Austin Reilley Benson
Cornell University
413B Bill and Melinda Gates Hall
Ithaca, NY 14853 USA
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.
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
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
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 2021
Annual Satellite Workshop at NetSci

https://www.siam.org/conferences/cm/conference/acda21

Member, Engagement Committee, SIAM ACDA 2021

Co-chair, SIAM Workshop on Network Science 2020
https://ns20.cs.cornell.edu

Co-organizer, Mining and Modeling Evolving and Higher-Order Complex Data and Networks 2019
Minisymposium, International Congress on Industrial and Applied Mathematics (ICIAM)

Co-organizer, Modeling and Mining Network Data 2018
Minisymposium, SIAM Conference on Discrete Mathematics (DM)
http://www.cs.cornell.edu/~arb/mmnd18/

Co-organizer, Tensor Eigenvectors and Stochastic Processes 2018
Minitutorial, SIAM Applied Linear Algebra (ALA)
http://www.cs.cornell.edu/~arb/tesp/

Co-organizer Eigenvectors and Decompositions of Structured Tensors 2017
Minisymposium, SIAM Computational Science and Engineering (CSE)

10
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)