David F. Gleich

Department of Computer Science
Purdue University
West Lafayette, IN 47907-2107

(765) 496-7300 · dgleich@purdue.edu

Education

Ph.D., Stanford University, Computational and Mathematical Engineering, 2009
  Dissertation · *Models and Algorithms for PageRank Sensitivity*
  Committee · Michael Saunders, Chen Greif, Amin Saberi

M.S., Stanford University, Computational and Mathematical Engineering, 2006

B.S., Harvey Mudd College, Joint Mathematics and Computer Science, 2004
  with highest distinction and honors in computer science

Professional Experience

2022–now	*Professor*, Computer Science, Purdue University
2018–2022	*Jyoti and Aditya Mathur Associate Professor*, Computer Science, Purdue University
2017–2022	*Associate Professor*, Computer Science, Purdue University
2011–2017	*Assistant Professor*, Computer Science, Purdue University
2013	*Visiting Scholar*, Simons Institute for the Theory of Computation, Univ. of Calif. Berkeley
2010–2011	*John von Neumann Postdoctoral Fellow*, Sandia National Laboratories
2009–2010	*Postdoctoral Fellow*, University of British Columbia
2004–2009	*Research Assistant & Teaching Assistant*, Stanford University
2008	*Research Intern*, Microsoft Live Labs

Awards and Honors

University Faculty Scholar · 2022

Best Paper Runner-up at IEEE/ACM International Conference on Advances in Social Networks Analysis and
  Mining · 2019 · for *Pairwise Link Prediction, Nassar, Benson, Gleich.*

Nature Outstanding Reviewer · 2018

SIAM Outstanding Paper Prize · 2018 · for *PageRank Beyond the Web, SIAM Review 2015*

Alfred P. Sloan Research Fellowship · 2016

NSF CAREER Award · 2012

Department of Energy John von Neumann Postdoctoral Fellowship · 2010

Microsoft Live Labs Fellowship · 2007

High distinction · Harvey Mudd College · 2004

Honors in Computer Science · Harvey Mudd College · 2004

Borrelli Prize · Harvey Mudd College · 2003

High school valedictorian · Lourdes High School · 2000

us Army Excellence in Computer Science · Lourdes High School · 1998

Intel Award of Excellence in Computer Science · Lourdes High School · 1998

Publications

Journal Articles

1. Topological structure of complex predictions.

M. Liu, T. K. Dey, and *D. F. Gleich*.
Nature Machine Intelligence, 5, 1382–1389, 2023.
https://arxiv.org/abs/2207.14358 (Includes all software.)

2. A flexible pagerank-based graph embedding framework closely related to spectral eigenvector embeddings.
D. Shur, Y. Huang, and *D. F. Gleich*.
Journal of Applied and Computational Topology, 2023.
doi:https://doi.org/10.1007/s41468-023-00129-6 (Includes all software.)

3. Dominant z-eigenpairs of tensor kronecker products decouple.
C. Colley, H. Nassar, and *D. F. Gleich*.
SIAM Journal on Matrix Analysis and Applications, 44 (3), 1006–1031, 2023.
doi:10.1137/22M1502008 (Includes all software.)

4. Flow-based algorithms for improving clusters: A unifying framework, software, and performance.
K. Fountoulakis, M. Liu, *D. F. Gleich*, and M. W. Mahoney.
SIAM Review, 65 (1), 59–143, February 2023.
doi:10.1137/20m1333055 (Includes all software.)

5. Aligning spatially constrained graphs.
V. Ravindra, H. Nassar, *D. F. Gleich*, and A. Grama.
Transactions on Knowledge and Data Engineering, pages 1–13, 2022.
doi:10.1109/TKDE.2022.3206823

6. Estimating statewide carrying capacity of bobcats (lynx rufus) using improved maximum clique algorithms.
L. R. Jones, R. K. Swihart, *D. F. Gleich*, G. Albers, S. A. Johnson, C. M. Hudson, and P. A. Zollner.
Landscape Ecology, jul 2022.
doi:10.1007/s10980-022-01460-6 (Includes all software.)

7. Scalable algorithms for multiple network alignment.
H. Nassar, G. Kollias, A. Grama, and *D. F. Gleich*.
SIAM J. Scientific Computing, 43 (5), S592–S611, 2021.
doi:10.1137/20m1345876 (Includes all software.)

8. Adaptive erasure coded fault tolerant linear system solver.
X. Kang, *D. F. Gleich*, A. Sameh, and A. Grama.
ACM Trans. Parallel Comput., 8 (4), dec 2021.
doi:10.1145/3490557

9. Local hypergraph clustering using capacity releasing diffusion.
R. Ibrahim and *D. F. Gleich*.
PLoS ONE, 15 (12), e0243485, December 2020.
doi:10.1371/journal.pone.0243485 (Includes all software.)

10. Neighborhood and pagerank methods for pairwise link prediction.
H. Nassar, A. R. Benson, and *D. F. Gleich*.
Social Network Analysis and Mining, 10, 63, 2020.
doi:10.1007/s13278-020-00671-6 (Includes all software.)

11. Classes of preferential attachment and triangle preferential attachment models with power-law spectra.
N. Eikmeier and *D. F. Gleich*.
Journal of Complex Networks, 8 (4), cnz040, August 2020.
doi:10.1093/comnet/cnz040 (Includes all software.)

12. Multi-way monte carlo method for linear systems.
T. Wu and *D. F. Gleich*.
SIAM Journal on Scientific Computing, 41 (6), A3449–A3475, January 2019.
doi:10.1137/18M121527X (Includes all software.)

13. Computing tensor z-eigenvectors with dynamical systems.
    A. Benson and *D. F. Gleich*.
    SIAM Journal on Matrix Analysis and Applications, 40 (4), 1311–1324, January 2019.
    `doi:10.1137/18M1229584` (Includes all software.)

14. Metric-constrained optimization for graph clustering algorithms.
    N. Veldt, D. Gleich, A. Wirth, and J. Saunderson.
    SIAM J. Mathematics of Data Science, 1 (2), 333–355, 2019.
    `doi:10.1137/18M1217152` (Includes all software.)

15. Coin-flipping, ball-dropping, and grass-hopping for generating random graphs from matrices of probabilities.
    A. S. Ramani, N. Eikmeier, and *D. F. Gleich*.
    SIAM Review, 61 (3), 549–595, 2019.
    `doi:10.1137/17M1127132` (Includes all software.)

16. Non-exhaustive, overlapping clustering.
    J. J. Whang, Y. Hou, *D. F. Gleich*, and I. Dhillon.
    Transactions on Pattern Analysis and Machine Intelligence, 41 (11), November 2019.
    `doi:10.1109/TPAMI.2018.2863278` (Includes all software.)

