

## Meisam Razaviyayn

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| CONTACT<br>INFORMATION      | E-mail: <a href="mailto:razaviya@usc.edu">razaviya@usc.edu</a><br>Phone: (213) 821-0777   | <a href="#">Homepage</a><br><a href="#">Google scholar profile</a> |
| APPOINTMENTS                | <ul style="list-style-type: none"><li>▷ <b>Google Research (July 2024 – Now)</b>, Part-Time Research Scientist</li><li>▷ <b>Associate Professor (February 2023 – Now)</b><br/><b>Andrew and Erna Viterbi Early Career Chair</b><br/>Daniel J. Epstein Department of Industrial and Systems Engineering, USC<br/>Electrical and Computer Engineering Department (Courtesy Appointment)<br/>Computer Science Department, USC (Courtesy Appointment)<br/>Quantitative And Computational Biology Department (Courtesy Appointment)<br/>USC Machine Learning Center<br/>USC Center for Systems and Control<br/>Optimization for Data-Driven Science (ODDS) Research Group</li><li>▷ <b>Associate Director of the USC-Meta Center for Research and Education in AI and Learning (2021 – Now)</b>. The center, established by a \$4,000,000 grant from Meta, will support AI research and will increase accessibility to AI education.</li><li>▷ <b>Assistant Professor (August 2016 - February 2023)</b><br/>Daniel J. Epstein Department of Industrial and Systems Engineering, USC<br/>Computer Science Department, USC (Courtesy Appointment)<br/>Quantitative And Computational Biology Department (Courtesy Appointment)<br/>Electrical and Computer Engineering Department (Courtesy Appointment)<br/>USC Machine Learning Center<br/>USC Center for Systems and Control<br/>Optimization for Data-Driven Science (ODDS) Research Group</li></ul> |  |
| PROFESSIONAL<br>PREPARATION | <ul style="list-style-type: none"><li>▷ <b>Postdoctoral Research Fellow, Electrical Engineering Department</b> and Stanford Data Science Institute, Stanford University, 2014–2016</li><li>▷ <b>Visiting Scientist, Simons Institute for the Theory of Computing</b>, University of California, Berkeley, Spring 2015</li><li>▷ <b>Ph.D. in Electrical Engineering (Minor in Computer Science)</b>, University of Minnesota, 2014</li><li>▷ <b>M.S. in Electrical Engineering</b>, University of Minnesota, 2013</li><li>▷ <b>M.S. in Mathematics</b>, University of Minnesota, 2013</li><li>▷ <b>B.S. in Electrical Engineering</b>, Isfahan University of Technology, 2008</li></ul>  |  |
| HONORS AND<br>AWARDS        | <ul style="list-style-type: none"><li>▷ National Academy of Engineering, German-American Frontiers of Engineering Symposium Attendee (only 40 engineers from the US was selected by the NAE), 2023</li><li>▷ Northrop Grumman Excellence in Teaching Award, 2022</li><li>▷ NSF CAREER Award, March 2022</li><li>▷ AFOSR Young Investigator Prize Award, November 2021</li><li>▷ 3M's Non-Tenured Faculty Award (NTFA), February 2021</li><li>▷ ICCM Best Paper Award in Mathematics, August 2020</li><li>▷ Best Paper Award in IEEE Data Science Workshop, June 2019</li><li>▷ Finalist of the Best Paper Prize for Young Researcher in Continuous Optimization, 2016.</li><li>▷ IEEE Signal Processing Society Young Author Best Paper Award, December 2014.</li><li>▷ Finalist for Best Paper Prize for Young Researcher in Continuous Optimization, 2013.</li><li>▷ Doctoral Dissertation Fellowship, University of Minnesota, Twin Cities, 2013.</li><li>▷ Paper Shortlisted for Best Student Paper Award, SPAWC 2010.</li><li>▷ Dean's Fellowship, University of Minnesota, 2008–2009.</li><li>▷ Fifth Place in ACM International Collegiate Programming Contest (ICPC), Asia Regional Contest, Tehran, Iran, 2004</li><li>▷ Silver Medal Recipient in 20th National Mathematics Olympiad, Iran, 2003.</li></ul>   |  |

Published more than 100 journal and conference publications in various venues including SIAM J. on Opt., Math Prog., TMLR, IEEE TAC, IEEE TSP, NeurIPS, ICML, ICLR, AISTATS, NAACL, ALT, CDC, ACC, etc; Four patents on optimization algorithms for signal processing; three patents on ML algorithms and architecture design; See [Google Scholar Profile](#) and the [OpenReview Profile](#) for a full list of publications.

