Ivan Brugere

Research Scientist - AI For Good

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Current Objective

I am currently seeking AI research scientist positions in industry, available immediately, with no hard location constraints.

I am an AI Research Scientist with experience in interdisciplinary biological sciences and high-impact applications for social good. I have a deep interest in graphs/networks. My most recent interests have been in fairness and bias, particularly within complex, graph-structured data. 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

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. Focused on structured computational models on graphs, and scalability. 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

2020 CEGE: Constrained Equitable Graph Editing via Reinforcement Learning (in submission)
Privacy Shadow: Measuring Node Predictability and Privacy Over Time (in submission)

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)

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

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)

Program Committees

2020 AAAI, KDD, SDM
2019 AAAI, CIKM, ICDM, KDD, SDM
2018 KDD

Reviewer

AAAI, CIKM, ICDM, IJCAI, KDD, PAKDD, SDM (Conference)
ACM CSUR, IMS AOAS, IEEE TKDE, 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 and Notable Courses

Teaching Assistant: Computer Algorithms I (Senior-level)
Advanced Computational Biology and Bioinformatics Seminar
Advanced Data Mining Seminar
Field Course in Computational Ecology at Mpala Research Centre, Kenya

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

Links

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