Jamie Haddock

Harvey Mudd College
Department of Mathematics
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Research Interests

Mathematical Data Science, Convex and Combinatorial Optimization, Randomized Algorithms, Polyhedral Theory, Convex Geometry

Education

University of California, Davis
Ph.D., Applied Mathematics, May 2018
Dissertation Title: *Projection Algorithms for Convex and Combinatorial Optimization*
Advisor: Jesús A. De Loera
M.S., Applied Mathematics, 2016

Gonzaga University
B.S., Mathematics (Minor in Computer Science), 2013

Academic Positions

Harvey Mudd College, Department of Mathematics
Iris & Howard Critchell Assistant Professor, July 2024 - present
Assistant Professor, July 2021 - present
Courses taught: Numerical Analysis, Intro. to Probability and Statistics, Mathematical Data Science & Topic Modeling, Linear Algebra, Problem Solving Seminar

UCLA Mathematics Department
CAM Assistant Adjunct Professor (non-tenure-track), July 2018 - June 2021
CAM REU Academic Mentor, June 2018 - August 2018, June 2021 - August 2021
Courses taught: Intro. to Probability and Statistics, Probability Theory, Machine Learning

UC Davis Mathematics Department
Graduate Student Researcher, Teaching Assistant, Associate Instructor, 2013 - 2017
Courses taught: Linear Algebra, Precalculus
Curriculum development: Calculus for Biosciences
Courses TAed: Calculus for Biosciences, Advanced Problem Solving, History of Mathematics, Introduction to Abstract Mathematics, Calculus I, Calculus III

Published Works

$^{\bullet}$ undergraduate co-author, * graduate co-author

Journal Publications

R. S. Gonçalves, J. Payne, A. Tan, C. Benitez$^{\bullet}$, J. Haddock, R. Gentleman. "The text2term tool to map free-text descriptions of biomedical terms to ontologies." Database, Volume 2024, 2024.

B. Curtis, L. Gan, J. Haddock, R. Lawrence*, S. Spiro. "Zero forcing with random sets." Discrete Math., 347(5), 2024.

J. Haddock, T. Will$^{\bullet}$, J. Vendrow$^{\bullet}$, R. Zhang$^{\bullet}$, D. Molitor*, D. Needell, M. Gao$^{\bullet}$, E. Sadovnik*. "Neural Nonnegative Matrix Factorization for Hierarchical Multilayer Topic Modeling." Sampling Theory, Signal Processing, and Data Analysis, to appear, 2023.

P. Chodrow, N. Eikmeier, J. Haddock. "Nonbacktracking spectral clustering of nonuniform hypergraphs." SIAM J. Math. Data Sci., to appear, 2022.

J. Haddock, B. Jarman*, C. Yap•. "Paving the Way for Consensus: Convergence of Block Gossip Algorithms." IEEE T. Inform. Theory, 68(11), 7515-7527, 2022.

J. Haddock, D. Needell, E. Rebrova, W. Swartworth*. "Quantile-based Iterative Methods for Corrupted Systems of Linear Equations." SIAM J. Matrix Anal. A., 43(2), 605-637, 2022.

E. Chau•, J. Haddock. "On Application of Block Kaczmarz Methods in Matrix Factorization." SIAM Undergraduate Research Online, 2022.

R. Yim•, J. Haddock, D. Needell. "Statistical Learning for Best Practices in Tattoo Removal." SIAM Undergraduate Research Online, 2022.

J. Haddock, A. Ma. "Greed Works: An Improved Analysis of Sampling Kaczmarz-Motkzin." SIAM J. Math. Data Sci., 3(1), 342-368, 2021.

J. A. De Loera, J. Haddock, A. Ma, D. Needell. "Data-driven Algorithm Selection and Tuning in Optimization and Signal Processing." Ann. Math. Artif. Intel., 89(7), 711-735. 2020.

J. Vendrow•, J. Haddock, D. Needell, L. Johnson. "Feature Selection on Lyme Disease Patient Survey Data." Algorithms, 14(12), 334, 2020.

L. Johnson, M. Shapiro, R. Stricker, J. Vendrow•, J. Haddock, D. Needell. "Antibiotic treatment response in persistent Lyme disease: Why do some patients improve while others do not?" Healthcare, vol. 8, no. 4, 383-404, 2020.

J. A. De Loera, J. Haddock, L. Rademacher. "The Minimum Euclidean-Norm Point on a Convex Polytope: Wolfe's Combinatorial Algorithm is Exponential." SIAM J. Comput., vol. 49, iss. 1, 138-169, 2019.

J. Haddock, D. Needell. "Randomized Projection Methods for Linear Systems with Arbitrarily Large Sparse Corruptions." SIAM J. Sci. Comp., vol. 41, iss. 5, S19-S36, 2018.

J. Haddock, D. Needell. "On Motzkin's Method for Inconsistent Linear Systems." BIT Numerical Mathematics, vol. 59, iss. 2, 387-401, 2019.

J. A. De Loera, J. Haddock, D. Needell. "A Sampling Kaczmarz-Motzkin Algorithm for Linear Feasibility." SIAM J. Sci. Comp., vol. 39, iss. 5, S66-S87, 2017.