### **Resource-Efficient Foundation Models:**

#### *Data and Algorithms for Foundation Models*

- Z. Li, Y. Deng, P. Zhong, M. Razaviyayn, and V. Mirrokni, “PiKE: Adaptive Data Mixing for Multi-Task Learning Under Low Gradient Conflicts,” (**Spotlight, NeurIPS 2025**) [*spotlight acceptance rate: 3%*]
- A. Behrouz, M. Razaviyayn, P. Zhong, V. Mirrokni, “Nested learning: The illusion of deep learning architectures,” (**NeurIPS 2025**)
- Y. Han, M. Razaviyayn, and R. Xu, “Stochastic Control for Fine-tuning Diffusion Models: Optimality, Regularity, and Convergence,” (**ICML 2025**)
- Z. Li, X. Zhang, P. Zhong, Y. Deng, M. Razaviyayn, and V. Mirrokni, “Addax: Utilizing Zeroth-Order Gradients to Improve Memory Efficiency and Performance of SGD for Fine-Tuning Language Models,” (**ICLR 2025**)

#### *Next-Generation Architectures for LLMs*

- Z. Li, A. Behrouz, Y. Deng, P. Kacham, M. Karami, M. Razaviyayn, and V. Mirrokni, “TNT: Improving chunkwise training for test-time memorization” (**ICLR 2026**)
- A. Behrouz, M. Razaviyayn, P. Zhong, and V. Mirrokni, “It’s All Connected: A Journey Through Test-Time Memorization, Attentional Bias, Retention, and Online Optimization,” (**ICLR 2026**)
- A. Behrouz, M. Razaviyayn, P. Zhong, V. Mirrokni, “Nested Learning: The Illusion of Deep Learning Architectures,” (**NeurIPS 2025**)

### **Scalable Responsible AI:**

#### *Privacy*

- D. Nguyen, Z. Li, M. Bateni, V. Mirrokni, M. Razaviyayn, and B. Mirzasoleiman, “Synthetic text generation for training large language models via gradient matching,” International Conference on Machine Learning (**ICML 2025**)
- A. Lowy & M. Razaviyayn “Private Stochastic Optimization With Large Worst-Case Lipschitz Parameter,” (**Journal of Privacy and Confidentiality 2025**)
- D. Gupta, M. Razaviyayn, and V. Sharan, “On the Inherent Privacy of Zeroth-Order Projected Gradient Descent,” (**AISTATS 2025**)
- X. Zhang, Z. Bu, B. Balle, M. Hong, M. Razaviyayn, V. Mirrokni “Disk: Differentially private optimizer with simplified Kalman filter for noise reduction,” (**ICLR 2025**)
- X. Zhang, Z. Bu, M. Hong, and M. Razaviyayn, “DOPPLER: Differentially Private Optimizers with Low-pass Filter for Privacy Noise Reduction,” (**NeurIPS 2024**)
- A. Lowy, Z. Li, T. Huang, and M. Razaviyayn, “Optimal Differentially Private Learning with Public Data,” International Conference on Machine Learning, (**ICML 2024**)  
It also appeared in *Theory and Practice of Differential Privacy*, 2023
- J. Flemings, M. Razaviyayn, and M. Annavaram, “Differentially Private Next-Token Prediction of Large Language Models,” (**NAACL 2024**)
- A. Lowy and M. Razaviyayn, “Private Federated Learning Without a Trusted Server: Optimal Algorithms for Convex Losses,” (**ICLR 2023**)  
It also appeared in *ICML workshop on the Theory and Practice of Differential Privacy*
- A. Lowy, D. Gupta, and M. Razaviyayn “Private Federated Learning Without a Trusted Server: Optimal Algorithms for Convex Losses,” (**ICLR 2023**)  
It was also selected as an **oral presentation** in the 2022 NeurIPS workshop on Algorithmic Fairness through the Lens of Causality and Privacy (AFCP)
- A. Lowy A. Ghafelebashi, and M. Razaviyayn, “Private non-convex federated learning without a trusted server,” (**AISTATS 2023**)