17. Multimodal network diffusion predicts future disease-gene-chemical associations.
    C.-H. Lin, D. M. Konecki, M. Liu, S. J. Wilson, H. Nassar, A. D. Wilkins, *D. F. Gleich*, and O. Lichtarge.
    Bioinformatics, page bty858, October 2018.
    `doi:10.1093/bioinformatics/bty858` (Includes all software.)

18. Gauss's law for networks directly reveals community boundaries.
    A. Sinha, *D. F. Gleich*, and K. Ramani.
    Scientific Reports, 8 (1), 11909, August 2018.
    `doi:10.1038/s41598-018-30401-0` (Includes all software.)

19. A geometric approach to characterize the functional identity of single cells.
    S. Mohammadi, V. Ravindra, *D. F. Gleich*, and A. Grama.
    Nature Communications, 9 (1), 1516, April 2018.
    `doi:10.1038/s41467-018-03933-2` (Includes all software.)

20. Triangular alignment (TAME): A tensor-based approach for higher-order network alignment.
    S. Mohammadi, *D. F. Gleich*, T. G. Kolda, and A. Grama.
    Transactions on Computational Biology and Bioinformatics, 14 (6), 1446–1458, November 2017.
    `doi:10.1109/TCBB.2016.2595583`.
    Published online (July 2016) ahead of print (Includes all software.)

21. Localization in seeded PageRank.
    D. F. Gleich, K. Kloster, and H. Nassar.
    Internet Mathematics, page Online, 2017.
    `doi:10.24166/im.001.2017` (Includes all software.)

22. The spacey random walk: a stochastic process for higher-order data.
    A. Benson, *D. F. Gleich*, and L.-H. Lim.
    SIAM Review, 59 (2), 321–345, May 2017.
    `doi:10.1137/16M1074023` (Includes all software.)

23. An optimization approach to locally-biased graph algorithms.
    K. Fountoulakis, *D. F. Gleich*, and M. W. Mahoney.
    Proceedings of the IEEE, 105 (2), 256–272, February 2017.
    `doi:10.1109/JPROC.2016.2637349` (Includes all software.)

24. AptRank: an adaptive PageRank model for protein function prediction on bi-relational graphs.
    B. Jiang, K. Kloster, *D. F. Gleich*, and M. Gribskov.

Bioinformatics, 33 (12), 1829–1836, June 2017.
doi:10.1093/bioinformatics/btx029 (Includes all software.)

25. Erasure coding for fault oblivious linear system solvers.
Y. Zhu, A. Grama, and *D. F. Gleich*.
SIAM J. of Scientific Computing, 39 (1), C48–C64, 2017.
doi:10.1137/15M1041511 (Includes all software.)

26. Higher-order organization of complex networks.
A. Benson, *D. F. Gleich*, and J. Leskovec.
Science, 353 (6295), 163–166, 2016.
doi:10.1126/science.aad9029 (Includes all software.)

27. Seeded PageRank solution paths.
K. Kloster and *D. F. Gleich*.
European Journal of Applied Mathematics, 27 (6), 812–845, 2016.
doi:10.1017/S0956792516000280 (Includes all software.)

28. A parallel min-cut algorithm using iteratively reweighted least squares.
Y. Zhu and *D. F. Gleich*.
Parallel Computing, 59, 43–59, November 2016.
doi:10.1016/j.parco.2016.02.003 (Includes all software.)

29. Overlapping community detection using neighborhood-inflated seed expansion.
J. J. Whang, *D. F. Gleich*, and I. S. Dhillon.
Transactions on Knowledge and Data Engineering, 28 (5), 1272–1284, May 2016.
doi:10.1109/TKDE.2016.2518687 (Includes all software.)

30. Multilinear PageRank.
D. F. Gleich, L.-H. Lim, and Y. Yu.
SIAM Journal on Matrix Analysis and Applications, 36 (4), 1507–1541, 2015.
doi:10.1137/140985160 (Includes all software.)

31. Parallel maximum clique algorithms with applications to network analysis.
R. A. Rossi, *D. F. Gleich*, and A. H. Gebremedhin.
SIAM Journal on Scientific Computing, 37 (5), C589–C616, 2015.
doi:10.1137/14100018X (Includes all software.)

32. PageRank beyond the web.
D. F. Gleich.
SIAM Review, 57 (3), 321–363, August 2015.
doi:10.1137/140976649 (Includes all software.)

33. Sublinear column-wise actions of the matrix exponential on social networks.
D. F. Gleich and K. Kloster.
Internet Mathematics, 11 (4–5), 352–384, 2015.
doi:10.1080/15427951.2014.971203 (Includes all software.)

34. Dimensionality of social networks using motifs and eigenvalues.
A. Bonato, *D. F. Gleich*, M. Kim, D. Mitsche, P. Prałat, A. Tian, and S. J. Young.
PLoS ONE, 9 (9), e106052, September 2014.
doi:10.1371/journal.pone.0106052 (Includes all software & all social network data.)

35. Model reduction with MapReduce-enabled tall and skinny singular value decomposition.
P. G. Constantine, *D. F. Gleich*, Y. Hou, and J. Templeton.
SIAM J. Sci. Comput., 36 (5), S166–S191, November 2014.
doi:10.1137/130925219 (Includes all software & 4TB data.)

36. A dynamical system for PageRank with time-dependent teleportation.
D. F. Gleich and R. A. Rossi.

Internet Mathematics, 10 (1–2), 188–217, June 2014.
`doi:10.1080/15427951.2013.814092` (Includes all software.)

37. Message-passing algorithms for sparse network alignment.
M. Bayati, *D. F. Gleich*, A. Saberi, and Y. Wang.
ACM Trans. Knowl. Discov. Data, 7 (1), 3:1–3:31, March 2013.
`doi:10.1145/2435209.2435212` (Includes all software.)

38. The power and Arnoldi methods in an algebra of circulants.
D. F. Gleich, C. Greif, and J. M. Varah.
Numerical Linear Algebra with Applications, 20, 809–831, October 2013.
`doi:10.1002/nla.1845` (Includes all software.)

39. Moment based estimation of stochastic Kronecker graph parameters.
D. F. Gleich and A. B. Owen.
Internet Mathematics, 8 (3), 232–256, August 2012.
`doi:10.1080/15427951.2012.680824` (Includes all software.)

40. Fast matrix computations for pairwise and columnwise commute times and Katz scores.
F. Bonchi, P. Esfandiar, *D. F. Gleich*, C. Greif, and L. V. Lakshmanan.
Internet Mathematics, 8 (1-2), 73–112, 2012.
`doi:10.1080/15427951.2012.625256` (Includes all software.)

