived from underlying data, with applications in social networks, mobile location privacy, and large-scale multimedia recommendation.

Experience

Mar. 2021-	J.P. Morgan Chase & Co. AI Research Scientist Working on ML fairness and interpretability for compliance. Working on efficient and fair model search, robust and fair tree-based ensembles.
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 (<i>Mentor: Alex Smola</i>) 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 (<i>Mentor: Marcello Hasegawa</i>) Developed textual and device models for novelty detection and attribution in the Windows 10 user population.
Summer 2014	Lawrence Livermore National Laboratory Research Intern (<i>Mentor: Brian Gallagher</i>) Formulated graph inference problems over several scientific research domains.
2013-2015	University of Illinois at Chicago Research Fellow (<i>Mentor: Prof. Venkat Venkatakrishnan</i>) Graph-based models for attribute inference and privacy preservation on real mobile device datasets.
Summer 2013	Technicolor Research Research Intern (<i>Mentor: Fernando Silveira</i>) 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 (<i>Advisor: Prof. Tanya Berger-Wolf</i>) Model selection for graph structure inference and prediction. Focusing on ecology and populations biology domains.
2010-2012	University of Minnesota Research Assistant (<i>Advisor: Prof. Vipin Kumar</i>) 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 (<i>Advisor: Prof. Tanya Berger-Wolf</i>) Thesis: Network Structure Inference: Methodology and Applications.
2009-2012	University of Minnesota Computer Science M.S. (<i>Advisor: Prof. Vipin Kumar</i>) 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

2023	Comparing Apples to Oranges: Learning Similarity Functions for Data Produced by Different Distributions L. Tsepenekas, I. Brugere, F. Lecue, D. Magazzeni (<i>NeurIPS 2023</i>)
	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, (<i>in submission</i>)
	Balancing Fairness and Accuracy in Data-Restricted Binary Classification Z. McBride Lazri, D. Dervovic, A. Polychroniadou, I. Brugere, D. Dachman-Soled, M. Wu (<i>in submission</i>)
	Hyper-parameter Tuning for Fair Classification without Sensitive Attribute Access A.K. Veldanda, I. Brugere, S. Dutta, A. Mishler, S. Garg (<i>in submission</i>)

		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 (<i>in submission</i>)
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 (<i>Transactions on Machine Learning Research</i>)
2021		Parameterized Explanations for Investor/Company Matching S. Kaur, I. Brugere, A. Stefanucci, A. Nourbakhsh, S. Shah, M. Veloso (<i>ICAIF'21</i>)
		GAEA: Graph Augmentation for Equitable Access via Reinforcement Learning G.S. Ramachandran, I. Brugere, L.R. Varshney, C. Xiong (<i>AAAI AIES 2021</i>)
		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. (<i>Journal of the American Medical Informatics Association</i>)
		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. (<i>JAMA Network Open</i>)
2020		Network Structure Inference: Methodology and Applications I. Brugere (<i>PhD Thesis</i>)
2018		Network Structure Inference, A Survey: Motivations, Methods, and Applications I. Brugere, B. Gallagher, T. Y. Berger-Wolf (<i>ACM Computing Surveys</i>)
		Network model selection with task-focused minimum description length I. Brugere, T.Y. Berger-Wolf (<i>WWW BigNet Workshop on Learning Representations for Big Networks</i>)
		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 (<i>ACM TKDD</i>)
2017		Evaluating Social Networks Using Task-Focused Network Inference I. Brugere, C. Kanich, T.Y. Berger-Wolf (<i>SIGKDD MLG Workshop on Mining and Learning in Graphs</i>)
		A General Framework for Task-Oriented Network Inference I. Brugere, C. Kanich, T.Y. Berger-Wolf (<i>SIAM SDM Workshop on Inferring Networks from Non-Network Data</i>)
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 (<i>Nature Scientific Reports</i>)
2015		Social Information Improves Location Prediction in the Wild J. Li, I. Brugere, B. Ziebart, T. Y. Berger-Wolf, M. Crofoot, D. Farine (<i>AAAI Workshop on Trajectory-based Behaviour Analytics</i>)
2014		Modeling and Analysis of Spatiotemporal Social Networks I. Brugere, V. M.V. Gunturi, and S. Shekhar (<i>Encyclopedia of Social Network Analysis and Mining</i>)
2012		Approximate Search on Massive Spatiotemporal Datasets I. Brugere, K. Steinhaeuser, S. Boriah, and V. Kumar (<i>IEEE ICDM Workshop on Spatial and Spatiotemporal Data Mining SSTDM</i>)
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 (<i>NASA Conference on Intelligent Data Understanding</i>)
		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 (<i>NASA Conference on Intelligent Data Understanding</i>)
		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 (<i>NASA Conference on Intelligent Data Understanding</i>)
		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 (<i>IEEE Geoscience and Remote Sensing Symposium IGARSS</i>)

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 (<i>KDD 2018</i>)
Workshops	2023	NLP and Network Analysis in Financial Applications (<i>ACM ICAIF'23</i>)
	2019	PhD Forum (<i>IEEE ICDM'19</i>)
	2017	NetInf'17: First Workshop on Inferring Networks from Non-Network Data (<i>SIAM SDM'17</i>)
	2016	Inferring Networks from Non-Network Data (<i>SIAM AM'16</i>)
PC Member/Reviewer	2018-Present	AAAI, CIKM, FAccT, ICDM, IJCAI, KDD, PAKDD, SDM, WWW (<i>Conference</i>) ACM CSUR, IMS AOAS, IEEE TKDE, KAIS (<i>Journal</i>)
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

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 [ivanbrugere](https://github.com/ivanbrugere)

 LinkedIn
 Google scholar

 ORCID