It also appeared in the 2022 ICML Workshop on Theory and Practice of Differential Privacy

- A. Lowy and M. Razaviyayn. “Private Stochastic Optimization in the Presence of Outliers: Optimal Rates for (Non-Smooth) Convex Losses and Extension to Non-Convex Losses,” (**ALT 2023**). It also appeared in NeurIPS 2022 workshop on Optimization for ML

#### *Fairness*

- S. Baharlouei, S. Patel, and M. Razaviyayn “*f*-FERM: A Scalable Framework for Robust Fair Empirical Risk Minimization,” (**ICLR 2024**)  
It also appeared in NeurIPS 2023 Workshop on the Optimization for Machine Learning
- A. Lowy, D. Gupta, and M. Razaviyayn “Stochastic Differentially Private and Fair Learning,” (**ICLR 2023**). It was also selected for **oral presentation** in the NeurIPS 2022 Workshop on Algorithmic Fairness through the Lens of Causality and Privacy
- A. Lowy, S. Baharlouei, R. Pavan, M. Razaviyayn, and A. Beirami. “FERMI: Fair Empirical Risk Minimization via Exponential Rényi Mutual Information,” (**TMLR 2022**). It also appeared in the ICML Workshop on Socially Responsible Machine Learning
- S. Baharlouei, M. Nouiehed, A. Beirami, and M. Razaviyayn, “Rényi Fair Inference,” (**ICLR 2020**)

#### *Robustness*

- S. Baharlouei, K. Ogodu, S.-Z. Suen, and M. Razaviyayn. “RIFLE: Robust Inference from Low Order Marginals,” (**TMLR 2023**). It was also **selected for oral presentation** in the ICML 2023 workshop on Duality Principles for Modern Machine Learning.
- S. Baharlouei, F. Sheikholeslami, M. Razaviyayn, and Z. Kolter. “Improving Adversarial Robustness via Joint Classification and Multiple Explicit Detection Classes,” (**AISTATS 2023**) Also appeared in the ICML Workshop on Formal Verification of ML
- T. Huang, S. A. Halbe, C. Sankar, P. Amini, S. Kottur, A. Geramifard, M. Razaviyayn, A. Beirami. “Robustness through Data Augmentation Loss Consistency,” (**TMLR 2022**). It also appeared in the ICML Uncertainty and Robustness in Deep Learning Workshop
- M. Nouiehed, M. Sanjabi, T. Huang, J. D. Lee, and M. Razaviyayn “Solving a Class of Non-Convex Min-Max Games Using Iterative First Order Methods,” (**NeurIPS 2019**)
- M. Sanjabi, J. Ba, M. Razaviyayn, M., and J. D. Lee, “On the Convergence and Robustness of Training GANs with Regularized Optimal Transport,” (**NeurIPS 2018**)
- M. Razaviyayn, F. Farnia, and D. Tse, “Discrete Rényi Classifiers,” (**NeurIPS 2015**)

#### *Explainability*

- D. Lundstrom and M. Razaviyayn, “Four Axiomatic Characterizations of the Integrated Gradients Attribution Method,” (**JMLR 2025**)
- D. Lundstrom, A. Ghafelebashi, and M. Razaviyayn, “A Unifying Framework to the Analysis of Interaction Methods using Synergy Functions,” (**ICML 2023**). It was also selected as an *oral presentation* in the 2023 ICML workshop on Interpretable ML in Healthcare
- D. Lundstrom, T. Huang, and M. Razaviyayn, “A rigorous study of integrated gradients method and extensions to internal neuron attributions,” (**ICML 2022**)

### **Optimization, Control and RL for Machine Learning:**

#### *Control and RL for ML and Optimization*

- Y. Han, M. Razaviyayn, and R. Xu “Policy gradient converges to the globally optimal policy for nearly linear-quadratic regulators,” SIAM J. Cont. & Opt. (**SICON 2025**)
- Y. Han, M. Razaviyayn, and R. Xu “Stochastic Control for Fine-tuning Diffusion Models: Optimality, Regularity, and Convergence,” (**ICML 2025**)
- H. Mohammadi, M. Razaviyayn, M. R. Jovanović “Tradeoffs between convergence rate and noise amplification for momentum-based accelerated optimization algorithms,” (**IEEE Transac. on Automatic Control 2024**)
- Y. Han, M. Razaviyayn, & R. Xu, “Stochastic Control for Fine-tuning Diffusion Models: Optimality, Regularity, and Convergence,” (**ICML 2025**)

