INDERJIT S. DHILLON

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EDUCATION

Ph.D. University of California at Berkeley - May 1997.

Major:	Computer Science
Thesis:	*A New $O(n^2)$ Algorithm for the Symmetric Tridiagonal Eigenvalue/Eigenvector Problem*
Advisors:	Profs. Beresford N. Parlett and James W. Demmel
Minors:	Mathematics and Theoretical Computer Science.

B. Tech. Indian Institute of Technology, Bombay, India - April 1989.

Major:	Computer Science and Engineering
Thesis:	*Parallel Architectures for Sparse Matrix Computations*
Advisors:	Prof. S. Biswas and Dr. N. K. Karmarkar

RESEARCH INTERESTS

Large Language Models, Pre-Training & Post-Training Gemini Models, Deep Learning, Machine learning, Big Data, Statistical Pattern Recognition, Data Mining, Numerical Linear Algebra, Social Network Analysis, Numerical Optimization, Bioinformatics.

RESEARCH EXPERIENCE

05/25–: Vice President and Google Fellow, Google, Mountain View, CA.
09/09–: Professor, Departments of Computer Science & Mathematics, The University of Texas, Austin.
12/21-04/25 Distinguished Scientist and Area Tech Lead (ATL), Google, Mountain View, CA.
09/20-12/21: Vice President and Distinguished Scientist, Amazon, Berkeley & Palo Alto, CA.
06/18-08/20: Amazon Fellow and Head, Amazon Research Lab, Berkeley, CA.
02/17-06/18: Amazon Fellow, A9/Amazon, Berkeley & Palo Alto, CA.
01/16-02/17: Principal Member of Research Staff, Voleon Capital Management, Berkeley, CA.
09/99-present: Member, Institute for Comp. Engg. & Sciences (ICES), The University of Texas, Austin.
09/05-08/09: Associate Professor, Department of Computer Science, The University of Texas, Austin.
09/07-12/07: Senior Research Fellow, Institute of Pure & Applied Mathematics (IPAM), UCLA.
09/99-08/05: Assistant Professor, Department of Computer Science, The University of Texas, Austin.
11/97-08/99: Researcher, IBM Almaden Research Center, San Jose, CA.
05/97-10/97: Post-Doctoral Scholar, EECS Department, University of California at Berkeley, AND
08/91-04/97: Graduate Student Researcher, EECS Department, University of California at Berkeley.
9/89-8/91: Member of Technical Staff, Math Sciences Research Center, AT&T Bell Labs, Murray Hill, NJ.

HONORS & AWARDS

2022: AAAI Fellow for "significant contributions to machine learning and large-scale data analysis".

2021: AAAI Best Paper Runner-up Award for the paper "Learning from eXtreme Bandit Feedback" (with R. Lopez and Mike Jodan) at the Thirty-Fifth AAAI Conference.

2020: AI 2000 Machine Learning Most Influential Scholars Honorable Mention for "top most cited scholars from the top publication venues in Machine Learning over the past 10 years (2009-–2019)".

2016: AAAS Fellow for "contributions to large-scale data analysis and computational mathematics".

2015: Alcalde's Texas 10, "selected in annual list of UT's most inspiring professors as nominated by alumni".

2014: ACM Fellow for "contributions to large-scale data analysis, machine learning and computational mathematics".

2014: Gottesman Family Centennial Professor, The University of Texas at Austin.

2014: SIAM Fellow for "contributions to numerical linear algebra, data analysis, and machine learning".

2014: IEEE Fellow for "contributions to large-scale data analysis and computational mathematics".

2013: ICES Distinguished Research Award, The University of Texas at Austin.

2012: Best Paper Award at the IEEE Int'l Conference on Data Mining for the paper "Scalable Coordinate Descent Approaches to Parallel Matrix Factorization for Recommender Systems".

2011: SIAM Outstanding Paper Prize for the journal paper "The Metric Nearness Problem". The prize is for "outstanding papers published in SIAM journals during the 3 years prior to year of award."

2010-2011: Moncrief Grand Challenge Award, The University of Texas at Austin.

2014, 2011, 2008, 2005, 2002 & 1999: Plenary talks at the XVIII, XVII, XVI, XV and XIV Householder Symposiums on Numerical Linear Algebra (Spa in Belgium, Tahoe City in California, Zeuthen in Germany, Campion in Pennsylvania, Peebles in Scotland & Whistler in Canada).

2002-2010: Faculty Fellowship, Dept of Computer Science, The University of Texas at Austin.

2006: SIAM Linear Algebra Prize for the journal paper "Orthogonal Eigenvectors and Relative Gaps". The award is for "the most outstanding paper on a topic in applicable linear algebra published in English in a peer-reviewed journal in the three calendar years preceding the year of the award."

Spring 2006: Dean's Fellowship, The University of Texas at Austin.

2005: University Cooperative Society's Research Excellence Award for Best Research Paper for "Clustering with Bregman Divergences".

2007 & 2005: Best Paper Awards at ICML at the 24th Int'l Conference on Machine Learning for the paper "Information-Theoretic Metric Learning", and at the 22nd Int'l Conference on Machine Learning for the paper "Semi-Supervised Graph-Based Clustering: A Kernel Approach".

2004: Best Paper Award at the Third SIAM Int'l Conference on Data Mining for the paper "Clustering with Bregman Divergences".

2001: NSF CAREER Award for the period 2001-2006.

1999: Householder Award for the *Best Dissertation in Numerical Linear Algebra* for the period 1996-1998, Honorable Mention.

Fall 1996-Spring 1997: Graduate Research Fellowship from Pacific Northwest National Laboratory (PNNL).

1985-1989: Ranked 2nd (in a class of over 300) at Indian Institute of Technology, Bombay.

PHD STUDENTS & POSTDOCS

Current Ph.D. Students: Sai Surya Duvvuri, Nirmal Patel.

Former Postdocs: Abolfazl Hashemi, 2020-21 (now Assistant Professor, Purdue University),
Nikhil Rao, 2014-2016 (Principal Researcher, Google),
Piyush Rai, 2012-2013 (Professor, IIT Kanpur),
Ambuj Tewari, 2010-2012 (Professor, University of Michigan),
Zhengdong Lu, 2008-2010 (Researcher, Huawei Noah's Ark Lab, Hong Kong),
Berkant Savas, 2009-2011 (Linköping Univ., Sweden).

Former Ph.D. Students: Joel Tropp in 2004 (now Professor, Caltech, Pasadena),
Yuqiang Guan in 2005 (Google, LA),
Suvrit Sra in 2007 (Associate Professor, MIT, Boston),
Jason Davis in 2008 (former Director of Data & Search, Etsy Inc.),
Hyuk Cho in 2008 (Professor, Sam Houston State Univ.),
Brian Kulis in 2008 (Associate Professor, Boston University),
Prateek Jain in 2009 (Distinguished Resarch Scientist, Google Deepmind, Bangalore),
Mátyás Sustik in 2013 (Researcher, Walmart Labs, California),
Cho-Jui Hsieh in 2015 (Associate Professor, UCLA),
Nagarajan Natarajan in 2015 (Researcher, Microsoft Research, Bangalore),
Joyce Whang in 2015 (Assistant Professor, KAIST, Korea),
Si Si in 2016 (Staff Research Scientist, Google Deepmind),
Hsiang-Fu Yu in 2016 (Senior Staff Research Scientist, Google),
Kai-Yang Chiang in 2017 (Senior Software Engineer, Google),
Donghyuk Shin in 2017 (Associate Professor, Arizona State University),
David Inouye in 2017 (Assistant Professor, Purdue University),
Ian Yen in 2018 (Researcher, Snap, Inc.),
Kai Zhong in 2018 (Senior Applied Scientist, Amazon),
Jiong Zhang in 2020 (Staff Reseaarch Scientist, Google),
Qi Lei in 2020 (Assistant Professor, NYU),
Rudrajit Das in 2024 (Researcher, Google Research, NY),
Anish Acharya in 2025 (Senior Applied Scientist, Amazon, Austin),
Luwen Huang in 2025 (Research Associate, UT Austin),
Devvrit Khatri in 2026 (Member of Technical Staff, Mirendil),
Nilesh Gupta in 2026 (Member of Technical Staff, Mirendil).

