Austin Reilley Benson

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413B Bill and Melinda Gates Hall
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arb@cs.cornell.edu
http://www.cs.cornell.edu/~arb

Academic Appointments

Assistant Professor, Cornell University Department of Computer Science	2018–
Postdoctoral Associate, Cornell University Department of Computer Science	2017–2018

Additional Cornell University affiliations:

Field Member, Data Science	2020–
Field Member, Center for Applied Mathematics	2018–

Education

PhD Computational and Mathematical Engineering · Stanford University	2017
MS Computational and Mathematical Engineering · Stanford University	2017
BS Electrical Engineering and Computer Sciences · University of California, Berkeley	2012
BA Applied Mathematics · University of California, Berkeley	2012

Professional Experience

Research Intern, Google · Mountain View, CA	Jul 2016–Dec 2016
Research Intern, Google · Mountain View, CA	Jun 2015–Dec 2015
Research Intern, Sandia National Laboratories · Livermore, CA	Summer 2014
Research Intern, HP Labs · Palo Alto, CA	Summer 2013
Software Engineering Intern, Google · Mountain View, CA	Summer 2012
Software Engineering Intern, Google · Mountain View, CA	Summer 2011

Preprints

9. Higher Order Information Identifies Tie Strength.
   Arnab Sarker, Jean-Baptiste Seby, Austin R. Benson, Ali Jadbabaie.
   arXiv:2108.02091, 2021.

8. fauci-email: a json digest of Anthony Fauci's released emails.
   Austin R. Benson, Nate Veldt, David F. Gleich.
   arXiv:2108.01239, 2021.
   Code and data released at **https://github.com/nveldt/fauci-email**.

7. Edge Proposal Sets for Link Prediction.
   Abhay Singh, Qian Huang, Sijia Linda Huang, Omkar Bhalerao, Horace He, Ser-Nam Lim, Austin R. Benson.
   arXiv:2106.15810, 2021.
   Code released at **https://github.com/CUAI/Edge-Proposal-Sets**.

6. Graph Belief Propagation Networks.
   Junteng Jia, Cenk Baykal, Vamsi K. Potluru, Austin R. Benson.
   arXiv:2106.03033, 2021.
   Code released at **https://github.com/000Justin000/GBPN**.

5. A Nonlinear Diffusion Method for Semi-supervised Learning on Hypergraphs.
   Francesco Tudisco, Konstantin Prokopchik, Austin R. Benson.
   arXiv: 2103.14867, 2021.

4. Higher-order Homophily is Combinatorially Impossible.
   Nate Veldt, Austin R. Benson, Jon Kleinberg.
   arXiv:2103.11818, 2021.
   Code released at **https://github.com/nveldt/HypergraphHomophily**.

3. Over-parametrized neural networks as under-determined linear systems.
   Austin R. Benson, Anil Damle, Alex Townsend.
   arXiv:2010.15959, 2020.

2. Augmented Sparsifiers for Generalized Hypergraph Cuts with Applications to Decomposable Submodular Function Minimization.
   Austin R. Benson, Jon Kleinberg, and Nate Veldt.
   arXiv:2007.08075, 2020.

1. Incrementally Updated Spectral Embeddings.
   Vasileios Charisopoulos, Austin R. Benson, Anil Damle.
   arXiv:1909.01188, 2019.
   Code released at **https://github.com/VHarisop/inc-spectral-embeddings**.

Accepted and Published Research Articles

63. Diverse and Experienced Group Discovery via Hypergraph Clustering.
    Ilya Amburg, Nate Veldt, Austin R. Benson.
    To appear at SIAM Data Mining (SDM), 2022.
    Code released at **https://github.com/ilyaamburg/fair-clustering-for-diverse-and-experienced-groups**.

62. Hypergraph Cuts with General Splitting Functions.
    Nate Veldt, Austin R. Benson, Jon Kleinberg.
    To appear in SIAM Review (SIREV), 2022.

61. A Unifying Generative Model for Graph Learning Algorithms: Label Propagation, Graph Convolutions, and Combinations.
    Junteng Jia, Austin R. Benson.
    To appear in SIAM Journal on Mathematics of Data Science (SIMODS), 2021.
    Code and data released at **https://github.com/000Justin000/GaussianMRF**.