Conference Publications

Z. Collins, J. Haddock, T. Headley, L. Wang. "Quantile Multiplicative Updates for Corruption-Robust Nonnegative Matrix Factorization." Sampling Theory and Applications (SampTA), Vienna, Austria, August 2025.

A. Castillo*, J. Haddock, I. Hartsock, P. Hoyos*, L. Kassab, A. Kryshchenko, K. R. Larripa, D. Needell, S. Suryanarayanan*, K. Yacoubou-Djima. "Randomized Iterative Methods for Tensor Regression Under the t-product." Proc. Women in Data Science and Mathematics (WiSDM), 2024.

J. Haddock, A. Ma, E. Rebrova. "On Subsampled Quantile Randomized Kaczmarz." Allerton Conference on Communication, Control, and Computing, Monticello, IL, September 2023.

H. Friedman•, A. R. Maina-Kilaas•, J. Schalkwyk•, H. Ahmed•, J. Haddock. "Joint NMF for Identification of Shared Features in Datasets and a Dataset Distance Measure." Conference on Information Sciences and Systems, Baltimore, MD, March 2023.

E. Sizikova, J. Vendrow*, X. Cao, R. Grotheer, J. Haddock, L. Kassab, A. Kryshchenko, T. Merkh, R. W. M. A. Madushani, K. Moise, A. Ulichney, H. V. Vo, C. Wang, M. Coffee, K. Leonard, D. Needell. "Interpretability of Automatic Infectious Disease Classification Analysis with Concept Discovery." Proc. Mach. Learn. for Health (ML4H), New Orleans, LA, November 2022.

J. Vendrow•, J. Haddock, D. Needell. "A Generalized Hierarchical Nonnegative Tensor Decomposition." Proc. Int. Conf. on Acoustics, Speech, and Signal Provessing (ICASSP), Singapore, May 2022.

J. Vendrow•, J. Haddock, D. Needell. "Neural Nonnegative CP Decomposition for Hierarchical Tensor Analysis." Proc. 55th Asilomar Conf. on Signals, Systems, and Computers, Pacific Grove, CA, Nov. 2021.

J. Haddock, L. Kassab*, S. Li•, A. Kryshchenko, R. Grotheer, E. Sizikova, C. Wang, T. Merkh*, R. W. M. A. Madushani, M. Ahn, D. Needell, K. Leonard. "Semi-supervised Nonnegative Matrix Factorization for Document Classification." Proc. 55th Asilomar Conf. on Signals, Systems, and Computers, Pacific Grove, CA, Nov. 2021.

J. Vendrow•, J. Haddock, E. Rebrova, D. Needell. "On a Guided Nonnegative Matrix Factorization." Proc. Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP), 2021.

M. Ahn, N. Eikmeier, J. Haddock, L. Kassab*, A. Kryshchenko, K. Leonard, D. Needell, A. M. R. W. Mudiyanselage, E. Sizikova, C. Wang. "On Dynamic Topic Modeling with Nonnegative Tensor Decomposition." Proc. Women in Data Science and Mathematics (WiSDM), 2019.

J. Haddock, D. Needell, E. Rebrova, W. Swartworth*. "Stochastic Gradient Descent Methods for Corrupted Systems of Linear Equations." Proc. Conference on Information Sciences and Systems (CISS), Princeton, NJ, Mar. 2020.

J. Haddock, L. Kassab*, A. Kryshchenko, D. Needell. "On Nonnegative CP Tensor Decomposition Robustness to Noise." Proc. Information Theory and Applications (ITA), San Diego, CA, Feb. 2020.

M. Gao•, J. Haddock, D. Molitor*, D. Needell, E. Sadovnik*, T. Will•, R. Zhang•. "Neural Nonnegative Matrix Factorization for Hierarchical Multilayer Topic Modeling." Proc. International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP), Guadeloupe, West Indies, December 2019.

J. Haddock, D. Needell, N. Rahnavard, A. Zaeemzadeh*. "Convergence of Iterative Hard Thresholding Variants with Application to Asynchronous Parallel Methods for Sparse Recovery." Proc. 53rd Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, Nov. 2019.

J. A. De Loera, J. Haddock, A. Ma, D. Needell. "Data-driven Algorithm Selection and Parameter Tuning: Two Case studies in Optimization and Signal Processing." Proc. International Joint Conference on Artificial Intelligence (IJCAI), Macao, China, August 2019.

J. Haddock, D. Molitor*, D. Needell, S. Sambandam•, J. Song•, S. Sun•. "On Inferences from Completed Data." Proc. Sampling Theory and Applications (SampTA), Bordeaux, France, July 2019.

J. Haddock, D. Molitor*, D. Needell, S. Sambandam•, J. Song•, S. Sun•. "On Inferences from Completed Data." (extended version) Proc. Information Theory and Applications (ITA), San Diego, CA, Feb. 2019.

A. Zaeemzadeh*, J. Haddock, N. Rahnavard, D. Needell. "A Bayesian Approach for Asynchronous Parallel Sparse Recovery." Proc. 52nd Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, Oct. 2018.

J. A. De Loera, J. Haddock, L. Rademacher. "The Minimum Euclidean-Norm Point on a Convex Polytope: Wolfe's Combinatorial Algorithm is Exponential." Proc. 50th Annual ACM SIGACT Symposium on Theory of Computing, Los Angeles, CA, June 2018.