REPRESENTATIVE ACTIVITIES

- Neural Information Processing Systems Conference (NeurIPS) — Senior Area Chair: 2026 (Sydney, Australia), 2025 (San Diego, CA), 2024 (Vancouver, Canada), 2023 & 2022 (New Orleans), 2018 (Montreal, Canada), 2017 (Long Beach, CA), Area Chair: 2021 (Virtual), 2020 (Virtual), 2015 (Montreal, Canada), Reviewer: 2014 (Montreal, Canada), 2011 (Granada, Spain), 2010, 2009, 2008, 2007 & 2006 (Vancouver, Canada).
- Int'l Conference on Machine Learning (ICML) — Senior Area Chair: 2026 (Seoul, South Korea), 2025 (Vancouver, Canada), 2024 (Vienna, Austria), 2022 (Baltimore, USA), 2021 (Virtual), Area Chair: 2018 (Stockholm, Sweden), 2012 (Edinburgh, Scotland), 2010 (Haifa, Israel), Program Committee(PC) Member: 2011 (Bellevue, Washington) & 2007 (Corvallis, Oregon).
- Int'l Conference on Learned Representations (ICLR) — Senior Area Chair: 2026 (Rio de Janeiro, Brazil), 2025 (Singapore), 2024 (Vienna, Austria), Reviewer: 2018 (Vancouver, Canada).
- Organizing Committee Member, SIAM Conference on Applied Linear Algebra (ALA2027), 2026-2027.
- SIAM Fellows Selection Committee Member, 2022-24.
- General Chair, The Conference on Machine Learning and Systems (MLSys), Austin, TX, 2020.
- Board Member, The Machine Learning and Systems Foundation, 2019–now.
- National Advisory Committee Member, The Statistical and Applied Mathematical Sciences Institute (SAMSI), 2016-2022.
- Action Editor, Journal of Machine Learning (JMLR), 2008-2024.
- Associate Editor, IEEE Transactions of Pattern Analysis and Machine Intelligence (TPAMI), 2011-2017.
- Associate Editor, Foundations and Trends in Machine Learning, 2007-present.
- Member of Editorial Board, Machine Learning Journal, 2008-2020.

- Program Committee Co-Chair, KDD (ACM Int'l Conference on Knowledge Discovery & Data Mining), Chicago, 2013.
- Guest Editor, Mathematical Programming Series B, special issue on "Optimization and Machine Learning", 2008.
- Associate Editor, SIAM Journal for Matrix Analysis and Applications, 2002-2007.
- Householder Prize Committee Member, 2011-2022.
- Organizing Committee Member, IMA (Institute for Mathematics and its Applications) Annual Program on the Mathematics of Information, Sept 2011 - June 2012.
- Selection Committee Member, SIAM Linear Algebra Prize, 2009.
- Served on 2009 NSF Committee of Visitors(COV) in the Formal and Mathematical Foundations Cluster (FMF), 2015 & 2013 NSF SBIR/STTR panels, 2011 NSF panel in the Division of Information and Intelligent Systems (IIS), 2011 NSF panel in Cyber-enabled Discovery and Innovations (CDI), 2010 NSF panel in FMF, 2006 NSF panel in IIS, 2004 NSF panel in FMF, 2001 NSF panel in the Division of Advanced Computational Research (ACR), and 1999 NSF panel in IIS.
- Organizing Committee Member, NSF Workshop on Algorithms in the Field, May 2011.
- Program Chair, IMA Workshop on "Machine Learning: Theory and Computation", March 2012 (Minneapolis, MA).
- Organizer, Mysore Park Workshop on Machine Learning, August 2012 (Mysore, India).
- AAAI Conference on Artificial Intelligence — Area Chair: 2022 (Vancouver, CA), 2021 (Virtual), Senior Program Committee Member: 2020 (New York, New York).
- SysML Conference (SysML) — PC Member: 2018 (Stanford, CA)
- ACM Int'l Conference on Knowledge Discovery & Data Mining (KDD) — Senior PC Member: 2015 (Sydney, Australia), 2014 (New York), 2012 (Beijing, China), 2009 (Paris, France), 2007 (San Jose, CA), PC Member: 2011 (San Diego), 2008 (Las Vegas, NV), 2006 (Philadelphia, PA), 2005 (Chicago, IL), 2004 (Seattle, WA), 2000 (Boston, MA).
- SIAM Int'l Conference on Data Mining (SDM) — Area Chair: 2010 (Columbus, OH), 2008 (Atlanta, GA), PC Member: 2011 (Mesa, AZ), 2007 (Minneapolis, MN), 2006 (Bethesda, MD), 2005 (Newport Beach, CA), 2004 (Orlando, FL), 2003 (San Francisco, CA), 2002 (Arlington, VA), 2001 (Chicago, IL).
- IEEE Int'l Conference on Data Mining (ICDM) — PC Vice-Chair: 2005 (New Orleans, LA), PC Member: 2004 (Brighton, UK), 2003 (Melbourne, FL).
- Committee Member: 5-year Review of Manoa College of Natural Sciences, University of Hawaii, Oct 2021.
- Committee Member: 5-year Review of Academic Excellence for Department of Electronic Engineering, City University of Hong Kong, June 2016.
- PC Member for the IKDD Conference on Data Science (IKDD CODS): 2016 (Pune, India), 22nd Annual Conference on Learning Theory (COLT): 2009 (Montreal), SIAM Conference on Applied Linear Algebra: 2009 (Seaside, California), World Wide Web Conference (WWW): 2008 (Beijing, China), ACM Conference on Information & Knowledge Management (CIKM): 2011 (Glasgow, Scotland), 2006 (Arlington, VA).
- Program Co-Chair: NIPS workshops on "Multiresolution Methods for Large Scale Learning", 2015 (Montreal, Canada), "Numerical Mathematics in Machine Learning", 2010 (Whistler, Canada), ICML workshop on "Covariance Selection & Graphical Model Structure Learning", 2014 (Beijing, China), Workshops on "Clustering High-Dimensional Data and its Applications" at SIAM Int'l Conference on Data Mining (SDM): 2005 (Newport Beach, CA), 2004 (Orlando, FL), 2003 (San Francisco, CA), 2002 (Arlington, VA), Workshop on "Clustering High-Dimensional Data and its Applications" at IEEE Int'l Conference on Data Mining (ICDM): 2003 (Melbourne, FL), Workshop on "Text Mining" at the Second SIAM Int'l Conference on Data Mining (SDM): 2002 (Arlington, VA).