41. A factorization of the spectral Galerkin system for parameterized matrix equations: derivation and applications.
P. G. Constantine, *D. F. Gleich*, and G. Iaccarino.
SIAM Journal of Scientific Computing, 33 (5), 2995–3009, 2011.
`doi:10.1137/100799046` (Includes all software.)

42. Some computational tools for digital archive and metadata maintenance.
D. F. Gleich, Y. Wang, X. Meng, F. Ronaghi, M. Gerritsen, and A. Saberi.
BIT Numerical Mathematics, 51, 127–154, 2011.
`doi:10.1007/s10543-011-0324-6`

43. Random alpha PageRank.
P. G. Constantine and *D. F. Gleich*.
Internet Mathematics, 6 (2), 189–236, September 2010.
`doi:10.1080/15427951.2009.10129185` (Includes all software.)

44. An inner-outer iteration for PageRank.
D. F. Gleich, A. P. Gray, C. Greif, and T. Lau.
SIAM Journal of Scientific Computing, 32 (1), 349–371, February 2010.
`doi:10.1137/080727397` (Includes all software.)

45. Spectral methods for parameterized matrix equations.
P. G. Constantine, *D. F. Gleich*, and G. Iaccarino.
SIAM Journal on Matrix Analysis and Applications, 31 (5), 2681–2699, 2010.
`doi:10.1137/090755965`

46. A Monte Carlo method for solving unsteady adjoint equations.
Q. Wang, *D. F. Gleich*, A. Saberi, N. Etemadi, and P. Moin.
Journal of Computational Physics, 227 (12), 6184–6205, June 2008.
`doi:10.1016/j.jcp.2008.03.006`

47. Approximating personalized PageRank with minimal use of webgraph data.
D. F. Gleich and M. Polito.
Internet Mathematics, 3 (3), 257–294, December 2007.
`doi:10.1080/15427951.2006.10129128`

Conference Papers

48. Densest subhypergraph: Negative supermodular functions and strongly localized methods.
Y. Huang, *D. F. Gleich*, and N. Veldt.
In *TheWebConf*, 2024 (Includes all software.)

49. Theoretical bounds on the network community profile from low-rank semi-definite programming.
Y. Huang, C. Seshadhri, and *D. F. Gleich*.
In *Proceedings of the 40th International Conference on Machine Learning*, ICML 2023, pages 13976–13992, 2023 (Includes all software.)

50. Fauci-email: A JSON digest of Anthony Fauci's released emails.
A. R. Benson, N. Veldt, and *D. F. Gleich*.
Proceedings of the International AAAI Conference on Web and Social Media, 16 (1), 1208–1217, May 2022.
https://ojs.aaai.org/index.php/ICWSM/article/view/19371 (Includes all software and proposes a new dataset.)

51. Strongly local hypergraph diffusions for clustering and semi-supervised learning.
M. Liu, N. Veldt, H. Song, P. Li, and *D. F. Gleich*.
In *Proceedings of the Web Conference 2021*, WWW '21, pages 2092–2103, 2021.
doi:10.1145/3442381.3449887 (Includes all software.)

52. Strongly local p-norm-cut algorithms for semi-supervised learning and local graph clustering.
M. Liu and *D. F. Gleich*.
In *Advances in Neural Information Processing Systems (NeurIPS)*, volume 33, pages 5023–5035, 2020.
https://proceedings.neurips.cc//paper/2020/file/3501672ebc68a5524629080e3ef60aef-Paper.pdf (Includes all software.)

53. Graph clustering in all parameter regimes.
J. Gan, *D. F. Gleich*, N. Veldt, A. Wirth, and X. Zhang.
In J. Esparza and D. Král, editors, *45th International Symposium on Mathematical Foundations of Computer Science (MFCS 2020)*, volume 170 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 39:1–39:15. Schloss Dagstuhl–Leibniz-Zentrum für Informatik, Dagstuhl, Germany, 2020.
doi:10.4230/LIPIcs.MFCS.2020.39 (Authors in alphabetical order.)

54. Parameterized objectives and algorithms for clustering bipartite graphs and hypergraphs.
N. Veldt, A. Wirth, and *D. F. Gleich*.
In *Proceeding of KDD2020*, KDD '20, pages 1868–1876, 2020.
doi:10.1145/3394486.3403238 (Includes all software.)

55. Using cliques with higher-order spectral embeddings improves graph visualizations.
H. Nassar, C. Kennedy, S. Jain, A. R. Benson, and *D. F. Gleich*.
In *Proceedings of The Web Conference 2020*, WWW '20, pages 2927–2933. Association for Computing Machinery, New York, NY, USA, 2020.
doi:10.1145/3366423.3380059 (Includes all software.)

56. A parallel projection method for metric constrained optimization.
C. Ruggles, N. Veldt, and *D. F. Gleich*.
In *Proceedings of the SIAM Workshop on Combinatorial Scientific Computing 2020 (CSC20)*, pages 43–53. SIAM, 2020.
doi:10.1137/1.9781611976229.5 (Includes all software.)

57. Rigid graph alignment.
V. Ravindra, H. Nassar, *D. F. Gleich*, and A. Grama.
In *Complex Networks and Their Applications VIII*, pages 621–632. Springer International Publishing, 2019.
doi:10.1007/978-3-030-36687-2_52

58. Centrality in dynamic competition networks.
    A. Bonato, N. Eikmeier, *D. F. Gleich*, and R. Malik.
    In *Complex Networks and Their Applications VIII*, pages 105–116. Springer International Publishing, 2019.
    doi:10.1007/978-3-030-36683-4_9

59. Nonlinear diffusion for community detection and semi-supervised learning.
    R. Ibrahim and *D. F. Gleich*.
    In *The World Wide Web Conference*, WWW '19, pages 739–750. ACM, New York, NY, USA, 2019.
    doi:10.1145/3308558.3313483 (Includes all software.)

60. Learning resolution parameters for graph clustering.
    N. Veldt, A. Wirth, and *D. F. Gleich*.
    In *The World Wide Web Conference*, WWW '19, pages 1909–1919. ACM, New York, NY, USA, 2019.
    doi:10.1145/3308558.3313471 (Includes all software.)

61. Flow-based local graph clustering with better seed set inclusion.
    N. Veldt, C. Klymko, and *D. F. Gleich*.
    In *Proceedings of the SIAM International Conference on Data Mining*, pages 378–386, 2019.
    doi:10.1137/1.9781611975673.43 (Includes all software.