J. Haddock and D. Needell. "Randomized Projections for Corrupted Linear Systems." Proc. 15th Int. Conf. Numer. Anal. Appl. Math., Rhodes, Greece, Sept. 2017.

Other Publications

J. Haddock. "Projection Algorithms for Convex and Combinatorial Optimization." PhD Dissertation, Applied Mathematics, University of California, Davis, May 2018.

J. Haddock, R. Yoshida. "Advice from our Advisor: Jesús A. De Loera." Not. Am. Math. Soc., 70(8), 1231-1234, 2023.

Preprints

A. Castillo, J. Haddock, I. Hartsock, P. Hoyos*, L. Kassab, A. Kryshchenko, K. R. Larripa, D. Needell, S. Suryanarayanan*, K. Yacoubou-Djima. "Block Gauss-Seidel methods for t-product tensor regression." Submitted, `https://arxiv.org/abs/2503.19155`, 2024.

A. Castillo, J. Haddock, I. Hartsock, P. Hoyos*, L. Kassab, A. Kryshchenko, K. R. Larripa, D. Needell, S. Suryanarayanan*, K. Yacoubou-Djima. "Quantile-Based Randomized Kaczmarz for Corrupted Tensor Linear Systems." Submitted, `https://arxiv.org/abs/2503.18190`, 2024.

A. Castillo, J. Haddock, I. Hartsock, P. Hoyos*, L. Kassab, A. Kryshchenko, K. R. Larripa, D. Needell, S. Suryanarayanan*, K. Yacoubou-Djima. "Randomized Kaczmarz methods for t-product tensor linear systems with factorized operators." Submitted, `https://arxiv.org/abs/2412.10583`, 2024.

M. Zhang, J. Haddock, D. Needell. "Tensor Randomized Kaczmarz Methods for Linear Feasibility Problems." Submitted, 2024.

M. Zhang, J. Haddock, D. Needell. "Block Matrix and Tensor Randomized Kaczmarz Methods for Linear Feasibility Problems." Submitted, `https://arxiv.org/abs/2406.12021`, 2024.

N. Coria•, J. Haddock, J. Pacheco•. "On Quantile Randomized Kaczmarz for Linear Systems with Time-Varying Noise and Corruption." Submitted, `https://arxiv.org/abs/2403.19874`, 2024.

Software & Code

J. Vendrow, J. Haddock. *Neural nonnegative matrix factorization.* `https://pypi.org/project/NeuralNMF/`, 2023.

J. Haddock, S. Li, L. Kassab, R. W. M. A. Madushani. *Semi-supervised nonnegative matrix factorization.* `https://pypi.org/project/ssnmf/`, 2020.

J. Vendrow, J. Haddock. *Fast nonnegative least-squares.* `https://pypi.org/project/fnnls/`, 2020.

E. Chau, J. Haddock. *Block Kaczmarz methods for matrix factorization.* `https://pypi.org/project/mf-algorithms/`, 2020.

Selected Grants & Awards

NSF DMS CAREER Computational Mathematics Award 08/01/2025 - 07/31/2030
Title: "CAREER: Randomized Iterative Methods for Corrupted Data, Constrained Problems, and Compressed Updates" (solo PI)
Total award estimate: $402,235

NSF OAC Major Research Instrumentation Award 09/15/2024 - 08/31/2027
Title: "Equipment: MRI Consortium: Track 1 Acquisition of a High-Performance Computing Cluster for Interdisciplinary Research at the Claremont Colleges" (co-PI)
Total award estimate: $918,485

NSF DMS Computational Mathematics Award 07/01/2021 - 06/30/2025
Title: "Tensor Models, Methods, and Medicine" (solo PI)
Total award estimate: $232,568

Harvey Mudd College Innovation Accelerator Seed Funding 2024 - 2025
Title "Institute for Data Science & Social Impact" (co-PI)
Total award estimate: $20,000

MAA Project NExT Gold '21 cohort
Selected to take part in year-long professional development program, 2021 - 2022

UCLA Chancellor's Postdoctoral Research Award Nomination
Nominated for award for top postdoctoral scholars, Los Angeles, CA, 2020

AMS - Simons Foundation Travel Grant ($4,000 award)
Two year travel grant awarded to young researchers, 2018 - 2020

SIAM Early-Career Travel Award ($2,500 award)
Support for travel to ICIAM in Valencia, Spain, 2019

Rising Stars in Computational & Data Sciences
Support for attendance at intensive workshop in Austin, TX, 2019

NSF US Junior Oberwolfach Fellows Grant Support
Support for travel to MFO New Directions in Stoch. Opt. in Oberwolfach, Germany, 2018

William K. Schwarze Scholarship ($10,000 award)
Graduate student award for excellence in teaching and academic ability, 2016

Recent Professional Experience

IAS Summer Collaborators Two Week-long Collaborative Research Visit
Proposal on "Partial Information Methods for Large-scale Linear Systems" funded.
Princeton, NJ, 2025

AIM SQuaRE Week-long Collaborative Research Visit
Proposal on "Randomized Column-Slice-Action Methods for Tensor Problems" funded.
Pasadena, CA, 2024