- Organized invited minisymposium on "Mathematical Methods in Data Mining", SIAM Annual Meeting, San Diego, CA, July 2008, and invited minisymposium on "Linear Algebra in Data Mining and Information Retrieval", SIAM Conference on Applied Linear Algebra, Williamsburg, VA, July 2003.
- Ph.D. External Committee Member for Brendon Ames (Univ. of Waterloo, Canada) in 2011, Gilles Meyer (University of Liege, Belgium) in 2011.
- Referee for SIAM Review, SIAM Journal for Matrix Analysis and Applications, SIAM Journal on Scientific Computing, SIAM Journal on Numerical Analysis, Linear Algebra and its Applications, BIT, Proceedings of the National Academy of Sciences (PNAS), Journal of the ACM, Journal of Machine Learning Research (JMLR), Journal of Complex Networks, Internet Mathematics, Data Mining and Knowledge Discovery Journal, AI Review, IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), IEEE Transactions on Network Science and Engineering (TNSE) IEEE Transactions on Knowledge and Data Engineering (TKDE), IEEE/ACM Transactions on Computational Biology and Bioinformatics (TCBB), IEEE Transactions on Signal Processing, IEEE Transactions on Image Processing, Information Processing Letters, Decision Support Systems, ACM Transactions on Internet Computing, International Journal of Neural Systems, etc.

TEACHING

Spring 2025, Spring 2023: Instructor for the graduate course CS391L, *"Machine Learning"*.

Spring 2020, Fall 2011 & 2009, Spring 2008 & 2007: Instructor for the graduate course CS391D, *"Data Mining: A Mathematical Perspective"*.

Fall 2014: Instructor for the graduate course CS395T, *"Scalable Machine Learning"*.

Fall 2014, 2013 & 2012: Instructor for the undergraduate course SSC329C, *"Practical Linear Algebra"*.

Fall 2012, 2008, 2005, 2002 & 1999: Instructor for the graduate breadth course CS383C, *"Numerical Analysis: Linear Algebra"*.

Spring 2012, 2010 & 2009, & Fall 2006: Instructor for the undergraduate course CS378, *"Introduction to Data Mining"*.

Fall 2004, 2003, 2001, Spring 2001 & 2000: Instructor for the graduate topics course CS395T, *"Large-Scale Data Mining"*.

Fall 2004, Spring 2004, 2003, 2002 & Fall 2000: Instructor for the undergraduate course CS323E, *"Elements of Scientific Computing"*.

Spring 1993: Teaching Assistant for CS170, *"Efficient Algorithms and Intractable Problems"*. Instructor - Prof. Manuel Blum.

PUBLICATIONS, TALKS, PATENTS & GRANTS

Google Scholar Profile: Number of Citations = 64,000+; h-index = 104, i10-index = 253. Details available at http://scholar.google.com/citations?hl=en&user=xBv5ZfkAAAAJ

Publications in Progress

1. J. Yen, W. Chang, S. Si, N. Bui, I. S. Dhillon and C.-J. Hsieh, "SLIM: Structure-aware Low-rank Inference Model", 2025.

Journal Publications

1. N. Gupta, W. Chang, N. Bui, C.-J. Hsieh and I. S. Dhillon, "LLM-guided Hierarchical Search for End-to-end Reasoning Intensive Retrieval", *Transactions on Machine Learning Research(TMLR)*, 2026.
2. G. Comanici, E. Bieber, M. Schaekermann, I. Pasupat, N. Sachdeva, I. S. Dhillon, et al, "Gemini 2.5: Pushing the Frontier with Advanced Reasoning, Multimodality, Long Context, and Next Generation Agentic Capabilities", arXiv preprint arXiv:2507.06261, 2025.

3. M. Reid, et al, "Gemini 1.5: Unlocking multimodal understanding across millions of tokens of context", arXiv preprint arXiv:2403.05530, 2024.
4. R. Kumar, A. Mittal, N. Gupta, A. Kusupati, I. S. Dhillon and P. Jain, "EHI: End-to-end learning of Hierarchical Index for Efficient Dense Retrieval", *Transactions on Machine Learning Research(TMLR)*, 2024.
5. H. Li, H.-F. Yu, L. Ying and I. S. Dhillon, "Accelerating Primal-Dual Methods for Regularized Markov Decision Processes", *SIAM Journal on Optimization(SIOPT)*, vol. 34(1):764-789, 2024.
6. H. Li, S. Gupta, H.-F. Yu, L. Ying and I. S. Dhillon, "Approximate Newton policy gradient algorithms", *SIAM Journal on Scientific Computing(SISC)*, vol. 45(5): 2585-2609, 2023.
7. H.-F. Yu, K. Zhong, J. Zhang, W. Chang and I. S. Dhillon, "PECOS: Prediction for Enormous and Correlated Output Spaces", *Journal of Machine Learning Research(JMLR)*, vol. 23(98), pages 1–32, 2022.
8. A. Hashemi, A. Acharya, R. Das, H. Vikalo, S. Sanghavi and I. S. Dhillon, "On the Benefits of Multiple Gossip Steps in Communication-Constrained Decentralized Federated Learning", *IEEE Transactions on Parallel and Distributed Systems*, vol. 33:11, pages 2727–2739, 2022.
9. J. Whang, Y. Hou, D. Gleich and I. S. Dhillon, "Non-exhaustive, Overlapping Clustering", *IEEE Transactions on Pattern Analysis and Machine Intelligence(PAMI)*, vol. 41:11, pages 2644–2659, 2019.
10. K. Chiang, C.-J. Hsieh and I. S. Dhillon, "Using Side Information to Reliably Learn Low-Rank Matrices from Missing and Corrupted Observations", *Journal of Machine Learning Research(JMLR)*, vol. 19, pages 1–35, 2018.
11. N. Natarajan, I. S. Dhillon, P. Ravikumar and A. Tewari, "Cost-Sensitive Learning with Noisy Labels", *Journal of Machine Learning Research(JMLR)*, vol. 18, pages 1–33, 2018.
12. P. Jain, I. S. Dhillon and A. Tewari, "Partial hard thresholding". *IEEE Transactions on Information Theory (IT)*, vol. 63:5, pages 3029–3038, 2017.
13. S. Si, C.-J. Hsieh and I. S. Dhillon, "Memory Efficient Kernel Approximation", *Journal of Machine Learning Research(JMLR)*, vol. 18(20), pages 1–32, 2017.
14. B. Savas and I. S. Dhillon, "Clustered matrix approximation", *SIAM Journal of Matrix Analysis and Applications(SIMAX)*, vol. 37:4, pages 1531-1555, 2016.
15. A. Vandaele, N. Gillis, Q. Lei, K. Zhong and I. S. Dhillon, "Efficient and Non-Convex Coordinate Descent for Symmetric Nonnegative Matrix Factorization", *IEEE Transactions on Signal Processing (TSP)*, vol. 64:21, pages 5571–5584, 2016.
16. J. Whang, D. Gleich and I. S. Dhillon, "Overlapping Community Detection Using Neighborhood-Inflated Seed Expansion", *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, vol. 28:5, pages 1272–1284, 2016.
17. H.-F. Yu, C.-J. Hsieh, H. Yun, S.V.N. Vishwanathan and I. S. Dhillon, "Nomadic Computing for Big Data Analytics", *IEEE Computer*, vol. 49:4, pages 52–60, 2016.
18. H. Yun, H.-F. Yu, C.-J. Hsieh, S.V.N. Vishwanathan and I. S. Dhillon, "NOMAD: Non-locking, stOchastic Multi-machine algorithm for Asynchronous and Decentralized matrix completion", *Proceedings of the VLDB Endowment*, vol. 7:11, pages 975–986, 2014.
19. N. Natarajan and I. S. Dhillon, "Inductive matrix completion for predicting gene-disease associations", *Bioinformatics*, vol. 30:12, pages 60–68, 2014.
20. C.-J. Hsieh, M. Sustik, I. S. Dhillon and P. Ravikumar, "QUIC: Quadratic Approximation for Sparse Inverse Covariance Matrix Estimation", *Journal of Machine Learning Research(JMLR)*, vol. 15, pages 2911–2947, 2014.
21. H. F. Yu, C.-J. Hsieh, S. Si and I. S. Dhillon, "Parallel Matrix Factorization for Recommender Systems", *Knowledge and Information Systems(KAIS)*, vol. 41:3, pages 793–819, 2014.

