Damek Davis

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CV last updated: April 5, 2026

Educational background

University of California, Los Angeles, PhD in Mathematics, 09/2010 – 06/2015, Advisors: Stefano Soatto and Wotao Yin

University of California, Irvine, B.S. in Mathematics (summa cum laude), 09/2006 – 06/2010

Employment history

01/2025–Present	Associate Professor (with tenure), Department of Statistics and Data Science University of Pennsylvania
08/2024–12/2024	Visiting Research Scientist, Large Language Models and Transformers: Part 1 Simons Institute for the Theory of Computing
07/2024–01/2025	Visiting Associate Professor, Department of Statistics and Data Science University of Pennsylvania
07/2024–07/2025	Associate Professor (on leave), Operations Research and Information Engineering Cornell University
07/2022–07/2024	Associate Professor (with tenure), Operations Research and Information Engineering Cornell University
09/2022–12/2022	Senior Fellow, Program on Computational Microscopy Institute for Pure and Applied Mathematics
08/2017–10/2017	Visiting Research Scientist, Program on Bridging Continuous and Discrete Optimization Simons Institute for the Theory of Computing
07/2016–07/2022	Assistant Professor, Operations Research and Information Engineering, Cornell University Field Member, Mathematics, Cornell University Field Member, Applied Mathematics, Cornell University
07/2015–07/2016	NSF Mathematics Postdoctoral Fellow, University of California, Los Angeles Advisor: Wotao Yin

Publications

Refereed journal articles (published or forthcoming)

J1. Damek Davis, Dmitriy Drusvyatskiy, Liwei Jiang: Gradient descent with adaptive stepsize converges (nearly) linearly under fourth-order growth. *Mathematical Programming*, 2025. DOI: 10.1007/s10107-025-02290-5

J2. Damek Davis, Dmitriy Drusvyatskiy, Liwei Jiang: Active manifolds, stratifications, and convergence to local minima in nonsmooth optimization. arXiv preprint arXiv:2108.11832, *Foundations of Computational Mathematics*, (to appear)

J3. Damek Davis, Dmitriy Drusvyatskiy, Zhan Shi: Stochastic optimization over proximally smooth sets. arXiv preprint arXiv:2002.06309, submitted to *SIAM Journal on Optimization*, (to appear)

J4. Xingyuan Lu, Minh Pham, Elisa Negrini, Damek Davis, Stanley J. Osher, Jianwei Miao: Computational Microscopy beyond Perfect Lenses. *Physical Review E*, (to appear)

J5. Jeongyeol Kwon, Wei Qian, Constantine Caramanis, Yudong Chen, Damek Davis, Nhat Ho: Global Optimality of the EM Algorithm for Mixtures of Two Linear Regression. *IEEE Transactions on Information Theory* (to appear)

J6. Damek Davis, Mateo Diaz, Kaizheng Wang: Clustering a Mixture of Gaussians with Unknown Covariance. *Bernoulli* (to appear) (alphabetical)

J7. Damek Davis, Dmitriy Drusvyatskiy, Liwei Jiang: Asymptotic normality and optimality in nonsmooth stochastic approximation. *The Annals of Statistics* (to appear) (alphabetical)

J8. Damek Davis, Liwei Jiang: A local nearly linearly convergent first-order method for nonsmooth functions with quadratic growth. *Foundations of Computational Mathematics* (to appear) (alphabetical)

J9. Damek Davis, Dmitriy Drusvyatskiy, Vasileios Charisopoulos: Stochastic algorithms with geometric step decay converge linearly on sharp functions. *Mathematical Programming*, vol. 207, pp. 145–190 (to appear)

J10. Vasileios Charisopoulos, Damek Davis: A superlinearly convergent subgradient method for sharp semismooth problems. *Mathematics of Operations Research*, vol. 49, no. 3, pp. 1678-1709. (alphabetical)

J11. Damek Davis: Variance reduction for root-finding problems. *Mathematical Programming*, vol. 197, pp. 375-410, 2023 (alphabetical)

J12. Damek Davis, Mateo Díaz, Dmitriy Drusvyatskiy: Escaping strict saddle points of the Moreau envelope in nonsmooth optimization. *SIAM Journal on Optimization*, vol. 32, no. 3, pp. 1958-1983, 2022 (alphabetical)