Collaborate@ICERM Week-long Collaborative Research Visit
Proposal on "Randomized Algorithms for Tensor Problems with Factorized Data" funded.
Providence, RI, 2024

SLMath Summer Research in Mathematics Week-long Collaborative Research Visit
Proposal on "Column-Slice-Action Methods for Tensor Regression" funded.
Berkeley, CA, 2024

ICERM Workshop "Connecting Higher-Order Statistics and Symmetric Tensors"
Invited to participate in week-long workshop.
Providence, RI, 2024

IPAM Research Workshop Women in Data Science & Mathematics (WiSDM)

Co-leading a research group of 10 early career women in a week-long workshop.
Los Angeles, CA, 2023

Banff International Research Station "Perspectives on Matrix Computations"
Invited to participate in week-long workshop.
Banff, Alberta, Canada, 2023

IPAM Workshop Multi-Modal Imaging with Deep Learning and Modeling
Invited to participate in week-long workshop.
Los Angeles, CA, 2022

AMS Math. Research Community Models and Methods for Sparse (Hyper)Network Science
Invited to participate in week-long workshop and selected as MRC assistant.
Java Center, NY, 2022

Institute for Advanced Studies (IAS) Women and Math Program "The Mathematics of Machine Learning"
Selected to participate in week-long workshop
Princeton, NJ, 2022

Fields Institute Focus Program Data Sci., Approx. Theory, and Harmonic Analysis
Invited to participate in focus week on "Computational Harmonic Analysis and Linear Algebra."
Toronto, ON, 2022

Presentations & Posters

Conference Presentations

ICCOPT, Los Angeles, CA, 2025
NSF CompMath Meeting, Salt Lake City, Utah, 2025
SIAM Conference on Applied Linear Algebra (LA24), Paris, France, 2024
MAA SoCal-Nevada meeting (invited), San Diego, CA, 2024
ICERM "Connecting Higher-Order Statistics and Symmetric Tensors", Providence, RI, 2024
Allerton Conference on Communication, Control, and Computing, Monticello, IL, 2023
AWM Research Symposium "Tensor Methods for data modeling" (invited), Atlanta, GA, 2023
ICIAM "Interpretable constrained tensor decompositions" (invited), Tokyo, Japan, 2023
Conference on Information Sciences and Systems, Baltimore, MD, 2023
JMM "Models and Methods for Sparse (Hyper) Network Science" (invited), Boston, MA, 2023
CMStatistics "Recent advances in statistical learning" program (invited), London, UK, 2022
IPAM Multi-Modal Imaging with Deep Learning and Modeling (invited), Los Angeles, CA, 2022
SIAM Math. Data Sci. "Non-convex methods for tensor probs" (invited), San Diego, CA, 2022
Fields Inst. "Data Sci., Approx. Theory, Harmonic Anal." program (invited), Toronto, ON, 2022
Conference on Information Sciences and Systems (invited), Princeton, NJ 2022 (virtual format)
AAAI Graphs and More Complex Structures for Learn., Reason. (invited), Vancouver, CN, 2022
JMM AMS Tensor Modeling and Optimization (invited), Seattle, WA, 2022 (virtual)
JMM AMS Finding Needles in Haystacks: Inv. Prob. Using Comb., Lin. Alg., virtual, 2022
Asilomar Conf. on Signals, Systems, and Comp. (contributed), Pacific Grove, CA, 2021
Mixed Integer Programming Workshop (invited), DIMACS, virtual format, 2021
SIAM Conference on Applied Linear Algebra (invited), virtual format, 2021
AMS Spring Southeastern Sectional Meeting (invited), virtual format, 2021
IPAM Deep Learning and Medical Applications (invited), Los Angeles, CA, 2020
AMS Sectional Meeting (invited), Medford, MA, 2020 (cancelled)
SIAM Conference on Mathematics of Data Science (invited), Cincinnati, OH, 2020 (postponed)
AMS Sectional Meeting (invited), Fresno, CA, 2020 (cancelled)
Conference on Information Sciences and Systems (invited), Princeton, NJ, 2020 (virtual format)
ITA Tensor Methods in Mach. Learning and Signal Processing (invited), San Diego, CA, 2020

JMM AMS Math. and Comp. Research in Data Science (invited), Denver, CO, 2020
IEEE Comp. Adv. in Multi-Sensor Adapt. Proc. (invited), Guadalupe, West Indies, 2019
Asilomar Conf. on Signals, Systems, and Comp. (invited), Pacific Grove, CA, 2019
WiMSoCal (contributed), CSU Channel Islands, Camarillo, CA, 2019
International Congress on Indust. and Appl. Math. (contributed), Valencia, Spain, 2019
SIAM Conference on Applied Algebraic Geometry (invited), Bern, Switzerland, 2019
Information Theory & Applications Workshop (invited), San Diego, CA, 2019
Asilomar Conf. on Signals, Systems, and Comp. (contributed), Pacific Grove, CA, 2018
50th Annual ACM Symp. on the Theory of Comp. (contributed), Los Angeles, CA, 2018
JMM AMS Applied Math, III (contributed), San Diego, CA, 2018
Simons Institute for Theory of Comp.: Geom. in Optim. (invited), Berkeley, CA, 2017
ICNAAM (contributed), Rhodes, Greece, 2017
ICCOPT (invited), Tokyo, Japan, 2016
14th Copper Mountain Conf. on Iter. Methods (contributed), Copper Mtn., CO, 2016
Davis Mathematics Conference (invited), Davis, CA, 2016