22. K. Chiang, C.-J. Hsieh, N. Natarajan, I. S. Dhillon and A Tewari, "Prediction and Clustering in Signed Networks: A Local to Global Perspective", *Journal of Machine Learning Research(JMLR)*, vol. 15, pages 1177–1213, 2014.
23. U. Singh Blom, N. Natarajan, A Tewari, J. Woods, I. S. Dhillon and E. M. Marcotte, "Prediction and Validation of Gene-Disease Associations Using Methods Inspired by Social Network Analyses", PLOS ONE 8(5): e58977, 2013.
24. D. Kim, S. Sra and I. S. Dhillon, "A Non-monotonic Method for Large-scale Nonnegative Least Squares", *Optimization Methods and Software*, vol. 28:5, pages 1012–1039, 2013.
25. M. Sustik and I. S. Dhillon, "On a Zero-Finding Problem involving the Matrix Exponential", *SIAM Journal of Matrix Analysis and Applications(SIMAX)*, vol. 33:4, pages 1237–1249, 2012.
26. P. Jain, B. Kulis, J. Davis and I. S. Dhillon, "Metric and Kernel Learning using a Linear Transformation", *Journal of Machine Learning Research(JMLR)*, vol. 13, pages 519–547, 2012.
27. V. Vasuki, N. Natarajan, Z. Lu, B. Savas and I. S. Dhillon, "Scalable affiliation recommendation using auxiliary networks", *ACM Transactions on Intelligent Systems and Technology(TIST)*, vol. 3, 2011.
28. D. Kim, S. Sra and I. S. Dhillon, "Tackling Box-Constrained Optimization Via a New Projected Quasi-Newton Approach", *SIAM Journal on Scientific Computing(SISC)*, vol. 32:6, pages 3548–3563, 2010.
29. B. Kulis, M. Sustik and I. S. Dhillon, "Low-Rank Kernel Learning with Bregman Matrix Divergences", *Journal of Machine Learning Research(JMLR)*, vol. 10, pages 341–376, 2009.
30. B. Kulis, S. Basu, I. S. Dhillon and R. J. Mooney, "Semi-Supervised Graph Clustering: A Kernel Approach", *Machine Learning*, 74:1, pages 1–22, 2009.
31. P. Jain, R. Meka and I. S. Dhillon, "Simultaneous Unsupervised Learning of Disparate Clusterings", *Statistical Analysis and Data Mining*, vol. 1:3, pages 195–210, 2008.
32. I. S. Dhillon, R. Heath Jr., T. Strohmer and J. Tropp, "Constructing Packings in Grassmannian Manifolds via Alternating Projection", *Experimental Mathematics*, vol. 17:1, pages 9–35, 2008.
33. H. Cho and I. S. Dhillon, "Co-clustering of Human Cancer Microarrays using Minimum Sum-Squared Residue Co-clustering", *IEEE/ACM Transactions on Computational Biology and Bioinformatics(TCBB)*, vol. 5:3, pages 385–400, 2008.
34. J. Brickell, I. S. Dhillon, S. Sra and J. Tropp, "The Metric Nearness Problem", *SIAM Journal of Matrix Analysis and Applications(SIMAX)*, vol. 30:1, pages 375–396, April 2008 — **2011 SIAM Outstanding Paper Prize for outstanding papers published in SIAM journals in the three year period from 2008–2010**.
35. D. Kim, S. Sra and I. S. Dhillon, "Fast Projection-Based Methods for the Least Squares Nonnegative Matrix Approximation Problem", *Statistical Analysis and Data Mining*, vol. 1:1, pages 38–51, 2008.
36. I. S. Dhillon and J. Tropp, "Matrix Nearness Problems using Bregman Divergences", *SIAM Journal of Matrix Analysis and Applications(SIMAX)*, vol. 29:4, pages 1120–1146, 2007.
37. I. S. Dhillon, Y. Guan and B. Kulis, "Weighted Graph Cuts without Eigenvectors: A Multilevel Approach", *IEEE Transactions on Pattern Analysis and Machine Intelligence(PAMI)*, vol. 29:11, pages 1944–1957, 2007.
38. M. Sustik, J. Tropp, I. S. Dhillon and R. Heath Jr., "On the existence of Equiangular Tight Frames", *Linear Algebra and its Applications(LAA)*, vol. 426:2–3, pages 619–635, 2007.
39. A. Banerjee, I. S. Dhillon, J. Ghosh, S. Merugu and D. S. Modha, "A Generalized Maximum Entropy Approach to Bregman Co-Clustering and Matrix Approximations", *Journal of Machine Learning Research(JMLR)*, vol. 8, pages 1919–1986, 2007.
40. I. S. Dhillon, B. N. Parlett and C. Vömel, "The Design and Implementation of the MRRR Algorithm", *ACM Transactions on Mathematical Software*, vol. 32:4, pages 533–560, 2006.
41. I. S. Dhillon, B. N. Parlett and C. Vömel, "Glued Matrices and the MRRR Algorithm", *SIAM Journal on Scientific Computing(SISC)*, vol. 27:2, pages 496–510, 2005.

42. A. Banerjee, S. Merugu, I. S. Dhillon and J. Ghosh, "Clustering with Bregman Divergences", *Journal of Machine Learning Research(JMLR)*, vol. 6, pages 1705–1749, 2005.

43. A. Banerjee, I. S. Dhillon, J. Ghosh and S. Sra, "Clustering on the Unit Hypersphere using von Mises-Fisher distributions", *Journal of Machine Learning Research(JMLR)*, vol. 6, pages 1345–1382, 2005.

44. P. Bientinesi, I. S. Dhillon and R. van de Geijn, "A Parallel Eigensolver for Dense Symmetric Matrices Based on Multiple Relatively Robust Representations", *SIAM Journal on Scientific Computing(SISC)*, vol. 27:1, pages 43–66, 2005.

45. I. S. Dhillon, R. Heath Jr., M. Sustik and J. Tropp, "Generalized finite algorithms for constructing Hermitian matrices with prescribed diagonal and spectrum", *SIAM Journal of Matrix Analysis and Applications(SIMAX)*, vol. 27:1, pages 61–71, 2005 (a longer version appears as UT CS Technical Report # TR-03-49, Nov 2003).

46. J. Tropp, I. S. Dhillon, R. Heath Jr. and T. Strohmer, "Designing Structured Tight Frames via an Alternating Projection Method", *IEEE Transactions on Information Theory (IT)*, vol. 51:1, pages 188–209, 2005.

47. J. Tropp, I. S. Dhillon and R. Heath Jr., "Finite-step algorithms for constructing optimal CDMA signature sequences", *IEEE Transactions on Information Theory (IT)*, vol. 50:11, pages 2916–2921, 2004.

48. I. S. Dhillon and B. N. Parlett, "Multiple Representations to Compute Orthogonal Eigenvectors of Symmetric Tridiagonal Matrices", *Linear Algebra and its Applications(LAA)*, vol. 387, pages 1–28, 2004.

49. I. S. Dhillon and B. N. Parlett, "Orthogonal Eigenvectors and Relative Gaps", *SIAM Journal of Matrix Analysis and Applications(SIMAX)*, vol. 25:3, pages 858–899, 2004 — **SIAM Linear Algebra Prize for the best journal paper in applied linear algebra in the three year period from 2003–2005**.

50. I. S. Dhillon, E. M. Marcotte and U. Roshan, "Diametrical Clustering for identifying anti-correlated gene clusters", *Bioinformatics*, vol. 19:13, pages 1612–1619, 2003.