60. Approximate Decomposable Submodular Function Minimization for Cardinality-Based Components.
    Nate Veldt, Austin R. Benson, Jon Kleinberg.
    Advances in Neural Information Processing Systems (NeurIPS), 2021.
    Code released at **https://github.com/nveldt/SparseCardDSFM**.

59. Communication-efficient distributed eigenspace estimation.
    Vasileios Charisopoulos, Austin R. Benson, Anil Damle.
    SIAM Journal on Mathematics of Data Science (SIMODS), 2021.
    Code released at **https://gitlab.com/vchariso/distributed-eigenspace-estimation**.

58. Generative hypergraph clustering: from blockmodels to modularity.
    Philip S. Chodrow, Nate Veldt, Austin R. Benson.
    Science Advances, 2021.
    Code released at **https://github.com/PhilChodrow/HypergraphModularity**.
    Data released at **https://www.cs.cornell.edu/~arb/**.

57. The Generalized Mean Densest Subgraph Problem.
Nate Veldt, Austin R. Benson, Jon Kleinberg.
Proceedings of the International Conference on Knowledge Discovery & Data Mining (KDD), 2021.
Code released at **https://github.com/nveldt/GenMeanDSG**.

56. Choice Set Confounding in Discrete Choice.
Kiran Tomlinson, Johan Ugander, Austin R. Benson.
Proceedings of the International Conference on Knowledge Discovery & Data Mining (KDD), 2021.
Code released at **https://github.com/tomlinsonk/choice-set-confounding**.

55. Learning Interpretable Feature Context Effects in Discrete Choice.
Kiran Tomlinson, Austin R. Benson.
Proceedings of the International Conference on Knowledge Discovery & Data Mining (KDD), 2021.
Code released at **https://github.com/tomlinsonk/feature-context-effects**.

54. Expertise and Dynamics within Crowdsourced Musical Knowledge Curation: A Case Study of the Genius Platform.
Derek Lim, Austin R. Benson.
Proceedings of the International AAAI Conference on Web and Social Media (ICWSM), 2021.
Code released at **https://github.com/cptq/genius-expertise**.
Data released at **https://www.cs.cornell.edu/~arb/data/**.

53. Higher-order Network Analysis Takes Off, Fueled by Old Ideas and New Data.
Austin R. Benson, David F. Gleich, Desmond J. Higham.
SIAM News, 2021 (online).

52. Combining Label Propagation and Simple Models Out-performs Graph Neural Networks.
Qian Huang, Horace He, Abhay Singh, Ser-Nam Lim, Austin R. Benson.
Proceedings of the International Conference on Learning Representations (ICLR), 2021.
Code released at **https://github.com/CUAI/CorrectAndSmooth**.

51. Planted Hitting Set Recovery in Hypergraphs.
Ilya Amburg, Jon Kleinberg, Austin R. Benson.
Journal of Physics: Complexity (Special Issue on Higher-Order Structures in Networks and Network Dynamical Systems), 2021.
Code released at **https://github.com/ilyaamburg/Hypergraph-Planted-Hitting-Set-Recovery**.
Data released at **https://www.cs.cornell.edu/~arb/data**.

50. Nonlinear Higher-Order Label Spreading.
Francesco Tudisco, Austin R. Benson, Konstantin Prokopchik.
Proceedings of the Web Conference (WWW), 2021.
Code released at **https://github.com/doublelucker/nhols**.

49. Random Graphs with Prescribed K-Core Sequences: A New Null Model for Network Analysis.
Katherine Van Koevering, Austin R. Benson, Jon Kleinberg.
Proceedings of the Web Conference (WWW), 2021.
Code released at **https://github.com/ktvank/Random-Graphs-with-Prescribed-K-Core-Sequences**.

48. Better Set Representations For Relational Reasoning.
Qian Huang, Horace He, Abhay Singh, Yan Zhang, Ser-Nam Lim, Austin R. Benson.
Advances in Neural Information Processing Systems (NeurIPS), 2020.
Code released at **https://github.com/CUVL/SSLR**.