Colloquia Presentations

UCLA Mathematics Colloquium, Los Angeles, CA, 2025
Cal State Long Beach Mathematics Colloquium, Long Beach, CA, 2024
Wellesley College, Boston, MA, 2023
One World Mathematics of INformation, Data, and Signals (1W-MINDS) Seminar, virtual, 2023
Harvey Mudd College Stauffer Lecture series, Claremont, CA, 2022
Harvey Mudd College Women in Mathematics speaker series, Claremont, CA, 2022
WSU AWM Colloquium, Pullman, WA, 2021
Claremont Center for the Mathematical Sciences (CCMS) Colloquium, Claremont, CA, 2021
UCLA CAM Colloquium, Los Angeles, CA, 2019

Seminar Presentations

Harvey Mudd College "Connections" Seminar, Claremont, CA, 2025
Claremont Center for the Math. Sciences (CCMS) Applied Math Seminar, Claremont, CA, 2024
Codes and Expansions (CodEx) Seminar, virtual format, 2024
UCI Combinatorics and Probability Seminar, Irvine, CA, 2023
Caltech Computational Mathematics + X (CMX) Lunch Seminar, Pasadena, CA, 2023
North Carolina State University Numerical Analysis Seminar, virtual format, 2022
UC Davis Math of Data and Decisions at Davis (MADDD) Seminar, virtual format, 2022
UNM Applied Math Seminar, virtual format, 2022
Claremont Center for the Math. Sciences (CCMS) Applied Math Seminar, Claremont, CA, 2022
UW Pac. NW Seminar on Topology, Algebra, and Geom. in Data Sci., virtual format, 2021
Colorado State University Data Science Seminar, virtual format, 2021
NYU Data Science Lunch Seminar, virtual format, 2020
Harvey Mudd Mathematics Connections Seminar, virtual format, 2020
CommNLA Seminar, virtual format, 2020
UBC Seminar, Vancouver, BC, 2020 (postponed)
UCI Probability Seminar, Irvine, CA, 2019
CSU Channel Islands Master Students Seminar, Camarillo, CA, 2019
UCLA Combinatorics Seminar, Los Angeles, CA, 2019
Tulane Probability and Statistics Seminar, New Orleans, LA, 2018
USC Combinatorics Seminar, Los Angeles, CA, 2018
IPAM Level Set Seminar, Los Angeles, CA, 2018
UCLA Math 270C: Computational Linear Algebra guest lecture, Los Angeles, CA, 2018
UCLA Math 285J: Math for High Dimensional Data guest lecture, Los Angeles, CA, 2018
UC Davis Exit Seminar, Davis, CA, 2018
UC Davis Student Math/Applied Math, Davis, CA, 2018

CACAO, Davis, CA, 2018
Mathematical Sciences Research Institute Graduate Student Seminar, Berkeley, CA, 2017
CACAO, Davis, CA, 2017
CACAO, Davis, CA, 2016
UC Davis Math Club, Davis, CA, 2016
UC Davis Student Math/Applied Math, Davis, CA, 2015
CACAO, Davis, CA, 2014

Poster Presentations

SampTA, Bordeaux, France, 2019
SOCAMS, Pasadena, CA, 2019
MAA Sectional Meeting, Hayward, CA, 2018
UC Davis Graduate Group in Applied Math Mini-Conference, Davis, CA, 2018
Gene Golub SIAM Summer School, Berlin, Germany, 2017
UC Davis Graduate Group in Applied Math Mini-Conference, Davis, CA, 2017
SIAM Annual Meeting, Boston, MA, 2016
MAA Sectional Meeting, Davis, CA, 2016

Outreach and Other Presentations
Harvey Mudd College "Women's Inclusion in STEM (WISTEM)" plenary, Claremont, CA, 2024
WimSoCal Career Panel, Claremont, CA, 2024
Harvey Mudd College "Women's Inclusion in STEM (WISTEM)" plenary, Claremont, CA, 2023
Rice University "Data Scientists in Training" presentation, virtual, 2022
LymeDisease.org Board Meeting, Hollywood, CA, 2018
LymeDisease.org Board Meeting, Burbank, CA, 2019

Press

Harvey Mudd College News (February 2025)
NSF CAREER grant featured in HMC News (`https://www.hmc.edu/about/2025/02/18/harvey-mudd-college-mathematician-seeks-to-tackle-big-data-challenges/`).

Claremont McKenna College News (November 2024)
NSF Major Research Instrumentation grant featured in CMC News (`https://www.cmc.edu/newsfeed/cmc-earns-large-nsf-grant-high-powered-research-equipment`).

SIAM News (October 2024)
Forthcoming ACM-ASA-MAA-SIAM++ Competencies for Undergraduate Data Science Curricula featured in SIAM News (`https://www.siam.org/publications/siam-news/articles/identifying-the-multidisciplinary-competencies-of-data-science/`).

Academic Data Science Alliance (ADSA) Career Development Network Round-up (April 2023)
Featured in the ADSA CDN Round-up (newsletter) and blog (`https://academicdatascience.org/resources/meet-a-data-scientist-jamie-haddock/`).