51. I. S. Dhillon, S. Mallela and R. Kumar, "A Divisive Information-Theoretic Feature Clustering Algorithm for Text Classification", *Journal of Machine Learning Research(JMLR)*, vol. 3, pages 1265–1287, 2003.

52. I. S. Dhillon and A. Malyshev, "Inner deflation for symmetric tridiagonal matrices", *Linear Algebra and its Applications(LAA)*, vol. 358:1-3, pages 139–144, 2003.

53. I. S. Dhillon, D. S. Modha and W. S. Spangler, "Class Visualization of High-Dimensional Data with Applications", *Computational Statistics & Data Analysis (special issue on Matrix Computations & Statistics)*, vol. 4:1, pages 59–90, 2002.

54. I. S. Dhillon and D. S. Modha, "Concept Decompositions for Large Sparse Text Data using Clustering", *Machine Learning*, 42:1, pages 143–175, 2001.

55. B. N. Parlett and I. S. Dhillon, "Relatively Robust Representations of Symmetric Tridiagonals", *Linear Algebra and its Applications(LAA)*, vol. 309, pages 121–151, 2000.

56. I. S. Dhillon, "Current inverse iteration software can fail", *BIT Numerical Mathematics*, 38:4, pages 685–704, 1998.

57. I. S. Dhillon, "Reliable computation of the condition number of a tridiagonal matrix in $O(n)$ time", *SIAM Journal of Matrix Analysis and Applications(SIMAX)*, 19:3, pages 776–796, 1998.

58. B. N. Parlett and I. S. Dhillon, "Fernando's solution to Wilkinson's problem: an application of Double Factorization", *Linear Algebra and its Applications(LAA)*, vol. 267, pages 247–279, 1997.

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1. B. Kulis, S. Sra, S. Jegelka and I. S. Dhillon. "Scalable Semidefinite Programming using Convex Perturbations". UT CS Technical Report # TR-07-47, September 2007.
2. P. Jain, B. Kulis and I. S. Dhillon, "Online Linear Regression using Burg Entropy", UT CS Technical Report # TR-07-08, Feb 2007.
3. S. Sra and I. S. Dhillon, "Nonnegative Matrix Approximation: Algorithms and Applications", UT CS Technical Report # TR-06-27, June 2006.
4. I. S. Dhillon and S. Sra, "Generalized Nonnegative Matrix Approximations with Bregman Divergences", UT CS Technical Report # TR-05-31, June 2005.
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PLENARY TALKS AT MAJOR CONFERENCES/WORKSHOPS

June 2025: "Kronecker Product Based Optimizers for Deep Learning", Plenary Talk, *Householder XXII Symposium*, Ithaca, NY.

Aug 2023: "Multi-Output Prediction: Theory and Practice", Keynote Talk, 15th International Conference on Contemporary Computing (IC3) , Noida, India.

Aug 2022: "Multiscale Methods for Machine Learning", Keynote Talk, *The 28th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining(KDD)*, Washington DC.

May 2021: "Multiscale Methods for Machine Learning", Keynote Talk, SIAM Conference on Applied Linear Algebra (LA21), New Orleans, Louisiana.

Aug 2020: "Think Globally, Act Locally: A Deep Neural Network Approach to High-Dimensional Time Series Forecasting", Keynote Talk, 6th KDD (Int'l Conference on Knowledge Discovery and Data Mining) Workshop on Mining and Learning from Time Series (MILETS), Virtual Conference.

Jul 2020: "Multi-Output Prediction: Theory and Practice", Invited Talk, ICML (Int'l Conference on Machine Learning) Workshop on Extreme Classification, Virtual Conference.

May 2020: "Multi-Output Prediction: Theory and Practice", Keynote Talk, 24th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD), Singapore.

Aug 2019: "Stable Recurrent Unit with Efficient Singular Value Gating", Keynote Talk, 11th International Conference on Contemporary Computing (IC3) , Noida, India.

Oct 2018: "Stabilizing Gradients for Deep Neural Networks", Keynote Talk, Harvard Data Science Initiative Conference (HDSI), Boston, MA.

Sep 2018: "Stabilizing Gradients for Deep Neural Networks", Keynote Talk, Amazon Research Day, Bangalore, India.

Dec 2017: "Stabilizing Gradients for Deep Neural Networks", Keynote Talk, ICMLDS (International Conference on Machine Learning and Data Science), Delhi, India.

Dec 2017: "Stabilizing Gradients for Deep Neural Networks with Applications to Extreme Classification", Invited Talk, NIPS (Neural Information Processing Systems) Workshop on Extreme Classification, Long Beach, CA.

Sept 2017: "Multi-Target Prediction Using Low-Rank Embeddings: Theory & Practice", Keynote Talk, ECML PKDD (European Conference on Machine Learning), Skopje, Macedonia.

Dec 2016: "A Primal and Dual Sparse Approach to Extreme Classification", Invited Talk, NIPS (Neural Information Processing Systems) Workshop on Extreme Classification, Barcelona, Spain.

Dec 2016: "Temporal Regularized Matrix Factorization for High-dimensional Time Series Prediction", Invited Talk, NIPS (Neural Information Processing Systems) Time Series Workshop, Barcelona, Spain.

Oct 2015: "Bilinear Prediction using Low-Rank Models", Keynote Talk, 26th International Conference on Algorithmic Learning Theory(ALT), Banff, Canada.

June 2015: "Proximal Newton Methods for Large-Scale Machine Learning", Distinguished Talk, ShanghaiTech Symposium on Data Science, Shanghai, China.

Dec 2014: "NOMAD: A Distributed Framework for Latent Variable Models", Invited Talk, NIPS (Neural Information Processing Systems) Workshop on Distributed Machine Learning and Matrix computations, Montreal, Canada.

Dec 2014: "Divide-and-Conquer Methods for Big Data", Keynote Talk, ICMLA (13th International Conference on Machine Learning and Applications), Detroit, Michigan.

June 2014: "Parallel Asynchronous Matrix Completion", Plenary Talk, *Householder XVIII Symposium*, Spa, Belgium.

Mar 2014: "Divide-and-Conquer Methods for Big Data", Keynote Talk, CoDS (1st iKDD Conference on Data Sciences), New Delhi, India.

Dec 2013: "Scalable Network Analysis", Keynote Talk, COMAD (19th Int'l Conference on Management of Data), Ahmedabad, India.

July 2013: "BIG & QUIC: Sparse Inverse Covariance Estimation for a Million Variables", Plenary Talk, SPARS (Signal Processing with Adaptive Sparse Structured Representations), EPFL, Lausanne, Switzerland.

Dec 2011: "Fast and Memory-Efficient Low-rank Approximation of Massive Graphs", Plenary Talk, NIPS (Neural Information Processing Systems) Workshop on Low-rank Methods for Large-Scale Machine Learning, Sierra Nevada, Spain.

June 2011: "Social Network Analysis: Fast and Memory-Efficient Low-Rank Approximation of Massive Graphs", Plenary Talk, *Householder XVII Symposium*, Tahoe City, California.

June 2009: "Matrix Computations in Machine Learning", Plenary Talk, ICML (Int'l Conference on Machine Learning) Workshop on Numerical Methods in Machine Learning, McGill University, Montreal, Canada.

June 2008: "The Log-Determinant Divergence and its Applications", Plenary Talk, *Householder XVII Symposium*, Zeuthen, Germany.

May 2008: "Machine Learning with Bregman Divergences", Plenary Talk, *EurOPT-2008*, Neringa, Lithuania.