47. Entrywise convergence of iterative methods for eigenproblems.
Vasileios Charisopoulos, Austin R. Benson, Anil Damle.
Advances in Neural Information Processing Systems (NeurIPS), 2020.
Code released at **https://github.com/VHarisop/entrywise-convergence**.

46. Residual Correlation in Graph Neural Network Regression.
    Junteng Jia, Austin R. Benson.
    Proceedings of the International Conference on Knowledge Discovery & Data Mining (KDD), 2020.
    Code released at **https://github.com/000Justin000/gnn-residual-correlation**.
    Data released at **https://www.cs.cornell.edu/~arb/data**.

45. Minimizing Localized Ratio Cut Objectives in Hypergraphs.
    Nate Veldt, Austin R. Benson, Jon Kleinberg.
    Proceedings of the International Conference on Knowledge Discovery & Data Mining (KDD), 2020.
    Code released at **https://github.com/nveldt/HypergraphFlowClustering**.
    Data released at **https://www.cs.cornell.edu/~arb/data**.

44. Choice Set Optimization Under Discrete Choice Models of Group Decisions.
    Kiran Tomlinson, Austin R. Benson.
    Proceedings of the International Conference on Machine Learning (ICML), 2020.
    Code released at **https://github.com/tomlinsonk/choice-set-opt**.

43. Neighborhood and PageRank methods for pairwise link prediction.
    Huda Nassar, Austin Benson, David F. Gleich.
    Social Network Analysis and Mining (SNAM), 2020.
    Code released at **https://github.com/nassarhuda/pairseed**.

42. Network Interpolation.
    Thomas Reeves, Anil Damle, Austin R. Benson.
    SIAM Journal on Mathematics of Data Science (SIMODS), 2020.
    Code released at **https://github.com/tr-maker/networkinterpolation**.

41. Measuring Directed Triadic Closure with Closure Coefficients.
    Hao Yin, Austin R. Benson, Johan Ugander.
    Network Science, 2020.
    Code released at **https://github.com/arbenson/ClosureCoefficients.jl**.

40. Random Walks on Simplicial Complexes and the normalized Hodge 1-Laplacian.
    Michael T. Schaub, Austin R. Benson, Paul Horn, Gabor Lippner, Ali Jadbabaie.
    SIAM Review (SIREV), 2020.

39. Clustering in graphs and hypergraphs with categorical edge labels.
    Ilya Amburg, Nate Veldt, Austin R. Benson.
    Proceedings of the Web Conference (WWW), 2020.
    Code released at **https://github.com/nveldt/CategoricalEdgeClustering**.
    Data released at **https://www.cs.cornell.edu/~arb/data**.

38. Frozen Binomials on the Web: Word Ordering and Language Conventions in Online Text.
    Katherine Van Koevering, Austin R. Benson Jon Kleinberg.
    Proceedings of the Web Conference (WWW), 2020.
    Code released at **https://github.com/ktvank/Frozen-Binomials**.

37. Using cliques with higher-order spectral embeddings improves graph visualizations.
    Huda Nassar, Caitlin Kennedy, Shweta Jain, Austin R. Benson, David F. Gleich.
    Proceedings of the Web Conference (WWW), 2020.
    Code released at **https://github.com/nassarhuda/GLANCE**.

36. Retrieving Top Weighted Triangles in Graphs.
    Raunak Kumar, Paul Liu, Moses Charikar, Austin R. Benson.
    Proceedings of the International Conference on Web Search and Data Mining (WSDM), 2020.
    Code released at **https://github.com/raunakkmr/Retrieving-top-weighted-triangles-in-graphs**.
    Data released at **https://www.cs.cornell.edu/~arb/data**.

35. Neural Jump Stochastic Differential Equations.
Junteng Jia, Austin R. Benson.
Advances in Neural Information Processing Systems (NeurIPS), 2019.
Code released at **https://github.com/000Justin000/torchdiffeq/tree/jj585**.

34. Modeling and Analysis of Tagging Networks in Stack Exchange Communities.
Xiang Fu, Shangdi Yu, Austin R. Benson.
Journal of Complex Networks, 2019.
Code released at **https://github.com/yushangdi/stack-exchange-cotagging**.
Data released at **https://www.cs.cornell.edu/~arb/data**.