J13. Damek Davis, Dmitriy Drusvyatskiy: Conservative and semismooth derivatives are equivalent for semialgebraic maps. *Set-Valued and Variational Analysis*, vol. 33, pp. 453–463, 2022 (alphabetical)

J14. Damek Davis, Dmitriy Drusvyatskiy, Lin Xiao, Junyu Zhang: From low probability to high confidence in stochastic convex optimization. *Journal of Machine Learning Research*, vol. 22, pp. 1-38, 2021 (alphabetical)

J15. Damek Davis, Dmitriy Drusvyatskiy: Proximal methods avoid active strict saddles of weakly convex functions. *Foundations of Computational Mathematics*, vol. 22, pp. 561–606, 2022 (alphabetical)

J16. Vasileios Charisopoulos, Yudong Chen, Damek Davis, Mateo Díaz, Lijun Ding, Dmitriy Drusvyatskiy: Low-rank matrix recovery with composite optimization: good conditioning and rapid convergence. *Foundations of Computational Mathematics*, vol. 21, pp. 1505–1593, 2021 (alphabetical)

J17. Damek Davis, Dmitriy Drusvyatskiy: Graphical Convergence of Subgradients in Nonconvex Optimization and Learning. *Mathematics of Operations Research*, vol. 47, no. 1, pp. 209-231, 2022 (alphabetical)

J18. Vasileios Charisopoulos, Damek Davis, Mateo Diaz, Dmitriy Drusvyatskiy: Composite optimization for robust rank one bilinear sensing. *IMA Journal on Information and Inference*, vol. 10, no. 2, pp. 333–396, 2021 (alphabetical)

J19. Aleksandr Aravkin, Damek Davis: Trimmed Statistical Estimation via Variance Reduction. *Mathematics of Operations Research*, vol. 45, no. 1, pp. 292-322, 2020 (alphabetical)

J20. Damek Davis, Dmitriy Drusvyatskiy, Sham Kakade, Jason D. Lee: Stochastic subgradient method converges on tame functions. *Foundations of Computational Mathematics*, vol. 20, pp. 119–154, 2020 (alphabetical)

J21. Damek Davis, Dmitriy Drusvyatskiy, Courtney Paquette: The nonsmooth landscape of phase retrieval. *IMA Journal on Numerical Analysis*, vol. 4, no. 40, pp. 2652–2695, 2020 (alphabetical)

J22. Damek Davis, Dmitriy Drusvyatskiy: Stochastic model-based minimization of weakly convex functions. *SIAM Journal on Optimization*, vol. 29, no. 1, pp. 207-239, 2019 (alphabetical)

J23. Damek Davis, Benjamin Grimmer: Proximally Guided Stochastic Subgradient Method for Nonsmooth, Nonconvex Problems. *SIAM Journal on Optimization*, vol. 29, no. 3, pp. 1908-1930, 2019 (to appear) (alphabetical)

J24. Damek Davis, Dmitriy Drusvyatskiy, Kellie J. MacPhee, Courtney Paquette: Subgradient methods for sharp weakly convex functions. *Journal of Optimization Theory and Applications*, vol. 179, pp. 962–982, 2018 (alphabetical)

J25. Luis M. Briceño-Arias, Damek Davis: Forward-Backward-Half Forward Algorithm for Solving Monotone Inclusions. *SIAM Journal on Optimization*, vol. 28, no. 4, pp. 2839-2871, 2018 (alphabetical)

J26. Damek Davis: Convergence rate analysis of the forward-Douglas-Rachford splitting scheme. *SIAM Journal on Optimization*, vol. 25, no. 3, pp. 1760-1786, 2015 (alphabetical)

J27. Damek Davis: Convergence rate analysis of primal-dual splitting schemes. *SIAM Journal on Optimization*, vol. 25, no. 3, pp. 1912-1943, 2015 (alphabetical)

J28. Damek Davis, Wotao Yin: Faster convergence rates of relaxed Peaceman-Rachford and ADMM under regularity assumptions. *Mathematics of Operations Research*, vol. 42, no. 3, pp. 783-805, 2016 (alphabetical)