July 2006: "Orthogonal Eigenvectors and Relative Gaps", SIAM Linear Algebra Prize Talk, *Ninth SIAM Conference on Applied Linear Algebra*, Dusseldorf, Germany.

July 2006: "From Shannon to von Neumann: New Distance Measures for Matrix Nearness Problems", Plenary Talk, *Ninth SIAM Conference on Applied Linear Algebra*, Dusseldorf, Germany.

May 2005: "Matrix Nearness Problems using Bregman Divergences", Plenary Talk, *Householder XVI Symposium*, Seven Springs, Pennsylvania.

Aug 2002: "Fast and Accurate Eigenvector Computation in Finite Precision Arithmetic", Semi-plenary Talk, *The Fourth Foundations of Computational Mathematics Conference (FoCM)*, Minneapolis, Minnesota.

June 2002: "Matrix Problems in Data Mining", Plenary Talk, *Householder XV Symposium*, Peebles, Scotland.

June 1999: "Orthogonal Eigenvectors through Relatively Robust Representations", Plenary Talk, *Householder XIV Symposium*, Whistler, Canada.

INVITED TALKS

Apr 2026: "CASPR: Combining Axes Preconditioners through Kronecker Approximation for Training Large Neural Networks", Invited Talk, CAM Special Colloquium, University of Chicago, Chicago, IL.

Apr 2024: "MatFormer: Nested Transformer for Elastic Inference", Distinguished Speaker Series, Data Science Institute, University of Chicago, Chicago, IL.

Nov 2023: "Learning in Large Output Spaces: An End-to-End Approach", Invited Colloquium Talk, Department of Computer Sciences, Cornell University, Ithaca, New York.

June 2022: "Sparse Inverse Covariance Estimation for a Million Variables", Invited Talk, *Householder XXI Symposium*, Fasano, Italy.

Feb 2022: "Multiscale Methods for Machine Learning", Invited minisymposium talk, *SIAM Conference on Parallel Processing for Scientific Computing*, Seattle, WA.

May 2021: "Multiscale Methods for Machine Learning", Invited Talk, Information System Laboratory (ISL) Colloquium, Stanford University, CA.

Aug 2020: "Multi-Output Prediction: Theory and Practice", Invited Talk, Institute of Advanced Studies (IAS), Special Year on Optimization, Statistics and Theoretical Machine Learning, Princeton, NJ.

Oct 2019: "AutoAssist: A Framework to Accelerate Training of Deep Neural Networks", Invited Talk, Industrial and Systems Engineering (ISyE) Departmental Seminar, Georgia Tech, Atlanta.

Dec 2018: "Multi-Target Prediction Using Low-Rank Embeddings: Theory & Practice", Invited Talk, ICMLDS (International Conference on Machine Learning and Data Science), Hyderabad, India.

Sep 2018: "Stabilizing Gradients for Deep Neural Networks", Invited Talk, International Center for Theoretical Studies (ICTS), Bangalore, India.

May 2018: "Stabilizing Gradients for Deep Neural Networks", Invited Talk, Linear Algebra and Optimization Seminar, Stanford University, CA.

Nov 2017: "Stabilizing Gradients for Deep Neural Networks", Invited Talk, Dept of Computer Science (LAPACK Seminar), UC Berkeley, CA.

Oct 2017: "Multi-Target Prediction Using Low-Rank Embeddings: Theory & Practice", Keynote Talk, University of Louisiana Research Day, Lafayette, Louisiana.

April 2017: "Sparse Inverse Covariance Estimation for a Million Variables", Invited Talk, Linear Algebra and Optimization Seminar, Stanford University, CA.

March 2017: "Sparse Inverse Covariance Estimation for a Million Variables", Invited Talk, Dept of Computer Science (LAPACK Seminar), UC Berkeley, CA.

June 2015: "Bilinear Prediction using Low-Rank Models", Invited Talk, Workshop on Low-rank Optimization and Applications, Hausdorff Center for Mathematics(HCM), Bonn, Germany.

May 2015: "Proximal Newton Methods for Large-Scale Machine Learning", Invited Colloquium Talk, Mathematics Department, UT Austin.

Nov 2014: "NOMAD: A Distributed Framework for Latent Variable Models", Invited Talk, Intel Research Labs, Santa Clara, CA, 2014.

Nov 2014: "Divide-and-Conquer Methods for Large-Scale Data Analysis", Distinguished Lecture, School of Computational Science & Engg, Georgia Tech, Atlanta.

July 2014: "Sparse Inverse Covariance Estimation for a Million Variables", Invited Talk, International Conference on Signal Processing and Communications (SPCOM), Bangalore, India.

June 2014: "Scalable Network Analysis", Invited Talk, Adobe Data Science Symposium, San Jose, CA.

May 2014: "Informatics in Computational Medicine", Invited Talk, ICES Computational Medicine Day, UT Austin.

May 2014: "Scalable Network Analysis", Invited Talk, IBM TJ Watson Research Labs, New York.

Dec 2013: "Divide & Conquer Methods for Big Data Analytics", Keynote Talk, Workshop on Distributed Computing for Machine Learning & Optimization, Mysore Park, Mysore, India.

Sept 2013: "Sparse Inverse Covariance Estimation for a Million Variables", Invited Talk: SAMSI Program on Low-Dimensional Structure in High-Dimensional Systems: Opening Workshop, Raleigh, North Carolina.

Apr 2013: "Sparse Inverse Covariance Estimation using Quadratic Approximation", Invited talk, Johns Hopkins University, Baltimore, Maryland.

Sept 2012: "Sparse Inverse Covariance Estimation using Quadratic Approximation", Invited Talks: SAMSI Massive Datasets Opening Workshop, Raleigh, North Carolina, and MLSLP Symposium, Portland, Oregon.

Aug 2012: "Orthogonal Matching Pursuit with Replacement", Mathematics Department, TU Berlin, Germany.

Feb 2012: "Orthogonal Matching Pursuit with Replacement", Invited talk, Information Theory & Applications (ITA) Workshop, San Diego, California.

Jan 2012: "Fast and accurate low-rank approximation of massive graphs", Invited talk, Statistics Yahoo! Seminar, Purdue University, Indiana.

June 2011: "Fast and accurate low-rank approximation of massive graphs", Plenary talk, Summer Workshop on Optimization in Machine Learning, UT Austin.

Aug 2010: "Fast and accurate low-rank approximation of massive graphs", Invited talk, Workshop on Advanced Topics in Humanities Network Analysis, IPAM, UCLA, California.

Feb 2010: "Guaranteed Rank Minimization via Singular Value Projection", Invited talk, Information Theory & Applications (ITA) Workshop, San Diego, California.

Dec 2009: "Guaranteed Rank Minimization via Singular Value Projection", Plenary talk, Workshop on Algorithms for processing Massive Data Sets, IIT Kanpur, India.

Apr 2009: "Metric and Kernel Learning", Invited Colloquium Talk, Computer Science and Engineering Department, Penn State University, State College, Pennsylvania.

Feb 2009: "Newton-type methods for Nonnegative Tensor Approximation", Invited talk, NSF Workshop on Future Directions in Tensor-Based Computation and Modeling, NSF, Arlington, Virginia.

June 2008: "Rank Minimization via Online Learning", Invited talk, *Workshop on Algorithms for Modern Massive Data Sets*, Stanford University, California.

Mar 2008: "The Symmetric Tridiagonal Eigenproblem", Invited talk, Bay Area Scientific Computing Day, Mathematical Sciences Research Institute (MSRI), Berkeley, California.

Feb 2008: "Metric and Kernel Learning", Invited Colloquium Talk, ORFE (Operations Research & Financial Engineering) Department, Princeton University, Princeton, New Jersey.