33. Unsupervised learning of dislocation motion.
Darren C. Pagan, Thien Q. Phan, Jordan S. Weaver, Austin R. Benson, Armand J. Beaudoin.
Acta Materialia, 2019.

32. Automated Grain Yield Behavior Classification.
Darren C. Pagan, Jakob Kaminsky, Wesley A. Tayon, Kelly E. Nygren, Armand J. Beaudoin, Austin R. Benson.
The Journal of The Minerals, Metals & Materials Society (JOM), 2019.

31. Computing Tensor Z-eigenvectors with Dynamical Systems.
Austin R. Benson, David F. Gleich.
SIAM Journal on Matrix Analysis and Applications (SIMAX), 2019.
Code released at **https://github.com/arbenson/TZE-dynsys**.

30. Pairwise Link Prediction.
Huda Nassar, Austin R. Benson, David F. Gleich.
Proceedings of the International Conference on Advances in Social Networks Analysis and Mining (ASONAM), 2019.
Best Research Paper Award Runner-up.
Code released at **https://github.com/nassarhuda/pairseed**.

29. Graph-based Semi-Supervised & Active Learning for Edge Flows.
Junteng Jia, Michael T. Schaub, Santiago Segarra, Austin R. Benson.
Proceedings of the International Conference on Knowledge Discovery & Data Mining (KDD), 2019.
Code released at **https://github.com/000Justin000/ssl_edge**.

28. Network Density of States.
Kun Dong, Austin R. Benson, David Bindel.
Proceedings of the International Conference on Knowledge Discovery & Data Mining (KDD), 2019.
Best Research Paper Award Winner.
Code released at **https://github.com/kd383/NetworkDOS**.

27. Three hypergraph eigenvector centralities.
Austin R. Benson.
SIAM Journal on Mathematics of Data Science (SIMODS), 2019.
Code released at **https://github.com/arbenson/Hyper-Evec-Centrality**.

26. Link Prediction in Networks with Core-Fringe Data.
Austin R. Benson, Jon Kleinberg.
Proceedings of the Web Conference (WWW), 2019.
Code released at **https://github.com/arbenson/cflp**.

25. Choosing to grow a graph: Modeling network formation as discrete choice.
Jan Overgoor, Austin R. Benson, Johan Ugander.
Proceedings of the Web Conference (WWW), 2019.
Code released at **https://github.com/janovergoor/choose2grow**.

24. Random Spatial Network Models with Core-Periphery Structure.
    Junteng Jia, Austin R. Benson.
    Proceedings of the International Conference on Web Search and Data Mining (WSDM), 2019.
    Code released at **https://github.com/000Justin000/spatial_core_periphery**.
    Data released at **https://www.cs.cornell.edu/~arb/data**.

23. Sampling Methods for Counting Temporal Motifs.
    Paul Liu, Austin R. Benson, Moses Charikar.
    Proceedings of the International Conference on Web Search and Data Mining (WSDM), 2019.
    Code released at **https://gitlab.com/paul.liu.ubc/sampling-temporal-motifs**.
    Data released at **http://www.cs.cornell.edu/~arb/data**.

22. The Local Closure Coefficient: A New Perspective On Network Clustering.
    Hao Yin, Austin R. Benson, Jure Leskovec.
    Proceedings of the International Conference on Web Search and Data Mining (WSDM), 2019.
    Code released at **https://github.com/arbenson/ClosureCoefficients.jl**.

21. Simplicial closure and higher-order link prediction.
    Austin R. Benson, Rediet Abebe, Michael T. Schaub, Ali Jadbabaie, Jon Kleinberg.
    Proceedings of the National Academy of Sciences (PNAS), 2018.
    Code released at **https://github.com/arbenson/ScHoLP-Tutorial**.
    Data released at **https://www.cs.cornell.edu/~arb/data**.

20. Found Graph Data and Planted Vertex Covers.
    Austin R. Benson, Jon Kleinberg.
    Advances in Neural Information Processing Systems (NeurIPS), 2018.
    Code released at **https://github.com/arbenson/FGDnPVC**.
    Data released at **http://www.cs.cornell.edu/~arb/data**.