#### *Distributed Optimization and Federated Learning*

- A. Lowy and M. Razaviyayn, “Private Federated Learning Without a Trusted Server: Optimal Algorithms for Convex Losses,” (**ICLR 2023**)
- A. Lowy A. Ghafelebashi, and M. Razaviyayn, “Private non-convex federated learning without a trusted server.” (**AISTATS 2023**)
- S. Lu, J. D. Lee, M. Razaviyayn, and M. Hong “Linearized ADMM Converges to Second-Order Stationary Points for Non-Convex Problems,” (**IEEE-TSP 2021**)
- S. Lu, M. Razaviyayn, B. Yang, K. Huang, M. Hong, “SNAP: Finding Approximate Second-Order Stationary Solutions Efficiently for Non-convex Linearly Constrained Problems,” **Spotlight Presentation in NeurIPS 2020** [spotlight acceptance rate: 3%]
- M. Hong, J. Lee, M. Razaviyayn, J. D. Lee, “Gradient Primal-Dual Algorithm Converges to Second-Order Stationary Solution for Nonconvex Distributed Optimization Over Networks,” International Conference on Machine Learning (**ICML 2018**)
- Q. Shi, H. Sun, S. Lu, M. Hong, and M. Razaviyayn, “Inexact block coordinate descent methods for symmetric nonnegative matrix factorization,” (**IEEE-TSP 2017**)
- M. Razaviyayn, M. Hong, Z.-Q. Luo, and J.-S. Pang, “A Unified Algorithmic Framework for Block-Structured Optimization Involving Big Data,” (**IEEE-TSP 2016**)
- M. Hong, Z.-Q. Luo, and M. Razaviyayn “Convergence Analysis of Alternating Direction Method of Multipliers for a Family of Nonconvex Problems”, (**SIOPT 2016**)
- M. Razaviyayn, M. Hong, Z.-Q. Luo, and J.-S. Pang, “Parallel Successive Convex Approximation for Nonsmooth Nonconvex Optimization,” (**NeurIPS 2014**)

#### *Optimization for Efficient Inference*

- T. Huang\*, P. Singhanian\*, M. Sanjabi, P. Mitra, and M. Razaviyayn, “Alternating Direction Method of Multipliers for Quantization,” International Conference on Artificial Intelligence and Statistics (**AISTATS 2021**)

#### *Min-Max Optimization and Adversarial Learning*

- Z. Wang, K. Balasubramanian, S. Ma, and M. Razaviyayn. “Zeroth-Order Algorithms for Stochastic Nonconvex Minimax Problems with Improved Complexities,” Journal of Global Optimization, (**JOGO 2023**)
- D. Ostrovskii, A. Lowy, and M. Razaviyayn. “Efficient search of first-order Nash equilibria in nonconvex-concave smooth min-max problems,” (**SIOPT 2021**)
- M. Razaviyayn, S. Lu, M. Nouiehed, T. Huang, M. Sanjabi, and M. Hong, “Non-convex Min-Max Optimization: Applications, Challenges, and Recent Theoretical Advances,” IEEE Signal Processing Magazine, (**IEEE-TSP 2020**)
- B. Barazandeh\*, M. Sanjabi\*, and M. Razaviyayn, “Training Generative Adversarial Networks Using Randomly Generated Discriminators,” IEEE Data Science Workshop [**Best Paper Award in IEEE-DSW 2019**]

#### *Landscape Analysis*

- M. Nouiehed and Meisam Razaviyayn. “Learning deep models: Critical points and local openness.” INFORMS Journal on Optimization, 2022.
- M. Nouiehed\* and M. Razaviyayn, “Learning Deep Models: Critical Points and Local Openness,” International Conference on Learning Representations (**ICLR 2018**)