62. Pairwise link prediction.
    H. Nassar, A. R. Benson, and *D. F. Gleich*.
    In *Proceedings of the 2019 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining*, ASONAM 19, pages 386–393, 2019.
    doi:10.1145/3341161.3342897 (Includes all software.)

63. Correlation clustering generalized.
    D. F. Gleich, N. Veldt, and A. Wirth.
    In *Proceedings of 29th International Symposium on Algorithms and Computation*, pages 44:1–44:13, 2018.
    doi:10.4230/LIPIcs.ISAAC.2018.44.
    Authors in Alphabetical Order following CS Theory Convention

64. The hyperkron graph model for higher-order features.
    N. Eikmeier, A. S. Ramani, and *D. F. Gleich*.
    In *Proceedings of the International Conference on Data Mining (ICDM)*, pages 941–946, November 2018.
    doi:10.1109/ICDM.2018.00115 (Includes all software.)

65. A correlation clustering framework for community detection.
    N. Veldt, *D. F. Gleich*, and A. Wirth.
    In *Proceedings of the 2018 World Wide Web Conference*, WWW '18, pages 439–448. International World Wide Web Conferences Steering Committee, Republic and Canton of Geneva, Switzerland, 2018.
    doi:10.1145/3178876.3186110 (Includes all software.)

66. Low rank spectral network alignment.
    H. Nassar, N. Veldt, S. Mohammadi, A. Grama, and *D. F. Gleich*.
    In *Proceedings of the 2018 World Wide Web Conference*, WWW '18, pages 619–628. International World Wide Web Conferences Steering Committee, 2018.
    doi:10.1145/3178876.3186128 (Includes all software.)

67. Retrospective higher-order markov processes for user trails.
    T. Wu and *D. F. Gleich*.
    In *Proceedings of the 23rd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, KDD '17, pages 1185–1194. ACM, New York, NY, USA, 2017.
    doi:10.1145/3097983.3098127 (Includes all software.)

68. Revisiting power-law distributions in spectra of real world networks.
    N. Eikmeier and *D. F. Gleich*.
    In *Proceedings of the 23rd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, KDD '17, pages 817–826. ACM, New York, NY, USA, 2017.
    `doi:10.1145/3097983.3098128` (Includes all software and data.)

69. Local higher-order graph clustering.
    H. Yin, A. R. Benson, J. Leskovec, and *D. F. Gleich*.
    In *Proceedings of the 23rd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, KDD '17, pages 555–564. ACM, New York, NY, USA, 2017.
    `doi:10.1145/3097983.3098069` (Includes all software, acceptance rate $131/748 = 17.5\%$; selected for oral $64/748 = 8.5\%$.)

70. Distributed fault tolerant linear system solvers based on erasure coding.
    X. Kang, *D. F. Gleich*, A. Sameh, and A. Grama.
    In *2017 IEEE 37th International Conference on Distributed Computing Systems (ICDCS)*, pages 2478–2485, 2017.
    `doi:10.1109/ICDCS.2017.261` (Includes all software).

71. Correlation clustering with low-rank matrices.
    N. Veldt, A. I. Wirth, and *D. F. Gleich*.
    In *Proceedings of the 26th International Conference on World Wide Web*, WWW '17, pages 1025–1034, 2017.
    `doi:10.1145/3038912.3052586` (Includes all software.)

72. Multimodal network alignment.
    H. Nassar and *D. F. Gleich*.
    In *Proceedings of the 2017 SIAM International Conference on Data Mining*, pages 615–623, 2017.
    `doi:10.1137/1.9781611974973.69` (Includes all software.)

73. Deconvolving feedback loops in recommender systems.
    A. Sinha, *D. F. Gleich*, and K. Ramani.
    In D. D. Lee, M. Sugiyama, U. V. Luxburg, I. Guyon, and R. Garnett, editors, *Neural Information Processing Systems (NIPS)*, pages 3243–3251. Curran Associates, Inc., 2016.
    `https://papers.nips.cc/paper/6283-deconvolving-feedback-loops-in-recommender-systems`

74. General tensor spectral co-clustering for higher-order data.
    T. Wu, A. Benson, and *D. F. Gleich*.
    In *Advances in Neural Information Processing Systems 29*, pages 2559–2567, 2016.
    `http://papers.nips.cc/paper/6376-general-tensor-spectral-co-clustering-for-higher-order-data`.
    Http://arxiv.org/abs/1603.00395 (Includes all software.)

75. A simple and strongly-local flow-based method for cut improvement.
    N. Veldt, *D. F. Gleich*, and M. W. Mahoney.
    In *International Conference on Machine Learning*, pages 1938–1947, 2016.
    `http://jmlr.org/proceedings/papers/v48/veldt16.html` (Includes all software.)

76. Fast multiplier methods to optimize non-exhaustive, overlapping clustering.
    Y. Hou, J. J. Whang, *D. F. Gleich*, and I. Dhillon.
    In *Proceedings of the 2016 SIAM International Conference on Data Mining*, pages 297–305, 2016.
    `doi:10.1137/1.9781611974348.34`

77. Differential flux balance analysis of quantitative proteomic data on protein interaction networks.
    B. Jiang, *D. F. Gleich*, and M. Gribskov.
    In *Symposium on Signal Processing and Mathematical Modeling of Biological Processes with Applications to Cyber-Physical Systems for Precise Medicine*, GlobalSIP, pages 977–981. IEEE, 2015.
    `doi:10.1109/GlobalSIP.2015.7418343`

78. Non-exhaustive, overlapping clustering via low-rank semidefinite programming.
Y. Hou, J. J. Whang, *D. F. Gleich*, and I. S. Dhillon.
In *Proceedings of the 21th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, KDD '15, pages 427–436. ACM, New York, NY, USA, 2015.
`doi:10.1145/2783258.2783398`

79. Using local spectral methods to robustify graph-based learning algorithms.
D. F. Gleich and M. W. Mahoney.
In *Proceedings of the 21th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, KDD '15, pages 359–368. ACM, New York, NY, USA, 2015.
`doi:10.1145/2783258.2783376` (Includes all software.)

80. Tensor spectral clustering for partitioning higher-order network structures.
A. R. Benson, *D. F. Gleich*, and J. Leskovec.
In *Proceedings of the 2015 SIAM International Conference on Data Mining*, pages 118–126, 2015.
`doi:10.1137/1.9781611974010.14` (Includes all software.)