J29. Damek Davis, Wotao Yin: A Three-Operator Splitting Scheme and its Optimization Applications. *Set-Valued and Variational Analysis*, vol. 25, pp. 829–858, 2017 (alphabetical)

J30. Rajiv Kumar, Oscar López, Damek Davis, Aleksandr Y. Aravkin, Felix J. Herrmann: Beating level-set methods for 5D seismic data interpolation: a primal-dual alternating approach. *IEEE Transactions on Computational Imaging* vol. 3, no. 2, pp. 264 - 274, 2017

J31. Douglas R. Isaacson, Alexander V. Sadovsky, Damek Davis: Tactical Scheduling for Precision Air Traffic Operations: Past Research and Current Problems. *Journal of Aerospace Information Systems*, vol. 11, no. 4: pp. 234-257, 2014

J32. Alexander V. Sadovsky, Damek Davis, Douglas R. Isaacson: Efficient computation of separation-compliant speed advisories for air traffic arriving in terminal airspace. *Journal of Dynamic Systems Measurement and Control* vol. 136, no. 4, pp. 041027-01–41027-10, 2014

J33. Alexander V. Sadovsky, Damek Davis, Douglas R. Isaacson: Separation-compliant, optimal routing and control of scheduled arrivals in a terminal airspace. *Transportation Research Part C: Emerging Technologies* vol. 37, pp. 157-176, 2013

J34. Damek Davis, Daqing Wan: Factorial and Noetherian Subrings of Power Series Rings: *Proceedings of the American Mathematical Society* vol. 139, no. 3, pp. 823-834, 2011 (alphabetical)

Refereed journal articles (submitted)

S1. Damek Davis, Dmitriy Drusvyatskiy: When do spectral gradient updates help in deep learning? arXiv preprint arXiv:2512.04299

S2. Libin Zhu, Damek Davis, Dmitriy Drusvyatskiy, Maryam Fazel: Iteratively reweighted kernel machines efficiently learn sparse functions. arXiv preprint arXiv:2505.08277

S3. Libin Zhu, Damek Davis, Dmitriy Drusvyatskiy, Maryam Fazel: Spectral norm bound for the product of random Fourier-Walsh matrices. arXiv preprint arXiv:2504.03148

Other articles (conference papers, book chapters)

C1. Liwei Jiang, Abhishek Roy, Krishna Balasubramanian, Damek Davis, Dmitriy Drusvyatskiy, Sen Na: Online Covariance Estimation in Nonsmooth Stochastic Approximation. *In Conference on Learning Theory* (2025)

C2. Chaoyue Liu, Dmitriy Drusvyatskiy, Mikhail Belkin, Damek Davis, Yi-An Ma: Aiming towards the minimizers: fast convergence of SGD for overparametrized problems. *NeurIPS* (2023)

C3. Damek Davis, Dmitriy Drusvyatskiy, Yin Tat Lee, Swati Padmanabhan, Guanghao Ye: A gradient sampling method with complexity guarantees for Lipschitz functions in high and low dimensions. *NeurIPS* (2022) (alphabetical)

C4. Damek Davis, Dmitriy Drusvyatskiy: High probability guarantees for stochastic convex optimization. *In Conference on Learning Theory* (2020) (alphabetical)

C5. Jeongyeol Kwon, Wei Qian, Constantine Caramanis, Yudong Chen, Damek Davis: Global Convergence of EM Algorithm for Mixtures of Two Component Linear Regression. *Conference on Learning*

Theory (2019)

C6. Damek Davis, Brent Edmunds, Madeleine Udell: The Sound of APALM Clapping: Faster Nonsmooth Nonconvex Optimization with Stochastic Asynchronous PALM. *Neural Information Processing Systems* (2016)

C7. Jingming Dong, Nikos Karianakis, Damek Davis, Joshua Hernandez, Jonathan Balzer, Stefano Soatto: Multiview Feature Engineering and Learning. *In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition* (2015)

C8. Damek Davis, Jonathan Balzer, Stefano Soatto: Asymmetric sparse kernel approximations for large-scale visual search. *In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition* (2014)

Invited articles

I1. Damek Davis, Dmitriy Drusvyatskiy: Subgradient methods under weak convexity and tame geometry. *SIAG/OPT News and Views*, vol. 28, no. 1, pp. 1-10, 2020. (alphabetical)