19. Sequences of Sets.
    Austin R. Benson, Ravi Kumar, Andrew Tomkins.
    Proceedings of the International Conference on Knowledge Discovery & Data Mining (KDD), 2018.
    Code released at **https://github.com/arbenson/Sequences-of-Sets**.
    Data released at **https://www.cs.cornell.edu/~arb/data**.

18. Higher-order clustering in networks.
    Hao Yin, Austin R. Benson, Jure Leskovec.
    Physical Review E (PRE), 2018.
    Code released at **https://github.com/arbenson/HigherOrderClustering.jl**.

17. A discrete choice model for subset selection.
    Austin R. Benson, Ravi Kumar, Andrew Tomkins.
    Proceedings of the International Conference on Web Search and Data Mining (WSDM), 2018.
    Code released at **https://github.com/arbenson/discrete-subset-choice**.
    Data released at **https://www.cs.cornell.edu/~arb/data**.

16. Local higher-order graph clustering.
    Hao Yin, Austin R. Benson, Jure Leskovec, David F. Gleich.
    Proceedings of the International Conference on Knowledge Discovery & Data Mining (KDD), 2017.
    Code and Data released at **http://snap.stanford.edu/mappr**.

15. Motifs in temporal networks.
    Ashwin Paranjape, Austin R. Benson, Jure Leskovec.
    Proceedings of the International Conference on Web Search and Data Mining (WSDM), 2017.
    Code and Data released at **https://snap.stanford.edu/temporal-motifs**.

14. The spacey random walk: a stochastic process for higher-order data.
Austin R. Benson, David F. Gleich, Lek-Heng Lim.
SIAM Review (SIREV), 2017.
Code released at **https://github.com/arbenson/spacey-random-walks**.
Data released at **https://www.cs.cornell.edu/~arb/data**.

13. Higher-order organization of complex networks.
Austin R. Benson, David F. Gleich, Jure Leskovec.
Science, 2016.
Code and Data released at **https://snap.stanford.edu/higher-order**.

12. General tensor spectral co-clustering for higher-order data.
Tao Wu, Austin R. Benson, David F. Gleich.
Advances in Neural Information Processing Systems (NeurIPS), 2016.
Code released at **https://github.com/wutao27/GtensorSC**.

11. Modeling user consumption sequences.
Austin R. Benson, Ravi Kumar, Andrew Tomkins.
Proceedings of the International World Wide Web Conference (WWW), 2016.

10. On the relevance of irrelevant alternatives.
Austin R. Benson, Ravi Kumar, Andrew Tomkins.
Proceedings of the International World Wide Web Conference (WWW), 2016.

9. Improving the numerical stability of fast matrix multiplication.
Grey Ballard, Austin R. Benson, Alex Druinsky, Benjamin Lipshitz, Oded Schwartz.
SIAM Journal on Matrix Analysis and Applications (SIMAX), 2016.
Code released at **https://github.com/arbenson/fast-matmul**.

8. Tensor spectral clustering for partitioning higher-order network structures.
Austin R. Benson, David F. Gleich, Jure Leskovec.
Proceedings of the SIAM International Conference on Data Mining (SDM), 2015.
Code released at **https://github.com/arbenson/tensor-sc**.

7. A framework for practical parallel fast matrix multiplication.
Austin R. Benson, Grey Ballard.
Proceedings of the Symposium on Principles and Practice of Parallel Programming (PPoPP), 2015.
Code released at **https://github.com/arbenson/fast-matmul**.

6. Scalable methods for nonnegative matrix factorizations of near-separable tall-and-skinny matrices.
Austin R. Benson, Jason D. Lee, Bartek Rajwa, David F. Gleich.
Advances in Neural Information Processing Systems (NeurIPS), 2014.
Selected for spotlight presentation.
Code released at **https://github.com/arbenson/mrnmf**.
Data released at **https://www.cs.cornell.edu/~arb/data**.

5. Learning multifractal structure in large networks.
Austin R. Benson, Carlos Riquelme, Sven Schmit.
Proceedings of the International Conference on Knowledge Discovery & Data Mining (KDD), 2014.