81. Non-exhaustive, overlapping k-means.
J. J. Whang, I. S. Dhillon, and *D. F. Gleich*.
In *Proceedings of the 2015 SIAM International Conference on Data Mining*, pages 936–944, 2015.
`doi:10.1137/1.9781611974010.105`

82. Scalable methods for nonnegative matrix factorizations of near-separable tall-and-skinny matrices.
A. R. Benson, J. D. Lee, B. Rajwa, and *D. F. Gleich*.
In *Proceedings of Neural Information Processing Systems*, pages 945–953, 2014.
`http://arxiv.org/abs/1402.6964`.
Selected for Spotlight Presentation (Includes all software, selected for spotlight presentation.)

83. Heat kernel based community detection.
K. Kloster and *D. F. Gleich*.
In *Proceedings of the 20th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, KDD '14, pages 1386–1395. ACM, New York, NY, USA, 2014.
`doi:10.1145/2623330.2623706` (Includes all software.)

84. Anti-differentiating approximation algorithms: A case study with min-cuts, spectral, and flow.
D. F. Gleich and M. M. Mahoney.
In *Proceedings of the International Conference on Machine Learning (ICML)*, pages 1018–1025, 2014.
`http://proceedings.mlr.press/v32/gleich14.html` (Includes all software.)

85. Direct tall-and-skinny QR factorizations in MapReduce architectures.
A. Benson, D. Gleich, and J. Demmel.
In *Big Data, 2013 IEEE International Conference on*, pages 264–272, October 2013.
`doi:10.1109/BigData.2013.6691583` (Includes all software.)

86. Overlapping community detection using seed set expansion.
J. J. Whang, *D. F. Gleich*, and I. S. Dhillon.
In *Proceedings of the 22nd ACM international conference on Conference on information and knowledge management*, CIKM '13, pages 2099–2108. ACM, New York, NY, USA, October 2013.
`doi:10.1145/2505515.2505535` (Includes all software.)

87. A multicore algorithm for network alignment via approximate matching.
A. Khan, *D. F. Gleich*, M. Halappanavar, and A. Pothen.
In *Proceedings of the 2012 ACM/IEEE International Conference for High Performance Computing, Networking, Storage and Analysis*, SC '12, pages 64:1–64:11. IEEE Computer Society Press, Los Alamitos, CA, USA, November 2012.
`http://conferences.computer.org/sc/2012/papers/1000a054.pdf` (Includes all software.)

88. Vertex neighborhoods, low conductance cuts, and good seeds for local community methods.
D. F. Gleich and C. Seshadhri.

In *KDD2012*, pages 597–605, August 2012.
`doi:10.1145/2339530.2339628` (Includes all software.)

89. Overlapping clusters for distributed computation.
R. Andersen, *D. F. Gleich*, and V. Mirrokni.
In *Proceedings of the fifth ACM international conference on Web search and data mining*, WSDM '12, pages 273–282. ACM, New York, NY, USA, February 2012.
`doi:10.1145/2124295.2124330` (Includes all software.)

90. Rank aggregation via nuclear norm minimization.
D. F. Gleich and L.-H. Lim.
In *Proceedings of the 17th ACM SIGKDD international conference on Knowledge discovery and data mining*, KDD '11, pages 60–68. ACM, New York, NY, USA, 2011.
`doi:10.1145/2020408.2020425` (Includes all software.)

91. Tracking the random surfer: empirically measured teleportation parameters in PageRank.
D. F. Gleich, P. G. Constantine, A. Flaxman, and A. Gunawardana.
In *WWW '10: Proceedings of the 19th international conference on World wide web*, pages 381–390, April 2010.
`doi:10.1145/1772690.1772730`

92. Algorithms for large, sparse network alignment problems.
M. Bayati, M. Gerritsen, *D. F. Gleich*, A. Saberi, and Y. Wang.
In *Proceedings of the 9th IEEE International Conference on Data Mining*, pages 705–710, December 2009.
`doi:10.1109/ICDM.2009.135` (Includes all software.)

93. Recommender systems research at Yahoo! Research Labs.
D. Decoste, *D. F. Gleich*, T. Kasturi, S. Keerthi, O. Madani, S.-T. Park, D. M. Pennock, C. Porter, S. Sanghai, F. Shahnaz, and L. Zhukov.
In *Beyond Personalization*. San Diego, CA, January 2005.
Position Statement

94. An SVD based term suggestion and ranking system.
D. F. Gleich and L. Zhukov.
In *ICDM '04: Proceedings of the Fourth IEEE International Conference on Data Mining (ICDM'04)*, pages 391–394. IEEE Computer Society, Brighton, UK, November 2004.
`doi:10.1109/ICDM.2004.10006`

Books and Edited Volumes

95. *Algorithms and Models for the Web Graph.*
D. F. Gleich, J. Komjáthy, and N. Litvak, editors.
volume 9479 of *Lecture Notes in Computer Science.*
Springer, 2015

Refereed workshop papers

96. Dynamic competition networks: Detecting alliances and leaders.
A. Bonato, N. Eikmeier, *D. F. Gleich*, and R. Malik.
In A. Bonato, P. Prałat, and A. Raigorodskii, editors, *Algorithms and Models for the Web Graph*, pages 115–144, 2018.
`doi:10.1007/978-3-319-92871-5_9`

97. Massive graph processing on nanocomputers.
B. P. Rainey and *D. F. Gleich*.
In *IEEE International Conference on Big Data*, pages 3326–3335, 2016.
`doi:10.1109/BigData.2016.7840992`.
Third Workshop on High Performance Big Graph Data Management, Analysis, and Mining (Includes all software.)

98. Mining and modeling character networks.
A. Bonato, D. R. D'Angelo, E. R. Elenberg, *D. F. Gleich*, and Y. Hou.
In A. Bonato, F. C. Graham, and P. Prałat, editors, *International Workshop on Algorithms and Models for the Web-Graph*, WAW, pages 100–114. Springer International Publishing, 2016.
`doi:10.1007/978-3-319-49787-7_9`

99. Strong localization in personalized PageRank.
H. Nassar, K. Kloster, and *D. F. Gleich*.
In *Proceedings of the 2015 Workshop on Algorithms for the Webgraph*, number 9479 in LNCS, pages 190–202, 2015.
`doi:10.1007/978-3-319-26784-5_15` (Includes all software.)

100. A nearly-sublinear method for approximating a column of the matrix exponential for matrices from large, sparse networks.
K. Kloster and *D. F. Gleich*.
In A. Bonato, M. Mitzenmacher, and P. Prałat, editors, *Algorithms and Models for the Web Graph*, volume 8305 of *Lecture Notes in Computer Science*, pages 68–79. Springer International Publishing, December 2013.
`doi:10.1007/978-3-319-03536-9_6` (Includes all software.)