I2. Damek Davis: Convergence Rate Analysis of Several Splitting Schemes. *INFORMS OS Today* vol. 5, no. 1, pp. 20-25, 2015

Reports

R1. Damek Davis, Sam Power: The sharp one-dimensional convex sub-Gaussian comparison constant. arXiv preprint arXiv:2604.03170

R2. Damek Davis: Counting partial Hadamard matrices in the cubic regime. arXiv preprint arXiv:2603.30013

R3. Damek Davis, Benjamin Recht: What is the objective of reasoning with reinforcement learning? arXiv preprint arXiv:2510.13651

R4. Damek Davis, Tao Jiang: A linearly convergent Gauss-Newton subgradient method for ill-conditioned problems. *arXiv preprint*, arXiv:2212.13278, 2023 (alphabetical)

R5. Damek Davis, Dmitriy Drusvyatskiy, Kellie J. MacPhee: Stochastic model-based minimization under high-order growth. *arXiv preprint*, arXiv:1807.00255, 2018 (alphabetical)

R6. Damek Davis: An $O(n\log(n))$ algorithm for projecting onto the ordered weighted norm ball. *arXiv preprint*, arXiv:1505.00870, 2015

Benchmarks, repositories, and competitions

1. Optimization Constants in Mathematics (co-maintainer with Paata Ivanisvili and Terence Tao): curated repository of optimization constants and best known bounds arising from variational problems and functional inequalities. `https://github.com/teorth/optimizationproblems`

2. Mathematics Distillation Challenge: Equational Theories, Stage 1 (co-organizer with Terence Tao and the SAIR Foundation): multi-stage competition studying whether short human-readable cheat sheets can boost the performance of weak LLMs on mathematics problems; the initial stage focuses on the implication graph of the Equational Theories Project.

PhD advisees who have graduated from Cornell

1. Tao Jiang (Graduated 2025. First position: Postdoc at Meta AI)
2. Liwei Jiang. (Graduated 2024. First position: Postdoc, Georgia Tech, Industrial and Systems Engineering. Second Position: Assistant Professor, Purdue, Industrial Engineering)
3. Vasilis Charisopoulos (Graduated 2023. First position: Postdoc, University of Chicago Data Science Institute. Second Position: Assistant Professor, University of Washington, Seattle, Electrical and Computer Engineering)
4. Mateo Díaz (Graduated 2021. First position: Postdoc, Caltech, Computing and Mathematical Sciences. Second Position: Assistant Professor, Johns Hopkins University, Applied Mathematics and Statistics and Mathematical Institute for Data Science; **Alfred P. Sloan Fellowship in Mathematics (2024)**)

5. Ben Grimmer (Graduated 2021; co-advised with J. Renegar. First Position: Assistant Professor, Johns Hopkins University, Seattle, Applied Mathematics and Statistics; **Alfred P. Sloan Fellowship in Mathematics (2024)**)

PhD students whose doctoral committees I have served on

1. Tonghua Tian. (Graduated 2024. First position: Aquatic Capital Management)
2. Miaolan Xie. (Graduated 2024. First position: Assistant Professor at Purdue, Department of Industrial Engineering)
3. Song (Sam) Zhou. (Graduated 2023. First position: Flexport)
4. Tâm Lê. (Graduated 2023. External reviewer/member at Toulouse 1 University Capitole. First position: Postdoc in optimization and machine learning at Université Grenoble Alps)
5. Qinru Shi. (Graduated 2022. First position: Huawei)
6. Calvin Wylie. (Graduated 2019. First position: Wayfair)

Masters of engineering/finance projects supervised at Cornell

1. Ruifan Chen, Lang Lei, Mert Onengut, Louis St-Pierre, Jing Zhang
Sponsor: Wegmans 2021-2022

2. Yixiao He, Xiaoxiang Ma, Yuke Wu, Jiaqi Zhang
Sponsor: Pitney Bowes 2020-2021

3. Percy Zhao, Iris Zhao, Foster Zhen, Betsy Fu
Sponsor: Equifax 2019-2020

4. Chenxin Guo, Dajun Luo, Liyang Du, Zuolin Shen
Sponsor: Equifax 2018-2019

5. Anne Ng, Antong Su, Charlotte Wang, Umut Yildiz
Sponsor: Equifax 2017-2018

6. Henry Zhou, Juan Duran-Vara, Elijah Huang
Sponsor: Putnam Investments 2017

7. Kendrick Cancio, Karen Cronk, Alexis Rouge Carrassat
Sponsor: Mitre 2016-2017

Invited talks

T1. "When do spectral gradient updates help in deep learning?" *Foundations of Computational Mathematics conference*, Austria, Jul. 2026.