Nov 2007: "Metric and Kernel Learning", Invited Colloquium Talk, Department of Computer Sciences, Cornell University, Ithaca, New York.

Sept, Oct & Nov 2007: "Clustering Tutorial", "Metric and Kernel Learning" & "Multilevel Graph Clustering", Special program on *Mathematics of Knowledge and Search Engines*, Institute of Pure & Applied Mathematics (IPAM), UCLA, California.

June 2007: "Machine Learning and Optimization", Invited Panel Speaker, *A-C-N-W Optimization Tutorials*, Chicago, Illinois.

Feb 2007: "Fast Newton-type Methods for Nonnegative Matrix Approximation", Invited talk, *NISS Workshop on Non-negative Matrix Factorization*, Raleigh, N. Carolina.

Jan 2007: "Machine Learning with Bregman Divergences", Invited talk, *BIRS Seminar on Mathematical Programming in Data Mining and Machine Learning*, organized by M.Jordan, J.Peng, T.Poggio, K.Scheinberg, D.Schuurmans and T.Terlaky, Banff, Canada.

June 2006: "Kernel Learning with Bregman Matrix Divergences" Invited talk, *Workshop on Algorithms for Modern Massive Data Sets*, Stanford University and Yahoo! Research, California.

May 2006: "Spectral Measures for Nearness Problems", Plenary talk, *Sixth International Workshop on Accurate Solution of Eigenvalue Problems*, Pennsylvania State University, University Park, Pennsylvania.

Dec 2005: "Co-Clustering, Matrix Approximations and Bregman Divergences", Invited Colloquium Talk, Department of Computer Sciences, Cornell University, Ithaca, New York.

Nov 2005: "Co-Clustering, Matrix Approximations and Bregman Divergences", Invited talk, McMaster University, Hamilton, Canada.

Mar 2004: "Information-Theoretic Clustering, Co-clustering and Matrix Approximations", Invited talk, IBM TJ Watson Research Center, New York.

Feb 2004: "Fast Eigenvalue/Eigenvector Computation for Dense Symmetric Matrices", Invited talk, University of Illinois, Urbana-Champaign.

Nov 2003: "Inverse Eigenvalue Problems in Wireless Communications", *BIRS Seminar on Theory and Numerics of Matrix Eigenvalue Problems*, organized by J.Demmel, N.Higham and P.Lancaster, Banff, Canada.

Oct 2003: "Inverse Eigenvalue Problems in Wireless Communications", *Dagstuhl Seminar on Theoretical and Computational Aspects of Matrix Algorithms*, organized by N.Higham, V.Mehrmann, S.Rump and D.Szyld, Wadern, Germany.

Aug 2003: "Accurate Computation of Eigenvalues and Eigenvectors of Dense Symmetric Matrices", Sandia National Laboratories, Albuquerque.

May 2003: "Information-Theoretic Clustering, Co-clustering and Matrix Approximations", *IMA Workshop on Data Analysis and Optimization*, organized by R.Kannan, J.Kleinberg, C.Papadimitriou and P.Ragahavan, Minneapolis, Minnesota.

Dec 2001: "Clustering High-Dimensional Data and Data Approximation", Invited Colloquium Talk, University of Minnesota, Minneapolis.

Oct 2000: "Concept Decompositions for Large-Scale Information Retrieval", Invited talk, *Computational Information Retrieval Workshop*, Raleigh, Carolina.

Apr 2000: "Matrix Approximations for Large Sparse Text Data using Clustering", Invited talk, *IMA Workshop on Text Mining*, Minneapolis, Minnesota.

Sept 1999: "Class Visualization of High-Dimensional Data", Invited talk, *Workshop on Mining Scientific Datasets*, Minneapolis, Minnesota.

Mar & Apr 1999: "Eigenvectors and Concept Vectors", Invited talks at UC Santa Barbara, Stanford, UT Austin, Yale, UW Madison and Caltech.

OTHER MAJOR TALKS

Aug 2012: "Sparse Inverse Covariance Estimation using Quadratic Approximation", ISMP 2012, Berlin.

Feb, Apr & May 2012: "Link Prediction for Large-Scale Social Networks", Tech talks, LinkedIn (Mountain View, CA), Amazon (Seattle, WA) and Google (Mountain View, CA).

Feb 2012: "Parallel Clustered Low-rank Approximation of Social Network Graphs", Invited minisymposium talk, *SIAM Conference on Parallel Processing for Scientific Computing*, Savannah, Georgia.

July 2011: "Fast and Memory-Efficient Low-Rank Approximation of Massive Graphs", Invited minisymposium talk, *ICIAM*, Vancouver, Canada.

July 2010: "Guaranteed Rank Minimization via Singular Value Projection", Invited minisymposium talk, *SIAM Annual Meeting*, Pittsburgh, Pennsylvania.

June 2008: "On some modified root finding problems", Invited minisymposium talk, *15th Conference of the International Linear Algebra Society (ILAS)*, Cancun, Mexico.

July 2007: "Fast Newton-type Methods for Nonnegative Tensor Approximation", Invited minisymposium talk, *Sixth Int'l Conference on Industrial and Applied Mathematics (ICIAM)*, Zurich, Switzerland.

July 2005: "Glued Matrices and the MRRR Algorithm", Invited minisymposium talk, *SIAM Annual Meeting*, New Orleans, Louisiana.

Feb 2004: "A Parallel Eigensolver for Dense Symmetric Matrices based on Multiple Relatively Robust Representations", Invited minisymposium talk, *SIAM Conference on Parallel Processing for Scientific Computing*, San Francisco, California.

Aug 2003 – June 2004: "Information Theoretic Clustering, Co-Clustering and Matrix Approximations", PARC, Yahoo!, Verity, Univ. of Wisconsin-Madison.

Aug 2003: "Information-Theoretic Co-clustering", *The Ninth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining(KDD)*, Washington DC.

July 2003: "Data Clustering using Generalized Distortion Measures", Invited minisymposium talk, *SIAM Conference on Applied Linear Algebra*, Williamsburg, Virginia.

July 2003: "Matrix Nearness Problems in Data Mining", Invited minisymposium talk, *SIAM Conference on Applied Linear Algebra*, Williamsburg, Virginia.

July 2002: "Enhanced Word Clustering for Hierarchical Text Classification", *The Eighth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining(KDD)*, Edmonton, Canada.

June 2002: "Accurate Computation of Eigenvalues and Eigenvectors of Tridiagonal Matrices", *Fourth International Workshop on Accurate Eigensolving and Applications*, Split, Croatia.

Apr 2002: "Refining Clusters in High-Dimensional Text Data", *2nd SIAM International Conference on Data Mining*, Arlington, Virginia.

July 2001: "Large-Scale Data Mining", Invited minisymposium talk, *SIAM Annual Meeting*, San Diego, California.

Oct 2000: "Multiple Representations for Orthogonal Eigenvectors", Invited minisymposium talk, *SIAM Conference on Applied Linear Algebra*, Raleigh, Carolina.

Dec 1999: "Class Visualization of Multidimensional Data with Applications", Invited minisymposium on Data Mining, *6th International Conference on High Performance Computing (HiPC '99)*, Calcutta, India.

May 1999: "Concept-Revealing Subspaces for Large Text Collections", Invited minisymposium talk, *SIAM Annual Meeting*, Atlanta, Georgia.

Aug 1998: "Concept Identification in Large Text Collections", *5th International Symposium, IRREGULAR'98*, Berkeley, California.

Apr 1998: "Orthogonal Eigenvectors without Gram-Schmidt", *Ph.D. Dissertation Talk*, Berkeley, California.