Research Mentorship

Research Students

Mengdi (Mandy) Gao (UC Irvine class of 2019, co-mentor Deanna Needell)
Neural nonnegative matrix factorization for hierarchical topic modeling.
Conference article in CAMSAP and one journal article submitted.
Attended masters program in statistics at UC Berkeley upon graduation.

Sneha Sambandam (UCLA class of 2020, co-mentor Deanna Needell)
Statistical inference on incomplete data.
Two conference articles appearing in SampTA and ITA.

Attended Ph.D. program in computer science at UBC upon graduation, NSF GRFP honorable mention.

Joy Song (Tsinghua University class of 2019, co-mentor Deanna Needell)
Statistical inference on incomplete data.
Two conference articles appearing in SampTA and ITA.
Attended Ph.D. program in mathematics at Brigham Young University upon graduation.

Yuanxun (Simon) Sun (Peking University class of 2019, co-mentor Deanna Needell)
Statistical inference on incomplete data.
Two conference articles appearing in SampTA and ITA.
Attended Ph.D. program in mathematics at Peking University after graduation.

Tyler Will (Michigan State University class of 2020, co-mentor Deanna Needell)
Neural nonnegative matrix factorization for hierarchical topic modeling.
Conference article in CAMSAP and one journal article submitted.
Attended Ph.D. program in operations research at Columbia University upon graduation.

Runyu Zhang (Peking University class of 2019, co-mentor Deanna Needell)
Neural nonnegative matrix factorization for hierarchical topic modeling.
Conference article in CAMSAP and one journal article submitted.
Attended Ph.D. program in applied mathematics at Harvard University upon graduation.

Eric Chen (UCLA class of 2020, co-mentor Deanna Needell)
Classification on Large-scale Lyme Disease Data.
Poster presentation at JMM.
Attended Ph.D. program in computer science at UC Berkeley upon graduation.

Rong Huang (UCLA class of 2019, co-mentor Deanna Needell)
Classification on Large-scale Lyme Disease Data.
Poster presentation at JMM.
Attended masters program in biostatistics at Yale School of Public Health upon graduation.

Diyi Liu (Shanghai Jiao Tong University class of 2019, co-mentor Deanna Needell)
Classification on Large-scale Lyme Disease Data.
Poster presentation at JMM.
Attended Ph.D. program in applied mathematics at University of Minnesota upon graduation.

Catherine Wahlenmayer (Gannon University class of 2020, co-mentor Deanna Needell)
Classification on Large-scale Lyme Disease Data.
Poster presentation at JMM (presenter).
Attended Ph.D. program in mathematics at UC San Diego upon graduation.

Ada (Jiewen) Wang (UCLA class of 2019, co-mentor Deanna Needell)
Classification on Large-scale Lyme Disease Data.
Poster presentation at JMM.
Attended MBA program at MIT Sloan School of Management upon graduation.

Kevin Liu (UCLA class of 2020)
Topic and trend modeling for National Basketball Association (NBA) data.
Attended masters program in business analytics at UCLA upon graduation.

Olivia Heiner (UCLA class of 2021)
Learning optimal hyperparameters for the Sampling Kaczmarz-Motzkin method.
Attended masters program in computer science at University of Utah upon graduation.

Edwin Chau (UCLA class of 2021)
Kaczmarz methods for matrix factorization and tensor decomposition.
Article in SIAM Journal of Undergraduate Research Online (SIURO) and one article in preparation.
Attended Columbia masters program upon graduation.

Sixian Li (UIUC class of 2021)
Semi-supervised nonnegative matrix factorization and tensor decomposition.
Conference article in ACSSC.
Attended masters program in mathematics and computer science at NYU upon graduation.

Joshua Vendrow (UCLA class of 2022, co-mentor Deanna Needell)
Nonnegative matrix factorization and tensor decomposition and applications.
Two journal articles appearing in Algorithms and Healthcare, one conference article in ICASSP, two conference articles in ACSSC, and one journal article submitted.
Attended MIT EECS Ph.D. program upon graduation.

Chuqi Bian (UCLA class of 2021)
Convex semi-supervised nonnegative matrix factorization.
Attended masters program in analytics at University of Chicago upon graduation.

Kalsuda Lapborisuth (UCLA class of 2021)
Convex semi-supervised nonnegative matrix factorization.
Attended Ph.D. program at Georgia Tech upon graduation.

Richard Yim (UCLA class of 2021, co-mentor Deanna Needell)
Statistical feature selection techniques and applications.
Article in SIAM Journal of Undergraduate Research Online (SIURO).
Attended masters program in applied mathematics at UC Davis upon graduation.

Chen Yap (UCLA class of 2021)
Kaczmarz methods for average consensus systems.
Journal article appearing in IEEE Transactions on Information Theory.

Moisey Alaev (UCLA class of 2021)
Supervised tensor decompositions for echocardiogram analysis and other applications.
Journal article in preparation.

Austin Froelich (HMC class of 2023)
Kaczmarz methods for rating problems.
Attended Statistics Ph.D. program at UCLA upon graduation.

William Gilroy (HMC class of 2022)
Kaczmarz methods for rating problems.
Attended masters program in math at Cambridge and Ph.D. program at Cornell after gap year.