T2. "When do spectral gradient updates help in deep learning?" *Workshop on Mathematical Foundations of AI, National Autonomous University of Mexico (UNAM)*, Mexico City, Mexico, Apr. 2026.

T3. "When do spectral gradient updates help in deep learning?" *Santa Fe Institute*, Santa Fe, New Mexico, Feb. 2026.

T4. "When do spectral gradient updates help in deep learning?" *Applied Mathematics Colloquium, UCLA*, Los Angeles, California, Feb. 2026.

T5. "When do spectral gradient updates help in deep learning?" *Electrical Engineering Seminar, University of Southern California*, Los Angeles, California, Feb. 2026.

T6. "When do spectral gradient updates help in deep learning?" *Penn Asset Seminar, University of Pennsylvania*, Philadelphia, Pennsylvania, Jan. 2026.

T7. "When do spectral gradient updates help in deep learning?" *Simons Institute for Theoretical Computer Science*, Berkeley, California, Jan. 2026.

T8. "When do spectral gradient updates help in deep learning?" *Meta*, Menlo Park, California, Dec. 2025.

T9. "Exponentially faster gradient methods in the presence of ravines" *International Centre for Theoretical Sciences (ICTS)*, Bangalore, India, Aug. 2025.

T10. "Exponentially faster gradient methods in the presence of ravines" *University of California, San Diego HDSI*, San Diego, California, March. 2025.

T11. "Exponentially faster gradient methods in the presence of ravines" *Simons Institute for Theoretical Computer Science*, Berkeley, California November. 2024.

T12. "Exponentially faster gradient methods in the presence of ravines" *Stanford ISL Seminar*, Stanford, California November. 2024.

T13. "Nonconvex Optimization for Statistical Estimation and Learning: Beyond Smoothness and Convexity" *University of Sourthern California USC Epstein Seminar Series*, Los Angeles, California, Sep. 2024.

T14. "Nonconvex Optimization for Statistical Estimation and Learning: Beyond Smoothness and Convexity" *Wharton Statistics and Data Science*, Philadelphia, Pennsylvania, Apr. 2024.

T15. "Nonconvex Optimization for Statistical Estimation and Learning: Beyond Smoothness and Convexity" *UCLA*, Los Angeles, California, Jan. 2024.

T16. "Leveraging "partial" smoothness for faster convergence in nonsmooth optimization," *Rob Freund's birthday workshop*, Cambridge, Massachusetts, Aug. 2023.

T17. "A nearly linearly convergent first-order method for nonsmooth functions with quadratic growth," *Continuous Optimization Workshop, Foundations of Computational Mathematics 2023*, Paris, France, Jun. 2023.

T18. "A nearly linearly convergent first-order method for nonsmooth functions with quadratic growth," *SIAM conference on optimization*, Seattle, Washington, Jun. 2023.

T19. "Stochastic model-based minimization of weakly convex functions," *SIAM conference on optimization (prize lecture)*, Seattle, Washington, Jun. 2023.

T20. "Leveraging "partial" smoothness for faster convergence in nonsmooth optimization," *Distinguished Seminar in Optimization & Data, University of Washington*, Seattle, Washington, Apr. 2023.

T21. "Leveraging "partial" smoothness for faster convergence in nonsmooth optimization," *CMX Lunch Seminar, Caltech*, Pasadena, California, Feb. 2023.

T22. "Leveraging "partial" smoothness for faster convergence in nonsmooth optimization," *Level Set Seminar, UCLA*, Los Angeles, California, Dec. 2022.

T23. "Leveraging "partial" smoothness for faster convergence in nonsmooth optimization," *Seminar, IPAM workshop on computational microscopy*, Los Angeles, California, Nov. 2022.