4. A parallel directional Fast Multipole Method.
Austin R. Benson, Jack Poulson, Kenneth Tran, Björn Engquist, Lexing Ying.
SIAM Journal on Scientific Computing (SISC), 2014.
Code released at **https://github.com/arbenson/ddfmm**.

3. Silent error detection in numerical time-stepping schemes.
Austin R. Benson, Sven Schmit, Robert Schreiber.

International Journal of High Performance Computing Applications (IJHPCA), 2014.
Code released at **https://www.cs.cornell.edu/~arb/silent.html**.

2. Direct QR factorizations for tall-and-skinny matrices in MapReduce architectures.
Austin R. Benson, David F. Gleich, James Demmel.
Proceedings of the IEEE International Conference on Big Data (BigData), 2013.
Code released at **https://github.com/arbenson/mrtsqr**.

1. The Gamma-Ray Imaging Framework.
Austin R. Benson, Mark S. Bandstra, Daniel H. Chivers, Timothy Aucott, Ben Augarten, Cameron Bates, Adam Midvidy, Ryan Pavlovsky, James Siegrist, Kai Vetter, Ben Yee.
IEEE Transactions on Nuclear Science, 2013.
Code released at **https://github.com/bearing/grif**.

Awards

NSF Faculty Early Career Development Program (CAREER) Award	2021
Kavli Fellow, Kavli Frontiers of Science, National Academy of Sciences	2020
JPMorgan Chase Faculty AI Research Award	2020
Best Research Paper Award, KDD '19	2019
Best Research Paper Award Runner-up, ASONAM '19	2019
LAA Early Career Speaker, International Linear Algebra Society	2019
Outstanding program committee member, WSDM '19	2019
Stanford Gene Golub Doctoral Dissertation Award	2017
Teaching Fellow, ICME, Stanford University	2016
Office of Technology Licensing Stanford Graduate Fellowship	2012

Advising

Postdocs

Jonas Juul · Cornell CAM Postdoc	2020–
Nate Veldt · Cornell CAM Postdoc	2019–2021

PhD students

Kiran Tomlinson · Computer Science	2019–
Ilya Amburg · Applied Mathematics	2018–
Junteng Jia · Computer Science	2018–2021

Master of Engineering (MEng) students

Haopeng Zhou · Computer Science	2021
Leah Ajmani · Computer Science	2020
Lillyan Pan · Computer Science	2018

Undergraduate students

Qian Huang · Computer Science & Mathematics	2019–2021
Finalist, CRA Outstanding Undergraduate Researcher Award, 2020 & 2021	
Recipient, Computer Science Department Prize for Academic Excellence	
Abhay Singh · Computer Science	2019–2021
Horace He · Computer Science & Mathematics	2019–2021
Honorable Mention, CRA Outstanding Undergraduate Researcher Award, 2020	
Derek Lim · Computer Science & Mathematics	2019–2020
Honorable Mention, CRA Outstanding Undergraduate Researcher Award, 2021	
Jakob Kaminsky · Computer Science	2019

Leah Ajmani · Computer Science & Philosophy   2018–2019
Scott Dickson · Computer Science   2018–2019
Shangdi Yu · Computer Science & Operations Research   2018–2019
    Recipient, Computer Science Department Prize for Academic Excellence
Xiang (Felix) Fu · Computer Science & Operations Research   2018–2019

Teaching Experience

Instructor, Cornell University

CS 4220/Math 4260: Numerical Analysis: Linear and Nonlinear Problems (49 students)	Spring 2021
CS 6210: Matrix Computations (33 students)	Fall 2020
CS 6241: Numerical Methods for Data Science (36 students)	Spring 2020
CS 2850/INFO 2040/ECON 2040/SOC 2090: Networks (642 students)	Fall 2019
CS 6241: Numerical Methods for Data Science (46 students)	Spring 2019
CS 2850/INFO 2040/ECON 2040/SOC 2090: Networks (615 students)	Fall 2018

Instructor, Stanford University

CME 193: Introduction to Scientific Python	Spring 2013
CME 193: Introduction to Scientific Python (created course)	Winter 2013