Nathan Hu (Williams College class of 2022)
Kaczmarz methods for rating problems.

Hannah Kaufman (Southwest Baptist University class of 2022)
Kaczmarz methods for rating problems.
Attended masters program in math upon graduation.

Alexander Sietsema (Michigan State University class of 2022)
Kaczmarz methods for rating problems.
Journal article submitted.
Attended Ph.D. program in math at UCLA upon graduation.

Hector Tierno (Harvey Mudd College class of 2023)
Iterative methods analysis for opinion dynamics models.
Attended Ph.D. program in math at UMass Amherst upon graduation.

Alicia (Kunyang) Lu (Harvey Mudd College class of 2023)
Tensor decomposition models for echocardiogram analysis.

Julianna Schalkwyk (Harvey Mudd College class of 2023)
Quantile bounded confidence models.
Conference publication appearing in Proc. Conf. on Information Sciences and Systems (CISS).
Attended Ph.D. program in CS at Georgia Tech upon graduation.

Nestor Coria (Harvey Mudd College class of 2023)
Kaczmarz methods for time-varying noise and corruption.
Journal article submitted.
Joined Schmidt Academy for Software Engineering at Caltech upon graduation.

Toby Anderson (Harvey Mudd College class of 2024)
Tensor decomposition models for echocardiogram analysis.
Journal article in preparation.

Noah Limpert (Harvey Mudd College class of 2024)
Tensor decomposition models for echocardiogram analysis.

Jaime Pacheco (Harvey Mudd College class of 2024)
Kaczmarz methods for time-varying noise and corruption.
Journal article submitted.

Max Collins (Harvey Mudd College class of 2025)
Concentration and variance of error of randomized iterative methods.
Journal article in preparation.

Anshuman Singh (Harvey Mudd College class of 2026)
Robust perceptron methods for mislabelled data.

Tyler Headley (Harvey Mudd College class of 2026)
Corruption-robust algorithms for nonnegative matrix factorization.

Zane Collins (Harvey Mudd College class of 2027)
Corruption-robust algorithms for nonnegative matrix factorization.

Thesis Students

William Gilroy (HMC class of 2022)
Check Yourself Before You WREK Yourself: Unpacking and Generalizing Randomized Extended Kaczmarz.
Reader: Prof. Heather Zinn-Brooks (HMC)
Attended masters program in math at Cambridge and Ph.D. program at Cornell after gap year.

Claire Chang (HMC class of 2023)
The Sensitivity of a Laplacian Family of Ranking Methods
Reader: Prof. Mike Orrison (HMC)
Received NSF GRFP and attended Ph.D. program in Operations Research at Cornell University upon graduation.

Clinic Groups

Georgia Klein (HMC class of 2024), **Mo Kyn** (HMC class of 2024), **Ryder Mitchell** (Pitzer class of 2022), **Allison Yao** (HMC class of 2024)
Equitable Federal Investments in California's Climate Resilience
Sponsor: Union of Concerned Scientists

Carmen Benitez (HMC class of 2022), **Cindy Lay** (CMC class of 2022), **An Nguyen** (HMC class of 2022), **Kobe Rico** (HMC class of 2022), **Matthew Waddell** (HMC class of 2022)
Semi-automatic Mapping of Medical Data onto Ontologies
Sponsor: Harvard Center for Computational Biomedicine

Service & Leadership

Departmental and College Activities

HMC Mathematics Search Committee member, 2024 - 2025
HMC Data Science Emphasis Committee co-chair, 2023 - 2025
HMC Computing Committee chair, 2023 - 2024
HMC Hixon-Math Search Committee member, 2023 - 2024
HMC Mathematics Department Chair Selection Committee, 2023 - 2024
HMC Academic Affairs Committee member, 2022 - 2023
HMC Mathematics Department Open Search Committee member, 2022 - 2023
HMC Applied Math Club/SIAM Student Chapter faculty advisor, 2022 - 2023
HMC Data Science Emphasis Proposal Team co-lead 2021 - 2023
HMC Math 62 Assessment Team member 2021 - 2022
HMC Mathematics Department IT Analyst Search Committee member, 2021 - 2022
UCLA Mathematics Equity, Diversity, and Inclusion Committee member 2020 - 2021
UC Davis Galois Group Graduate Group in Applied Math (GGAM) representative 2016 - 2017
UC Davis Galois Group Undergraduate Program Committee (UPC) representative 2015 - 2016
UC Davis Student-Run Math/Applied Math seminar (weekly seminar) co-organizer 2015 - 2017
UC Davis CACAO (weekly seminar with topics in convexity, optimization) organizer 2014 - 2015
UC Davis New Graduate Welcome organizer 2014 - 2016
UC Davis Galois Group Graduate Student Association representative 2014 - 2015

Volunteer Activities

Shin Institute Broader Engagement Guided Affinity Group co-leader, SIAM MDS 2024
UCLA Women in Mathematics (WiM) Research Panel co-organizer 2021
UC Davis WISE (Women in Science and Engineering) mentor 2013 - 2015
UC Davis Math Café tutor 2013 - 2015
UC Davis Explore Math coorganizer 2013 - 2015