T24. "Leveraging "partial" smoothness for faster convergence in nonsmooth optimization," *Seminar, UCLA Department of Computer Science*, Los Angeles, Nov. 2022.

T25. "Leveraging "partial" smoothness for faster convergence in nonsmooth optimization," *ISL seminar, Stanford*, Palo Alto, California, Nov. 2022.

T26. "Leveraging "partial" smoothness for faster convergence in nonsmooth optimization," *Seminar, Northwestern University Department of Statistics and Data Science*, Evanston, Illinois, Nov. 2022.

T27. "A nearly linearly convergent first-order method for nonsmooth functions with quadratic growth," *OPTML++ seminar, MIT*, Virtual, Nov. 2022.

T28. "A nearly linearly convergent first-order method for nonsmooth functions with quadratic growth," *International Conference on Continuous Optimization*, Lehigh, Pennsylvania, Jul. 2022.

T29. "Avoiding saddle points in nonsmooth optimization," *Workshop on Robustness and Resilience in Stochastic Optimization and Statistical Learning: Mathematical Foundations, Ettore Majorana Foundation And Centre For Scientific Culture*, Erice, Italy, May 2022.

T30. "Avoiding saddle points in nonsmooth optimization," *Theoretical Computer Science Seminar, University at Illinois, Chicago*, Virtual, Feb. 2022.

T31. "Plenary Talk: Avoiding saddle points in nonsmooth optimization," *OPT2021 NeurIPS Workshop*, Virtual, Dec. 2021.

T32. "Avoiding saddle points in nonsmooth optimization," *One World Optimization Seminar*, Virtual, Nov. 2021.

T33. "Avoiding saddle points in nonsmooth optimization," *SIAM Optimization Conference*, Virtual, Jul. 2021.

T34. "Nonconvex Optimization for Estimation and Learning: Dynamics, Conditioning, and Nonsmoothness," *CRM Applied Math Seminar, McGill University*, Montreal, Quebec, Canada, Nov. 2020.

T35. "Proximal methods avoid active strict saddles of weakly convex functions," *Foundations of Computational Mathematics (Cancelled due to COVID)*, Vancouver, Canada, Jun. 2020.

T36. "Stochastic Algorithms with Geometric Step Decay Converge Linearly on Sharp Functions," *SIAM Mathematics of Data Science (sessions cancelled due to COVID)*, Cincinnati, Ohio, May 2020.

T37. "Stochastic model-based minimization of weakly convex functions," *INFORMS Optimization Society Young Researchers Award Presentation*, Seattle, Washington, Nov. 2019.

T38. "Low-rank matrix recovery with composite optimization: good conditioning and rapid convergence," *INFORMS Annual Meeting*, Seattle, Washington, Nov. 2019.

T39. "Stochastic subgradient method converges on tame functions," *INFORMS Annual Meeting*, Seattle, Washington, Nov. 2019.

T40. "Stochastic subgradient method converges on tame functions," *ICCOPT Best Paper Prize for Young Researchers in Continuous Optimization Finalist*, Berlin, Germany, Aug. 2019.

T41. "Nonsmooth and nonconvex optimization under statistical assumptions," *Operations Research and Financial Engineering Optimization Seminar, Princeton University*, Princeton, New Jersey, Apr. 2019.

T42. "Stochastic Methods for Non-smooth Non-convex Optimization," *Annual Allerton Conference on Communication, Control, and Computing*, Urbana-Champaign, Illinois, Sept. 2018.

T43. "Algorithmic Foundations of Huge-Scale Nonsmooth, NonConvex Optimization with Applications in Data Science," *AFOSR Optimization and Discrete Math Program Review*, Arlington, Virginia, Aug. 2018.

T44. "Stochastic Methods for Non-smooth Non-convex Optimization," *TRIPODS/MOPTA Conference*, Lehigh, Pennsylvania, Aug. 2018.

T45. "Convergence rates of stochastic methods for nonsmooth nonconvex problems," *International Symposium on Mathematical Programming (ISMP) (cancelled due to Illness)*, Bordeaux, France, Jul. 2018.

T46. "Stochastic Methods for Non-smooth Non-convex Optimization," *DIMACS Workshop on ADMM and Proximal Splitting Methods in Optimization (cancelled due to Illness)*, Seattle, Washington, Jun. 2018.