101. Dynamic PageRank using evolving teleportation.
R. A. Rossi and *D. F. Gleich*.
In A. Bonato and J. Janssen, editors, *Algorithms and Models for the Web Graph*, volume 7323 of *Lecture Notes in Computer Science*, pages 126–137. Springer Berlin Heidelberg, 2012.
`doi:10.1007/978-3-642-30541-2_10` (Includes all software.)

102. Distinguishing signal from noise in an SVD of simulation data.
P. G. Constantine and *D. F. Gleich*.
In *Proceedings of the IEEE Conference on Acoustics, Speech, and Signal Processing*, pages 5333–5336, 2012.
`doi:10.1109/ICASSP.2012.6289125`

103. Tall and skinny QR factorizations in MapReduce architectures.
P. G. Constantine and *D. F. Gleich*.
In *Proceedings of the second international workshop on MapReduce and its applications*, MapReduce '11, pages 43–50. ACM, New York, NY, USA, June 2011.
`doi:10.1145/1996092.1996103` (Includes all software.)

104. Fast Katz and commuters: Efficient approximation of social relatedness over large networks.
P. Esfandiar, F. Bonchi, *D. F. Gleich*, C. Greif, L. V. S. Lakshmanan, and B.-W. On.
In *Algorithms and Models for the Web Graph*, 2010.
`doi:10.1007/978-3-642-18009-5_13` (Includes all software.)

105. Using polynomial chaos to compute the influence of multiple random surfers in the PageRank model.
P. G. Constantine and *D. F. Gleich*.
In A. Bonato and F. C. Graham, editors, *Proceedings of the 5th Workshop on Algorithms and Models for the Web Graph (WAW2007)*, volume 4863 of *Lecture Notes in Computer Science*, pages 82–95. Springer, 2007.
`doi:10.1007/978-3-540-77004-6_7`

Posters and refereed abstracts

106. A short introduction to local graph clustering methods and software.
K. Fountoulakis, *D. F. Gleich*, and M. W. Mahoney.
In *Book of Abstracts for 7th International Conference on Complex Networks and Their Applications*, pages 56–59, 2018 (Tutorial presentation for software.)

107. Using triangles to improve community detection in directed networks.
C. Klymko, *D. F. Gleich*, and T. G. Kolda.

In *Proceedings of the ASE BigData Conference*. Stanford, CA, 2014.
`doi:http://www.ase360.org/handle/123456789/104`.
Full version on arXiv `http://arxiv.org/abs/1404.5874`

108. Fast maximum clique algorithms for large graphs.
R. A. Rossi, *D. F. Gleich*, A. H. Gebremedhin, and M. M. A. Patwary.
In *Poster Proceedings of WWW2014*, pages 365–366, 2014.
`doi:10.1145/2567948.2577283`

109. Distributed algorithms for aligning massive networks.
A. Khan, A. Pothen, M. Halappanavar, D. Chavarria, and *D. F. Gleich*.
In *Poster Proceedings of the ACM, IEEE Supercomputing Conference*, 2013

110. Scalable computing with power-law graphs: Experience with parallel PageRank.
D. F. Gleich and L. Zhukov.
In *SuperComputing 2005*, November 2005.
`http://www.cs.purdue.edu/homes/dgleich/publications/gleich2005-parallelpagerank.pdf`.
Poster

111. The World of Music: SDP embedding of high dimensional data.
D. F. Gleich, L. Zhukov, M. Rasmussen, and K. Lang.
In *Information Visualization 2005*, 2005.
`http://www.cs.purdue.edu/homes/dgleich/publications/gleich2005-worldofmusic.pdf`.
Interactive Poster

Book reviews

112. Review of: Numerical algorithms for personalized search in self-organizing information networks by Sep Kamvar, Princeton Univ. Press, 2010, 160pp., ISBN13: 978-0-691-14503-7.
D. F. Gleich.
Linear Algebra and its Applications, 435 (4), 908 – 909, 2011.
`doi:10.1016/j.laa.2011.01.013`

Invited papers, Editorials, & Book chapters

113. Higher-order network analysis takes off, fueled by classical ideas and new data.
A. R. Benson, *D. F. Gleich*, and D. J. Higham.
SIAM News, cs.SI, 2103.05031, 2021.
`https://sinews.siam.org/Details-Page/higher-order-network-analysis-takes-off-fueled-by-old-ideas-and-new-data`.
Abbreviated version published on SIAM News, full version on arXiv

114. A simple study of pleasing parallelism on multicore computers.
Y. Ren and *D. F. Gleich*.
In A. Grama and A. H. Sameh, editors, *Parallel Algorithms in Computational Science and Engineering*, pages 325–346. Birkhäuser, 2020.
`doi:10.1007/978-3-030-43736-7_11`.
Report version on this website differs slightly from final published chapter

115. Current and future challenges in mining large networks: Report on the second sdm workshop on mining networks and graphs.
L. B. Holder, R. Caceres, *D. F. Gleich*, J. Riedy, M. Khan, N. V. Chawla, R. Kumar, Y. Wu, C. Klymko, T. Eliassi-Rad, and A. Prakash.
SIGKDD Explor. Newsl., 18 (1), 39–45, August 2016.
`doi:10.1145/2980765.2980770`

116. Mining large graphs.
D. F. Gleich and M. W. Mahoney.
In P. Bühlmann, P. Drineas, M. Kane, and M. van de Laan, editors, *Handbook of Big Data*, Handbooks

of modern statistical methods, pages 191–220. CRC Press, 2016.
`doi:10.1201/b19567-20`

117. Ranking web pages.
D. F. Gleich and P. G. Constantine.
In N. J. Higham, M. R. Dennis, P. Glendinning, P. A. Martin, F. Santosa, and J. Tanner, editors, *The Princeton Companion to Applied Mathematics*, pages 755–757. Princeton University Press, Princeton, NJ, USA, 2015

118. Expanders, tropical semi-rings, and nuclear norms: oh my!
D. F. Gleich.
XRDS, 19 (3), 32–36, March 2013.
`doi:10.1145/2425676.2425688`

119. Three results on the PageRank vector: eigenstructure, sensitivity, and the derivative.
D. F. Gleich, P. Glynn, G. H. Golub, and C. Greif.
In A. Frommer, M. W. Mahoney, and D. B. Szyld, editors, *Web Information Retrieval and Linear Algebra Algorithms*, number 07071 in Dagstuhl Seminar Proceedings. Internationales Begegnungs- und Forschungszentrum fuer Informatik (IBFI), Schloss Dagstuhl, Germany, 2007.
`http://drops.dagstuhl.de/opus/volltexte/2007/1061`

Technical reports

120. Better than best low-rank approximation with the singular value decomposition.
D. F. Gleich.
arXiv, math.NA, 2402.18427, 2024 (Includes all software.)