Invited presentations

SIAM Discrete Mathematics · Virtual Online	Jul 2021
Conference of the International Society for Clinical Biostatistics · Virtual Online	Jul 2021
European Conference on Operational Research · Virtual Online	Jul 2021
Higher-order Models NetSci Satellite · Virtual Online	Jul 2021
Dynamics and Motifs NetSci Satellite · Virtual Online	Jun 2021
IPDPS GrAPL Workshop · Virtual Online	May 2021
Worcester Polytechnic Institute · Virtual Online	May 2021
Northeastern University · Virtual Online	Mar 2021
RelationalAI · Virtual Online	Feb 2021
Joint Mathematics Meetings · Virtual Online	Jan 2021
Texas A&M Data Science Institute · Virtual Online	Oct 2020
JPMorgan Chase Machine Learning · Virtual Online	Aug 2020
Kavli Frontiers of Science · Virtual Online	Jul 2020
SIAM Annual · Virtual Online	Jul 2020
SIAM Conference on Mathematics of Data Science · Virtual Online	Jun 2020
Workshop on Mining and Learning with Graphs · Anchorage, AK	Aug 2019
Conference of the International Linear Algebra Society · Rio de Janeiro, Brazil	Jul 2019
Higher-order Models NetSci Satellite · Burlington, VT	May 2019
Statistical Inference for Network Models NetSci Satellite · Burlington, VT	May 2019
GraphEx 2019 · Boston, MA	Apr 2019
Syracuse University Computer Science Seminar · Syracuse, NY	Apr 2019
Clarkson Center for Complex Systems Science Seminar · Potsdam, NY	Feb 2019
University at Buffalo Applied Mathematics Seminar · Buffalo, NY	Oct 2018
Cornell Scientific Computing and Numerics Seminar · Ithaca, NY	Sep 2018
SIAM Annual · Portland, OR	Jul 2018
Higher-order Models NetSci Satellite · Paris, France	Jun 2018
Statistical Learning and Data Science · New York, NY	Jun 2018
Stanford Linear Algebra/Optimization Seminar · Stanford, CA	Apr 2018

CMStatistics Conference · London, England	Dec 2017
Cornell Center for Applied Math Colloquium · Ithaca, NY	Oct 2017
Data Institute SF Annual Conference · San Francisco, CA	Oct 2017
Purdue Center for Science of Information Seminar · West Lafayette, IN	Oct 2017
Cornell Scientific Computing and Numerics Seminar · Ithaca, NY	Sep 2017
AMS Spring Western Sectional Meeting · Pullman, WA	Apr 2017
University of Chicago Scientific Computing Seminar · Chicago, IL	Jan 2017
Lawrence Livermore National Laboratory Seminar · Livermore, CA	Jun 2016
MX16 Multi-dimensional Networks Symposium · Davis, CA	May 2016
Purdue Center for Science of Information Seminar · West Lafayette, IN	May 2016
Copper Mountain Conference on Iterative Methods · Copper Mountain, CO	Mar 2016
Stanford Linear Algebra/Optimization Seminar · Stanford, CA	Feb 2016
Santa Fe Institute Inference on Networks Workshop · Santa Fe, NM	Dec 2015
NeurIPS Multiresolution Methods Workshop · Montreal, Canada	Dec 2015
SIAM Applied Linear Algebra · Atlanta, GA	Oct 2015
UC-Berkeley DMML Workshop · Berkeley, CA	Oct 2015
Allerton Conference · Monticello, IL	Oct 2015
Lawrence Livermore National Laboratory Seminar · Livermore, CA	Sep 2015
Higher-order Models NetSci Satellite · Zaragoza, Spain	Jun 2015
SIAM Computational Science & Engineering · Salt Lake City, UT	May 2015
Stanford ICME Colloquium · Stanford, CA	Oct 2014
UT-Austin BLIS Retreat · Austin, TX	Sep 2014
Purdue Machine Learning Seminar · West Lafayette, IN	Sep 2014
Stanford ICME Colloquium · Stanford, CA	May 2013
Stanford MapReduce Workshop · Stanford, CA	Apr 2013
Stanford MapReduce Workshop · Stanford, CA	May 2012

Service

Editorial roles

Associate Editor, *Science Advances*	2019–
Guest Editor, *Applied Network Science: Machine Learning with Graphs Special Issue*	2019