T47. "Stochastic Methods for Non-smooth Non-convex Optimization," *West Coast Optimization Meeting*, Seattle, Washington, May 2018.

T48. "Recent progress on nonsmooth nonconvex optimization under statistical assumptions," *Operations Research Center Seminar, MIT*, Cambridge, Massachusetts, Apr. 2018.

T49. "Proximally Guided Stochastic Subgradient Method for Nonsmooth, Nonconvex Problems," *INFORMS Annual Meeting*, Houston, Texas, Nov. 2017.

T50. "Trimmed Statistical Estimation via Variance Reduction," *EUROPT continuous optimization working group of EURO (The Association of European Operational Research Societies)*, Montreal, Quebec, Canada, Jul. 2017.

T51. "A SMART Stochastic Algorithm for Nonconvex Optimization with Applications to Robust Machine Learning," *Google Brain Seminar*, New York, New York, Jul. 2017.

T52. "A SMART Stochastic Algorithm for Nonconvex Optimization with Applications to Robust Machine Learning," *Applied Mathematics Colloquium, UCLA*, Los Angeles, California, May 2017.

T53. "A SMART Stochastic Algorithm for Nonconvex Optimization with Applications to Robust Machine Learning," *SIAM Optimization Conference*, Vancouver, Canada, May 2017.

T54. "Fast Algorithms for Robust Machine Learning," *Google Internal Seminar*, New York, New York, Jul. 2016.

T55. "SMART: The Stochastic Monotone Aggregated Root-Finding Algorithm," *INFORMS International Meeting*, Waikoloa, Hawaii, Jun. 2016.

T56. "A Three-Operator Splitting Scheme and its Optimization Applications," *SIAM Conference on Imaging Science*, Albuquerque, New Mexico, May 2016.

T57. "SMART: The Stochastic Monotone Aggregated Root-Finding Algorithm," *Systems, Information, Learn-*

ing and Optimization (SILO) Seminar, University of Wisconsin, Madison, Madison, Wisconsin, Feb. 2016.

T58. "A Three-Operator Splitting Scheme and its Optimization Applications," *TOPS Optimization Seminar, University of Washington*, Seattle, Washington, Oct. 2015.

T59. "A Three-Operator Splitting Scheme and its Optimization Applications," *International Symposium on Mathematical Programming (ISMP)*, Pittsburg, Pennsylvania, Jul. 2015.

T60. "Decentralized Optimization via Operator Splitting," *Bell Labs Prize Innovathon @ Alcatel-Lucent*, Murray Hill, New Jersey, Jun. 2015.

T61. "A Three-Operator Splitting Scheme and its Optimization Applications," *Linear Algebra and Optimization Seminar, Stanford University*, Stanford, California, May 2015.

T62. "The Design and Analysis of Large-scale Operator-splitting Schemes," *Wisconsin Institute for Discovery Colloquium, University of Wisconsin, Madison*, Madison, Wisconsin, Feb. 2015.

T63. "The Design and Analysis of Large-scale Operator-splitting Schemes," *Combinatorics and Optimization Seminar, University of Waterloo*, Waterloo, Ontario, Canada, Jan. 2015.

Invited panels

P1. "AI for Math" *AI for Science Kickoff 2026, IPAM*, Los Angeles, California, Feb. 2026. `https://www.ipam.ucla.edu/programs/special-events-and-conferences/ai-for-science-kickoff-2026/`

P2. "Dynamics at the Frontiers of Optimization, Sampling, and Games" *NeurIPS 2025 panel, DynaFront workshop*, San Diego, California, Dec. 2025. `https://sites.google.com/view/dynafrontneurips25/home?authuser=0`

Teaching at Cornell

ORIE 4740 Statistical Data Mining, Cornell University — Spring 2024
Dept: Operations Research and Information Engineering

ORIE 6300 Mathematical Programming I, Cornell University — Fall 2023
Dept: Operations Research and Information Engineering
Lecture notes available at the following link:
`https://damek.github.io/teaching/orie6300/ORIE6300Fall2023notes.pdf`

Engineering 1050 Freshman Engineering Seminar, Cornell University — Fall 2023
Dept: Operations Research and Information Engineering