121. A cheeger inequality for size-specific conductance.
Y. Huang and *D. F. Gleich.*
arXiv, cs.DM, 2303.11452, 2023

122. A randomized algorithm for enumerating zonotope vertices.
K. Stinson, *D. F. Gleich*, and P. G. Constantine.
arXiv, math.NA, 1602.06620, 2016.
`http://arxiv.org/abs/1602.06620` (Includes all software.)

123. Computing active subspaces.
P. G. Constantine and *D. F. Gleich.*
arXiv, math.NA, 1408.0545, 2014.
`http://arxiv.org/abs/1408.0545` (Includes all software.) **Cited 57 times**

124. The world of music: User ratings; spectral and spherical embeddings; map projections.
D. F. Gleich, M. Rasmussen, K. Lang, and L. Zhukov.
Online report, 2006.
`http://www.cs.purdue.edu/homes/dgleich/publications/Gleich2006-wom.pdf`

125. Hierarchical directed spectral graph partitioning.
D. F. Gleich.
Information Networks, Stanford University, Final Project, 2005, 2006.
`http://www.cs.purdue.edu/homes/dgleich/publications/Gleich2005-hierarchicaldirectedspectral.pdf` (Cited 24 times)

126. Fast parallel PageRank: A linear system approach.
D. F. Gleich, L. Zhukov, and P. Berkhin.
Technical Report YRL-2004-038, Yahoo! Research Labs, 2004.
`http://www.cs.purdue.edu/homes/dgleich/publications/gleich2004-parallel.pdf` **Cited 126 times**

Patents

127. Systems and methods for ranking nodes of a graph using random parameters.

P. G. Constantine and *D. F. Gleich*, 2015.
http://www.google.com/patents/US8972329

Invited Plenary Presentations

Topology analysis of complex prediction functions. Workshop on Computational Topology and Quantum Computing (WoComToQC). Quantum Leap Africa, Kigali, Rwanda. (Zoom participation), February 2023.

Topology analysis of complex prediction functions. SIAM Mathematics of Data Science, San Diego, September 2022.

Flow-based cluster improvement. Virtual Satellite for NetSci 20 on Statistical Inference for Network Models. September 20, 2020 (Online due to COVID-19, originally Rome).

Higher-order structure in networks. ITA Workshop, San Diego, CA, February 13 2019.

Higher-order analysis of complex networks. 27th Biennial Numerical Analysis conference, Glasgow, Scotland, June 27-30, 2017.

Deconvolving Feedback loops in Recommender Systems, SIAM Data Mining Workshop on Recommender systems. Houston TX, April 29, 2017.

Localized methods in graph mining. Invited plenary presentation at the International Workshop on Machine Learning and Complex Networks, IIT Kharagpur, India, March 5-7, 2015.

Personalized PageRank based community detection. Invited plenary presentation at the 11th Workshop for Mining and Learning on Graphs at KDD 2013, Chicago IL. August 11th, 2013.

How does Google Google? A Journey into the wondrous mathematics behind your favorite websites. Farmingdale State College, New York. May 5, 2013.

Panelist

Panel on Future Challenges in Mining Large Network. Workshop on Mining Networks and Graphs: A Big Data Analytic Challenge · SIAM Data Mining 2015

Panel on the Future of Irregular Applications. Workshop on Irregular Applications: Architecture and Algorithm · SuperComputing 2012.

Service

Professional

Elected positions

SIAM Data Science Activity Group · Elected Program Director · 2022-2023

Major meeting organization (more than 1000 people)

SIAM Mathematics of Data Science · Technical program co-chair · 2024

TheWebConf · Social Network Track co-chair · 2022

SIAM Annual meeting · Technical program co-chair · 2016

Large meeting organization (around 500 people)

SIAM Data Mining Conference · Workshop program co-chair · 2016

Small meetings and workshops (fewer than 100 people) – Full-day to multi-day workshops

Algorithmic, Mathematical, and Statistical Foundations of Data Science and Applications · April 2019.

IMA Workshop on Approximation Theory and Machine Learning at Purdue University · September 2018.

SIAM Workshop on Parameter Space Dimension Reduction · July 2017.

Workshop on Algorithms for the Web-graph · December 2015.

SIAM Workshop on Network Science · July 2014.

SVG 2014 – a birthday celebration for Michael Saunders, James Varah, and Alan George · Stanford University · January 2014.

Workshop on MapReduce for simulation data analysis · Institution for Computational and Mathematical Engineering · Stanford University · May 2013

Workshop on using MapReduce for simulation data analysis · Institute for Computational and Mathematical Engineering · Stanford University · May 2012.

Workshop on Tensors, Kernels, and Machine Learning · NIPS 2010.

Minisymposia – Partial workshops at SIAM Conferences

Multilinear Algebra and Tensor Spaces · Rio de Janeiro, Brazil · July 2019.

Eigenvectors and Decompositions of Structured Tensors. SIAM Computational Science and Engineering 2017 · Atlanta, GA (with Austin Benson).

The Mathematics Behind Big Data Analysis. SIAM Discrete Mathematics 2016 · Atlanta, GA (with C. Seshadhri)

Multilinear Algebra, Markov Chains, and Hypergraphs. SIAM Applied Linear Algebra 2015 · Atalanta, GA (with Lek-Heng Lim)

Network Science, SIAM Computational Science and Engineering 2015 · Salt Lake City, UT (with Tammy Kolda)

Parallel Algorithms for MapReduce-Based Scientific Computing. SIAM Parallel Processing, 2014 (with Paul Constantine and Hans de Sterck).

Is MapReduce Good for Science and Simulation Data? SIAM Computational Science and Engineering, 2013 (with Paul Constantine).

Simulation Informatics: Applying Machine Learning Techniques To Simulation Databases, SIAM Uncertainty Quantification, 2012 (with Paul Constantine).

Modern matrix methods for large scale data and networks, SIAM Applied Linear Algebra, 2012.

Mini-symposium on Matrix Methods for Sparse Text and Data Mining · SIAM Annual Meeting 2008

Editorial

arXiv section moderator, cs.SI (social and information networks).

Associate Editor, SIAM Review (Spotlights section), 2021-Present.

Associate Editor, SIAM J. Mathematics of Data Science (SIMODS), 2018-Present.

Guest editor, Internet Mathematics, special issue on the workshop on algorithms and models from the Web Graph.

Guest editor, SIAM Journal of Scientific Computing special section on Computational Science and Engineering Software and Big Data in Computational Science and Engineering.

SIAM Fundamentals of Algorithms book series, 2012-2017.

Guest editor, SIAM Journal of Scientific Computing special section on Planet Earth and Big Data.