Professional Activities

ACM ASA MAA SIAM Joint Taskforce on Undergraduate Data Science Curriculum, 2024 -
SIAM Activity Group on Data Science (SIAG-DATA) secretary, Jan. 2024 - Dec. 2025
AWM SIAM Committee, Jan. 2024 - 2025, Chair 2025 - 2026
AWM SIAM Annual Meeting Workshop Organizer, 2025
IPAM "Women in Randomized Numerical Linear Algebra" workshop co-organizer, 2025
SIAM Conf. on the Math. of Data Science (SIAM MDS 2024) organizing committee, Oct. 2024
One World Math. of Information, Data, and Signals (MINDS) Seminar co-organizer, 2022-2023
SIAM Conference on the Mathematics of Data Science "Tensor Methods for Network Data Science" session co-organizer, Sept. 2022
Harvey Mudd College "Tensor Methods and Mathematics" workshop organizer, August 2022

ICCOPT "Tensor Modeling and Optimization" session co-organizer, July 2022
ICCOPT "Randomized Iterative Methods beyond Least-squares" session co-organizer, July 2022
AMS MRC "Sparse (Hyper)Network Science" assistant organizer, June 2022
IAS WAM "Young Researchers Seminar" co-organizer, May 2022
Southern California Applied Mathematics Symposium co-organizer, May 2022
Joint Math Meetings "MAA Session: Establishing Interdisciplinary Collaborations in Teaching and Research" session co-organizer, March 2022 (virtual)
Asilomar Conference on Signals, Systems, and Computers "Algorithms for Data Analytics" session chair, November 2021
Annual Conference on Learning Theory (COLT) program committee member, July 2021
Southern California Applied Mathematics Symposium co-organizer, April 2020 (postponed)
Joint Math Meetings "Special Session on Iterative Methods in Large-Scale Data Analysis" co-organizer, January 2020
Asilomar Conference on Signals, Systems, and Computers "Mathematical Data Science" session co-organizer, November 2019
AMS Central and Western Sections Joint Meeting Special Session "Sparsity, Randomness, and Optimization" co-organizer, March 2019
Joint Math Meetings "Special Session on Geometric and Topological Combinatorics" co-organizer, January 2019
Asilomar Conference on Signals, Systems, and Computers "Sparse Signal Processing" session chair, October 2018
Joint Math Meetings "AMS Applied Mathematics III" Session chair, January 2018

Reviewing and Editing

Editing
Co-editor of topical collection on tensor methods in La Matematica, 2024
Associate Editor, Numerical Algorithms, 2024 - current

Journal Reviewing
Applied Mathematics and Computation (AMC) - 2017
BIT Numerical Mathematics - 2018
Chemometrics and Intelligent Laboratory Systems - 2021
Frontiers in Big Data - 2021
IMA Journal of Numerical Analysis - 2022, 2024
INFORMS Journal on Computing - 2020
Journal of Global Optimization (JOGO) - 2019
Journal of Machine Learning Research (JMLR) - 2021
La Matematica - 2025
Linear Algebra and Its Applications - 2022
Machine Learning - 2020, 2021
Mathematical Programming - 2019, 2020, 2023
Mathematics of Computation - 2020, 2021
MathSciNet - 2023, 2024
Numerical Algorithms - 2023, 2024
Numerical Mathematics: Theory, Methods and Applications (NMTMA) - 2018
SIAM Journal on Imaging Sciences (SIIMS) - 2021
SIAM Journal on Mathematics of Data Science (SIMODS) - 2019
SIAM Journal on Matrix Analysis and Applications (SIMAX) - 2020, 2022, 2023, 2024
SIAM Journal on Scientific Computing (SISC) - 2016, 2018
SIAM Undergraduate Research Online (SIURO) - 2022

Conference Reviewing
Asilomar Conf. on Signals, Systems and Computers - 2020, 2021, 2022, 2023
Conference on Learning Theory (COLT) - 2021, 2022
Integer Programming and Combinatorial Optimization (IPCO) - 2022

International Congress on Industrial and Applied Mathematics (ICIAM) - 2023
Sampling Theory and Applications (SampTA) - 2025
Signal Processing with Adaptive Sparse Structured Representations (SPARS) Workshop - 2019

Other Reviewing
Doctoral committee for Wenjie Gao, Claremont Graduate University – 2024
National Science Foundation (NSF) Panel – 2021, 2022
Doctoral Reviewer for Syed Muhammad Atif (PAFKIET) – 2021

Languages and Skills
English (native), Spanish (beginner)
Matlab, LaTeX, C++, Python, Julia, R, AMPL, Mathematica, Sage

Memberships
American Association of University Women (AAUW) (member since 2016)
American Mathematical Society (AMS) (member since 2013)
Association for Women in Mathematics (AWM) (member since 2013)
Association for Women in Science (AWIS) (member since 2016)
Institute of Electrical and Electronics Engineers (IEEE) (member since 2021)
Institute for Operations Research and the Management Sci. (INFORMS) (member since 2021)
International Linear Algebra Society (ILAS) (member since 2021)
Mathematical Optimization Society (MOS) (member since 2016)
Mathematical Association of America (MAA) (member since 2012)
National Association of Mathematicians (NAM) (member since 2021)
Society for Industrial and Applied Mathematics (SIAM) (member since 2013)
Alpha Sigma Nu Honor Society (member since 2012)