ORIE 4740 Statistical Data Mining, Cornell University — Spring 2022
Dept: Operations Research and Information Engineering

ORIE 7391 Selected Topics in Mathematical Programming, Cornell University — Fall 2021
Dept: Operations Research and Information Engineering

ORIE 6340 Mathematics of Data Science, Cornell University — Spring 2021
Dept: Operations Research and Information Engineering
Course materials available at the following link:
`https://www.dropbox.com/sh/bvxav1pc2nr5n6x/AABn7gEfuYY7qD_ZxUQzJwpma?dl=0`

ORIE 3300 Optimization I, Cornell University — Fall 2020
Dept: Operations Research and Information Engineering

Engineering 1050 Freshman Engineering Seminar, Cornell University — Fall 2020
Dept: Operations Research and Information Engineering

ORIE 4740 Statistical Data Mining, Cornell University — Spring 2020
Dept: Operations Research and Information Engineering

ORIE 6300 Mathematical Programming I, Cornell University — Fall 2019
Dept: Operations Research and Information Engineering
Lecture notes available at the following link:
`https://damek.github.io/teaching/orie6300/ORIE6300Fall2023notes.pdf`

ORIE 3300 Optimization I, Cornell University — Fall 2018
Dept: Operations Research and Information Engineering

Math 2940 Linear Algebra for Engineers, Cornell University — Spring 2018
Dept: Mathematics

ORIE 4350 Introduction to Game Theory, Cornell University — Spring 2017
Dept: Operations Research and Information Engineering

ORIE 6300 Mathematical Programming I, Cornell University — Fall 2016
Dept: Operations Research and Information Engineering

Teaching at Penn

STAT 4830 Numerical Optimization for Data Science and Machine Learning (Optimization in PyTorch), University of Pennsylvania — Spring 2025, Spring 2026
Dept: Statistics and Data Science
Course webpage and notes available at the following link:
`https://damek.github.io/STAT-4830/`

Service at Cornell

ORIE Dept Director Appointment Committee, Cornell University, 2021, 2024

COR-OPT Optimization Seminar, Cornell University, 2018-2024

Graduate Admissions Committee, Cornell University, 2018-2020, 2022, 2024

Masters of Engineering Admissions Committee, Cornell University, 2016, 2021, 2022

Colloquium Co-organizer, Cornell University, Center for Applied Math, 2017-2018

Colloquium Co-organizer, Cornell University, Operations Research and Information Engineering, 2016, 2020

Service at Penn

Co-chair, Statistics Graduate Minor, University of Pennsylvania, 2025-Present

Hiring Committee, University of Pennsylvania, 2025-Present

Selected professional service

Associate Editor, Mathematical Programming, 2022-Present

Associate Editor, Foundations of Computational Mathematics, 2023-Present

Stream co-chair for Nonsmooth Optimization, International Conference on Continuous Optimization, Lehigh University, 2022

Cluster co-chair for Continuous Optimization, International Symposium on Mathematical Programming, Beijing, China, 2020

Track co-chair for Optimization in Data Science, INFORMS Optimization Society 2020 Meeting, Clemson University, 2019-2020

OPT2016 Program Committee Member, Neural Information Processing Systems, Barcelona, Spain, 2016

Honors and awards

SIAM Activity Group on Optimization Best Paper Prize — 2023

NSF CAREER Award — 2020
Budget: $454,000

Sloan Research Fellowship in Mathematics 2020
Budget: $75,000

Young Researchers Prize, INFORMS Optimization Society 2019

Finalist: Best Paper Prize for Young Researchers in Continuous Optimization (One of Four), ICCOPT 2019

A. W. Tucker Dissertation Prize Finalist (One of Two), Mathematical Optimization Society 2018

NSF Mathematics Postdoctoral Fellowship 2015
Budget: $150,000

Dissertation Prize, Pacific Journal of Mathematics 2015

Student Paper Prize, INFORMS Optimization Society 2014

NSF Graduate Research Fellowship 2010

Elected to Phi Beta Kappa (Junior Year) 2009

Grant activity

Collaborative Research: AIMing: Towards the Hadamard Conjecture: A Unified Neurosymbolic Reasoning and Formal Verification Paradigm. Award number: 2523384. Budget: $250,000.00