SIAM Blogs

Senior program committees

The Web Conference · 2019, 2020, 2021

ACM International Conference on Knowledge Discovery and Data Mining · 2017, 2019, 2020, 2021.

SIAM Data Mining · 2017.

Program committees

SIAM Annual Meeting · 2014

SIAM Applied Linear Algebra · 2015

ECML/PKDD · 2013

SIAM Workshop on Network Science · 2013, 2014 (Organizer), 2015, 2016, 2017, 2018.

SIAM Data Mining · 2012, 2013, 2014, 2015, 2016.

ACM International Conference on the World Wide Web · 2017

Neural Information Processing systems · 2016, 2017.

International Conference on Machine Learning (ICML) · 2018.

ACM International Conference on Web-search and Data Mining · 2013

Pacific-Asia Conference on Knowledge Discovery and Data Mining · 2012

ACM International Conference on Knowledge Discovery and Data Mining · 2011, 2013, 2014, 2015, 2016, 2018.

ACM Conference on Hypertext and Hypermedia · 2011

Workshop on mining and learning on graphs (MLG) · 2011, 2013

Journal reviewing

Nature

Nature Physics

Nature Computational Science

Proceedings of the National Academy of Sciences

Science Advances

Nature Communications

Communications of the ACM

Physics Review Letters

SIAM Review

Physics Review E

SIAM Journal of Matrix Analysis and its Applications

SIAM Journal on Scientific Computing

Scientific Reports (Nature Group)

Algorithmica

Information Visualization Conference

SIAM Symposium on Discrete Algorithms

Transactions on Parallel and Distributed Computing

Mathematics of Computation

Mathematics and Computers in Simulation

Transactions on Knowledge and Data Engineering

Information Retrieval

Linear Algebra and its applications

Electronic Transactions on Numerical Analysis

Applied Numerical Mathematics

Journal of Computational and Applied Mathematics

Journal of Graph Algorithms and Applications

Knowledge and Information Systems

Proposal reviewing

National Science Centre · Poland · 2021

DOE ASCR panel · 2022

KAUST · 2017

NSERC ("Canadian NSF") · 2016

NSF Computing and Communication Foundations Panel · 2011, 2012, 2015, 2016

NSF Information and Intelligent Systems Panel · 2013, 2014, 2019, 2021

Other

External Expert for IEEE Milestones Committee Review of PageRank and the Birth of Google · 2023 · `https://ieeemilestones.ethw.org/Milestone-Proposal:The_PageRank_algorithm_and_the_birth_of_Google,_1996-1998`

KTH External Expert for recruiting in Data Science · 2022-2023

SIAM Appointee to CRA Group on Dishonesty in publication · 2021

SIAM Executive Director Hiring Committee · 2020 (selected Susanne Weekes)

SIAM Web committee · 2014-2018

SIAM Committee on XML Publishing · 2011

Author of SIAM Guide to Surviving a Conference · 2011

Publicity

News articles & Press releases

Hacker News featured our study on Anthony Fauci's email [11] on the frontpage on September 16, 2021. (Screenshot available upon request.)

WL high school student mentored by Purdue prof takes third in national science-math competition. *Purdue Today.* `http://www.purdue.edu/newsroom/purduetoday/releases/2017/Q1/wl-high-school-student-mentored-by-purdue-prof-takes-third-in-national-science-math-competition.html`

Mathematical framework offers a more detailed understanding of network relationships. *phys.org*, July 8, 2016. `http://phys.org/news/2016-07-mathematical-framework-network-relationships.html` (about my Science article with Benson and Leskovec).

Stanford-led effort creates a new way to analyze and control networks. July 8, 2016, `http://news.stanford.edu/2016/07/08/stanford-led-effort-creates-new-way-analyze-control-networks/` (about my Science article with Benson and Leskovec).

Mathematical Framework that Prioritizes Key Patterns in Networks Aims to Accelerate Scientific Discovery. DARPA Press Release, July 7, 2016, `http://www.darpa.mil/news-events/2016-07-07` (about my Science article with Benson and Leskovec).

How Google's PageRank Quantifies Things (Like History's Best Tennis Player) Beyond The Web. *Fast Magazine, Co-exist*, August 18, 2014. `http://www.fastcoexist.com/3034193/how-googles-pagerank-quantifyies-things-like-historys-best-tennis-player-beyond-the-web` (about my article: `http://arxiv.org/abs/1407.5107`).

Fastest Supercomputer List Topped By Titan, Patience Wait. *Information Week*, November 14, 2012. `http://www.informationweek.com/tech-center/gov-cloud/fastest-supercomputer-list-topped-by-tit/240134978`
Mentions my SC12 paper on multicore network alignment

New algorithm pin-points similar data in seconds, Frances White. *Pacific Northwest National Laboratories* Press Release, November 13, 2012. `http://www.pnnl.gov/news/release.aspx?id=953` Discusses my SC12 paper on multicore network alignment

Interviews

Video Interview for SIAM. The benefits of conferences. Recorded July 2016. *Currently in production.*

Video Interview for SIAM. Online networking in scientific communities. March 2013. http://connect.siam.org/online-networking-in-scientific-communities-siam-video/

Richard Giles. *How to Use Flickr.* Course Technology PTR, 2006. Interview about visualizations of the Flickr social network.

"A Visual Exploration of Complex Networks." Seed Magazine Online, 24 July 2006. Accessed via `http://www.seedmagazine.com/news/2006/07/look_around_you.php`. Interview about visualizations of the LAUNCHcast recommendation network.

Software

GenericArpack.jl · 2021-2023
A translation of Arpack into the Julia language that enables generic computation over element types in the matrix.

LocalGraphClustering · 2017-2021
Software to implement local graph clustering techniques including flow-based clustering and local spectral clustering. This includes automated network analysis routines.

MatrixNetworks.jl · Version 1.0 · 2015-2021
Software to work with sparse matrices *as* network data in Julia with almost zero overhead.

MatlabBGL · Version 5.0 · 2006-2012
Downloaded over 50,000 times and cited in more than 5 publications, including in the Proceedings of the National Academy of Sciences.

vismatrix · Version 2 · 2005-2009
Software to view sparse matrices interactively with labeled data. Downloaded over 375 times and used in presentations to the NSA and Library of Congress.

gaimc · Version 1.0 · 2008-2009
Graph algorithms implemented in pure Matlab code.

bisquik · Version 1.0 · 2011
An implementation of the Bayati-Saberi-Kim prescribed degree random sampling algorithm.

libbvg · Version 2.0 · 2007-2014
A pure C library for the Boldi-Vigna graph compression scheme and a Matlab and Python interface to enable laptops to manipulate billion node graphs.