

Objective

I am seeking full time machine learning research scientist positions in industry starting Spring 2019, related to machine learning platforms and methods on large graphs. I am also interested in representation, sampling and bias, and structured prediction in large graph applications.

Research Summary

I focus on data science methodologies for inferring and validating graphs constructed from underlying data, with applications in interdisciplinary computational ecology, privacy and human mobile networks, and large-scale recommendation and search. My work develops model selection criteria for predictive tasks on graphs, accounting for many of the ad-hoc decisions and biases in the construction and analysis of graphs derived from data.

Experience

Amazon

Applied Scientist Intern, Mentor: Alex Smola, June 2018–Sept. 2018

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.

Microsoft

Data Science Intern, Mentor: Marcello Hasegawa, May 2015–Aug. 2015

Developed textual and device models for novelty detection and attribution in the Windows 10 user population.

Lawrence Livermore National Laboratory

Research Intern, Mentor: Brian Gallagher, Jun. 2014–Aug. 2014

Formulated network inference problems over several scientific research domains. Part of the Cyber Defenders internship program.

University of Illinois at Chicago

Research Assistant, Advisor: Professor Tanya Berger-Wolf, Aug. 2012–

Model selection for network structure inference and prediction. Focusing on ecology and populations biology domains.

University of Illinois at Chicago

Research Fellow, Electronic Security and Privacy IGERT, Dec. 2013–Dec 2015

Network-based models for attribute inference and privacy preservation on real mobile device datasets.

Technicolor Research

Research Intern, Mentor: Brian Eriksson, May 2013–Aug. 2013

Rule discovery for biometric sensor time series data for actionable analysis of film audiences. Developed methods to discover and visualize dynamic audience communities.

University of Minnesota

Research Assistant, Advisor: Professor Vipin Kumar, Jan. 2010–Jun. 2012

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.

University of Minnesota - Department of Computer Science

Web Applications Developer, Sept. 2004–Jun. 2007

University of Minnesota - College of Liberal Arts

Web Applications Developer, Aug. 2002–Sept. 2003

Education

University of Illinois at Chicago, 2012–Dec. 2018 (expected)

PhD in Computer Science, ongoing.

Thesis: “Network Structure Inference: Methodology and Applications”

University of Minnesota – Twin Cities, 2002–2007, 2009–2012

Master of Science in Computer Science, emphasis in spatiotemporal data mining.

Thesis: “Approximate Search on Massive Spatiotemporal Datasets.”

Bachelor of Science in Computer Science, minor in Mathematics.

Bachelor of Arts in Cultural Studies and Comparative Literature.

The New School, 2007–2009

Master of Arts in International Affairs.

Tutorials

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

Publications

Network Structure Inference, A Survey: Motivations, Methods, and Applications

I. Brugere, B. Gallagher, T. Y. Berger-Wolf

ACM Computing Surveys, 2018.

Network model selection with task-focused minimum description length

I. Brugere, T.Y. Berger-Wolf

BigNet WWW Workshop on Learning Representations for Big Networks, 2018.

Network model selection for task-focused attributed network inference

I. Brugere, C. Kanich, T.Y. Berger-Wolf

IEEE International Conference on Data Mining Workshop (ICDMW), 2017.

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 Transactions on Knowledge Discovery from Data (TKDD), 2018.

Evaluating Social Networks Using Task-Focused Network Inference

I. Brugere, C. Kanich, T.Y. Berger-Wolf

MLG'17 SIGKDD Workshop on Mining and Learning in Graphs, 2017.

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, 2017.

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, 2016.

Collective Movement in Socially and Environmentally Heterogeneous Systems: A Case Study in Olive Baboons

M.C. Crofoot, D. Farine, A. Strandburg-Peshkin, I. Brugere, J. Li, T. Y. Berger-Wolf

American Journal of Primatology

Social Information Improves Location Prediction in the Wild

J. Li, I. Brugere, B. Ziebart, T. Y. Berger-Wolf, M. Crofoot, D. Farine

Proceedings of the 2015 International Workshop on Trajectory-based Behaviour Analytics

Modeling and Analysis of Spatiotemporal Social Networks

I. Brugere, V. M.V. Gunturi, and S. Shekhar

Encyclopedia of Social Network Analysis and Mining, 2014

Approximate Search on Massive Spatiotemporal Datasets

I. Brugere, K. Steinhaeuser, S. Boriah, and V. Kumar

Proceedings of the International Workshop on Spatial and Spatiotemporal Data Mining (SSTDM'12)

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

Proceedings of the NASA Conference on Intelligent Data Understanding (CIDU'11)

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

Proceedings of the NASA Conference on Intelligent Data Understanding (CIDU'11)

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

Proceedings of the NASA Conference on Intelligent Data Understanding (CIDU'11)

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

Proceedings of the IEEE Geoscience and Remote Sensing Symposium (IGARSS'11)

Service

Program Committees and Organizing:

SDM 2019: PC Member
AAAI 2019: PC Member
KDD 2018: PC Member
MLG 2018 Workshop at KDD: PC Member
SDM 2017: “NetInf’17: First Workshop on Inferring Networks from Non-Network Data,” Co-organizer
KDD 2017: Broadening Participation in Data Mining Mentoring Co-Chair
SIAM AM 2016: “Inferring Networks from Non-Network Data,” Mini-symposium Co-organizer
KDD 2016: Broadening Participation in Data Mining 2016 Coordinator
KDD 2014: Broadening Participation in Data Mining 2014 Mentoring Coordinator

Conference and Journal Reviewer:

AAAI’12, 15, 17, 18; CIKM’12; ICDM’10, 11, 14; IJCAI’11; KDD’11, 12, 13, 14, 15, 16, 18; PAKDD’12;
SDM’11, 12 | AOAS; KAIS; TKDE; ACM CSUR

Community Activities:

Google Lime campus ambassador
University of Washington-AccessSTEM volunteer

Conference Student Volunteer:

ICDM’15, 17; KDD’15, 16; SDM’17; WSDM’16

Scholarships and Awards

Fellowships and Scholarships:

IGERT Electronic Security and Privacy Fellowship, 2014-2016
UIC Chancellor’s Graduate Research Fellowship, 2014-2016
Google Lime Scholarship, 2014

Awards:

IEEE ICDM 2017 Travel Award
SIAM SDM 2017 Travel Award
Tapia 2016 Celebration of Diversity in Computing, Travel Award
SIGKDD 2016 Broadening Participation in Data Mining Travel Award
WSDM 2016 Travel Award
ICDM 2015 Travel Award
UbiComp 2015 Broadening Participation Travel Award
SIGKDD 2015 Ram Kumar Memorial Travel Award
Fifty for the Future Award supported by the Illinois Technology Foundation,
SIAM CSE 2015 Travel Award supported by the Sustainable Horizons Institute
ACM-BCB 2014 Travel Award
SIGKDD 2014 Broadening Participation in Data Mining Travel Award
Tapia 2014 Celebration of Diversity in Computing, Travel Award
SIGKDD 2013 Broadening Participation in Data Mining Travel Award

Notable Courses and Teaching

Teaching Assistant: CS401 – Computer Algorithms I
Advanced Computational Biology and Bioinformatics Seminar
Advanced Data Mining Seminar
Field Course in Computational Ecology at Mpala Research Centre, Kenya