Conference and workshop organizational activities

Co-chair, Statistical Inference for Network Models Annual Satellite Workshop at NetSci	2021
Member, Engagement Committee, SIAM ACDA **https://www.siam.org/conferences/cm/conference/acda21**	2021
Co-chair, SIAM Workshop on Network Science **https://ns20.cs.cornell.edu**	2020
Co-organizer, *Mining and Modeling Evolving and Higher-Order Complex Data and Networks* Minisymposium, International Congress on Industrial and Applied Mathematics (ICIAM)	2019
Co-organizer, *Modeling and Mining Network Data* Minisymposium, SIAM Conference on Discrete Mathematics (DM) **http://www.cs.cornell.edu/~arb/mmnd18/**	2018
Co-organizer, *Tensor Eigenvectors and Stochastic Processes* Minitutorial, SIAM Applied Linear Algebra (ALA) **http://www.cs.cornell.edu/~arb/tesp/**	2018
Co-organizer *Eigenvectors and Decompositions of Structured Tensors* Minisymposium, SIAM Computational Science and Engineering (CSE)	2017

Conference and workshop program committees

    KDD '16, '17, '18, '19, '20, '21

    WWW '17, '18, '19, '20, '21

    WSDM '17, '18, '19, '20, '21

    NeurIPS '17, '18; Area chair: '19, '20

    SIAM Network Science '18, '20 (co-chair)

    SIAM ACDA '21

Grant proposal reviewing

    Army Research Office

    Department of Energy

    National Science Foundation Information and Intelligent Systems Panel · 2018, 2019

Journal reviewing

    ACM Transactions on Knowledge Discovery in Data (TKDD)

    Annals of Statistics

    IEEE Transactions on Network Science and Engineering (TNSE)

    IEEE Transactions on Knowledge and Data Engineering (TKDE)

    Journal of Complex Networks

    Journal of Machine Learning Research (JMLR)

    Journal of the ACM (JACM)

    Linear Algebra and Its Applications (LAA)

    Linear and Multilinear Algebra

    Multiscale Modeling and Simulation (MMS)

    Nature Scientific Reports

    Network Science

    Proceedings of the National Academy of Sciences (PNAS)

    PLOS ONE

    SIAM Journal on Applied Mathematics (SIAP)

    SIAM Journal on Scientific Computing (SISC)

    SIAM Journal on Mathematics of Data Science (SIMODS)

    SIAM Journal on Matrix Analysis and Applications (SIMAX)

    SIAM Review (SIREV)

Book reviewing

    CRC Press

    Morgan & Claypool Publishers

Outreach

    Co-organizer, Cornell SoNIC Workshop   2019, 2021

        https://www.cs.cornell.edu/content/workshop/sonic

    Faculty mentor for Black in AI   2019

    Mentor for PLOS-sponsored hackathon to promote accessible code and data in Network Science   2019

        https://opennetsci.github.io/

    Panelist for the Paper Unwind, Society of Young Network Scientists event at NetSci   2019

        https://www.networkscienceinstitute.org/syns

Press

Coverage of a few of our papers on higher-order network analysis:

    How Big Data Carried Graph Theory Into New Dimensions (Quanta Magazine)

Coverage of our 2021 *ICLR* paper "Combining Label Propagation and Simple Models Out-performs Graph Neural Networks":

Cornell & Facebook AI Simplified Graph Learning Approach Outperforms SOTA GNNs (Synced)

Coverage of our 2021 *ICWSM* paper "Expertise and Dynamics within Crowdsourced Musical Knowledge Curation: A Case Study of the Genius Platform":

Crowdsourced Expertise (Data Skeptic Podcast)

Coverage of our 2018 *PNAS* article "Simplicial closure an higher-order link prediction":

Predicting future combos, from rap songs to pharmaceuticals (Cornell Chronicle)

Algorithm predicts which rappers will work together (Futurity)

Coverage of our 2016 *Science* article "Higher-order organization of complex networks":

Stanford-led effort creates a new way to analyze and control networks (Stanford News)

Mathematical framework offers a more detailed understanding of network relationships (Phys.org)

Mathematical Framework that Prioritizes Key Patterns in Networks Aims to Accelerate Scientific Discovery (DARPA)