Oct 1997: "When are Factors of Indefinite Matrices Relatively Robust?", *Sixth SIAM Conference on Applied Linear Algebra*, Snowbird, Utah.

July 1997: "Perfect Shifts and Twisted Q Factorizations", *SIAM 45th Anniversary and Annual Meeting*, Stanford, California.

Mar 1997: "A New Algorithm for the Symmetric Eigenproblem Applied to Computational Quantum Chemistry", *Eighth SIAM Conference on Parallel Processing for Scientific Computing*, Minneapolis, Minnesota.

Aug 1996: "Accuracy and Orthogonality", *First International Workshop on Accurate Eigensolving and Applications*, Split, Croatia.

July 1996: "A New Approach to the Symmetric Tridiagonal Eigenproblem", *Householder XIII Symposium*, Pontresina, Switzerland.

June 1991: "Compilation Process for a New Parallel Architecture based on Finite Geometries", *Supercomputing Symposium '91*, New Brunswick, Canada.

PATENTS

1. US20240176993A1: "Scalable Self-Supervised Graph Clustering", P. Jain, I. S. Dhillon, F. Devvrit and A. Sinha, 2024.
2. US11250039: "Extreme multi-label classification", W. Chang, H.-F. Yu, and I. S. Dhillon, 2022.
3. US11126660: "High dimensional time series forecasting", R. Sen, H.-F. Yu, and I. S. Dhillon, 2021.
4. US11106690: "Neural query auto-correction and completion", I. S. Dhillon, V. Mohan and P. Wang, 2021.
5. US10872601: "Natural language processing", A. Acharya, A. Metallinou, R. Goel and I. S. Dhillon, 2020.
6. US6269376: "Method and system for clustering data in parallel on a distributed memory multiprocessor system", I. S. Dhillon and D. Modha, 2001.
7. US6560597: "Concept decomposition using clustering", I. S. Dhillon and D. Modha, 2003.

GRANTS

1. " Collaborative Research: EAGER: End-to-end Neural Training for Very Large Output Spaces", National Science Foundation, IIS-2439754, $100,000, 08/15/24-07/31/26.
2. "Efficient Training Algorithms for Large-Scale Distributed Training", Meta Inc., $100,000, 06/01/21-01/31/23.
3. "Predoctoral Training in Biomedical Big Data Science", National Institutes of Health (NIH), $1,106,990, 03/01/16-02/28/21.
4. "AF: Medium: Dropping Convexity: New Algorithms, Statistical Guarantees and Scalable Software for Non-convex Matrix Estimation", National Science Foundation, IIS-1564000, $902,415, 09/01/16-08/31/22.
5. "BIGDATA:Collaborative Research:F:Nomadic Algorithms for Machine Learning in the Cloud", National Science Foundation, IIS-1546452, $1,206,758, 01/01/16-9/30/21.
6. "Co-morbidity prediction using patient healthcare data", Xerox Foundation, $90,000, 06/01/15-05/31/17.
7. "Multi-modal Recommendation via Inductive Tensor Completion", Adobe, $50,000, 06/01/15-05/31/17.
8. "I-Corps: Faster than Light Big Data Analytics", National Science Foundation, IIP-1507631, $50,000, 01/01/15-06/30/15.
9. "AF: Divide-and-Conquer Numerical Methods for Analysis of Massive Data Sets", National Science Foundation, CCF-1320746, $491,044, 09/01/13-08/31/16.
10. "AF: Fast and Memory-Efficient Dimensionality Reduction for Massive Networks", National Science Foundation, CCF-1117055, $360,000, 09/01/11-08/31/14.
11. "Disease Modeling via Large-Scale Network Analysis", Army Research Office, $359,004, 09/01/10-12/31/13.
12. "Scalable mining of SKT cell phone data", UT Austin, $31,938, 06/01/10-01/15/11.
13. "Mining smartphone data", Motorola Mobility, $50,000, 1/01/11-12/31/11.
14. "RI: Matrix-structured statistical inference", National Science Foundation, IIS-1018426, $157,331, 08/15/10-07/31/11.
15. "Spatial-Temporal Approach to Scalable Dynamical Collaborative Filtering", Yahoo! Research, $15,000, 10/01/09-12/31/10.
16. "NetSE: Multi-Resolution Analysis of Network Matrices", National Science Foundation, CCF-0916309, $499,996, 09/01/09-08/31/13.
17. "Link Prediction and Missing Value Imputation on Multiple Data Sets", Sandia National Laboratories, $45,614, 01/01/09-08/31/09.
18. "Graph Data Mining", Sandia National Laboratories, $24,360, 06/01/08-08/31/08.
19. "Non-Negative Matrix and Tensor Approximations: Algorithms, Software and Applications", National Science Foundation, CCF-0728879, $250,000, 10/01/07-09/30/12.
20. "III-COR: Versatile Co-clustering Analysis for Bi-modal and Multi-modal Data", National Science Foundation, IIS-0713142, $430,000, 09/01/07-08/31/10.
21. "Sparse Data Estimation through Hierarchical Aggregation", Yahoo! Research, $25,000, 01/01/08-12/31/08.
22. Supplemental Award for National Science Foundation Grant "Novel Matrix Problems in Modern Applications", CCF-0431257, $30,000, 08/15/05-07/31/09.
23. REU Supplemental Award for National Science Foundation Grant "Scalable Algorithms for Large-Scale Data Mining", ACI-0093404, $6,000, 06/01/05-05/31/08.
24. "Novel Matrix Problems in Modern Applications", National Science Foundation, CCF-0431257, $200,000, 08/15/04-07/31/09.

25. "Web data mining and algorithms", Sabre Holdings, Inc., $72,000, 09/01/04-08/31/07.
26. "RI: Mastodon: A Large-Memory, High-Throughput Simulation Infrastructure", 18 co-PIs, National Science Foundation, CISE Research Infrastructure, extramural funding: $1,418,231, UT match: $508,000, total grant: $1,927,031, 2003-2008.
27. "ITR: Feedback from Multi-Source Data Mining to Experimentation for Gene Network Discovery", with R. Mooney, D. Miranker, V. Iyer and E. Marcotte, NSF Information Technology Research Award, IIS-0325116, $1,700,000, 11/03/03-10/31/08.
28. "Reconstructing Gene Networks by Mining Expression, Genomic and Literature Data", with E. Marcotte, Texas Higher Education Coordinating Board, Advanced Research Program (TARP), Award # 003658-0431-2001, $147,000, 01/01/02-08/31/04.
29. "Scalable Algorithms for Large-Scale Data Mining", NSF CAREER Award, ACI-0093404, $478,305, 06/01/01-05/31/08.
30. "Data Mining Seminar Series", Tivoli Inc., $5,000, 06/01/01-05/31/03.
31. "Linear Algebra for Text Classification", Lawrence Berkeley National Laboratories, $11,570.13, 08/01/00-05/31/01.
32. "An Interdisciplinary Practicum Course in Data Mining", Tivoli Inc., $20,000, 06/01/00-05/31/03.
33. "Data Mining Seminar Series", Tivoli Inc., $5,000, 06/01/00-05/31/01.
34. "Research in Web Mining", Neonyoyo Inc., $8,520, 06/01/00-08/31/00.
35. "Studies in Numerical Linear Algebra and Applications," University of Texas, Summer Research Award, $15,112, 06/01/00-07/31/00.
36. "SCOUT: Scientific Computing Cluster of UT (CISE Research Instrumentation)," with D. Burger, S. Keckler, H. Vin and T. Warnow, National Science Foundation, CISE-9985991, extramural funding: $139,481, UT match: $70,000, total grant: $209,481, 03/15/00-03/14/03.