#### SYNERGISTIC ACTIVITIES & SERVICE

- ▷ **Associate Director of the USC-Meta Center for Research and Education in AI and Learning (2022-Now):** Led 20+ research projects in USC related to the center; Co-organized three research workshops/meetings with the participation from academia and industry; covered 50+ top-off fellowships to incoming PhD students at the ISE and ECE departments; Offered 10+ fellowships (fully covering tuition costs) to the incoming Masters students in the Viterbi School of Engineering; Funded 20+ undergraduate students in the USC SURE program; Funded 10+ high school students in the USC SHINE program.
- ▷ **Conference Chair:** International Conference on Continuous Optimization 2025 (General Conference Chair); Uncertainty in Artificial Intelligence 2024 (Workshop Chair),
- ▷ **Organizing Committee:** Conference on Non-convex Statistical Learning 2017, Respon-

sible AI Workshop in ICLR 2021

- ▷ **Area Editor:** The Journal of Optimization Theory and Applications; responsibility: assign the submissions to the associate editors and supervise the decisions (2024-2025)
- ▷ **Associate Editor:** IEEE Transactions on Signal Processing (April 2022-March 2024), SIAM Journal on Optimization (January 1, 2025-December 31, 2027)
- ▷ **Action Editor:** Transactions on Machine Learning Research; Responsibility: assign the papers to reviewers and recommend acceptance/revision/rejection decision (2024-2027)
- ▷ **Senior Area Chair:** AISTATS 2026
- ▷ **Area Chair:** The International Conf. on Artificial Intelligence and Statistics (AISTATS 2022, 2023, 2024, 2025); Neural Information Processing Systems (NeurIPS 2021, 2022, 2023, 2024, 2025); International Conference on Machine Learning (ICML 2021, 2023, 2024, 2025, 2026), International Conference on Learning Representation (ICLR 2026), Conference on Uncertainty in Artificial Intelligence (UAI 2023).
- ▷ **NSF Panels Served:** Directorate for Engineering (ENG) in 2018; Directorate for Computer & Information Science & Engineering (CISE) in 2018, 2020, 2021, 2022, 2024
- ▷ **AFOSR Grant Reviewer** for the Math Programming topic, 2021, 2023, 2025
- ▷ **Journal and Conference Reviewer:** Reviewer for 30+ top-tier Journals and Conferences in the areas of Optimization and Machine Learning.

#### FUNDED PROJECTS

- ▷ Gift from **Google**, “JAX AI Stack Research Award”; *PI: Meisam Razaviyayn*, 2025-2027.
- ▷ Funded by **Epstein Family Foundation**; Part of Epstein Breakthrough Alzheimer’s Research Fund, Period: 2025-2026.
- ▷ Funded by **AFOSR** “International Conference on Continuous Optimization”; *Lead PI: J.S. Pang*, 2025-2026.
- ▷ Gift from **Amazon**: “Differential Private (DP) Foundational Model Pretraining,” PI, Period: 2025–2026.
- ▷ **USC Office of Research and Innovation: Generative AI Research Award**: “Making Generative AI Accessible: Efficient Training and Fine-Tuning with Resource-Aware Algorithms,” PI, Period: 2025–2026.
- ▷ Funded by **NSF**: “International Conference on Continuous Optimization,” PI, Period: 2025–2025.
- ▷ Funded by the **NSF NRT Program**: “NRT-AI: Integrating Artificial Intelligence and Operations Research Technologies,” Co-PI, Period: 2024–2029.
- ▷ **NSF CAREER Award**: “CAREER: Foundations of Scalable Nonconvex Min-Max Optimization,” Sole-PI, Period: 2022-2026.
- ▷ Funded by **Meta**: “USC-Meta Center for Research and Education in AI and Learning,” Multi-PI (Responsible for half of the spending), Period: 2022-2026.
- ▷ **USC’s Zumberge Collaborative Research Planning Award**: “Engineering Accessible Tools for Redesigning Postpartum Care,” Co-PI, Period: 2023-2025.
- ▷ Funded by the **Ming Hsieh Institute for Research on Engineering-Medicine for Cancer**: “Integrated Sensors for Accessible and Timely Diagnosis of Gynecological Cancers,” Co-PI, Period: 2024-2025.
- ▷ **President’s Sustainability Initiative Award**: “Sustaining a Healthy Population Through Early Detection and Frequent Monitoring: A One-Stop Green Fabrication of Versatile Affordable Diagnostics,” Co-PI, Period: 2024-2025.
- ▷ Funded by **Pacific Southwest Region 9 University Transportation Center**: “Enhancing Traffic Flow through Private Data Sharing and Incentivizing New Mobility Ser-

vices,” Lead-PI, Period: 2024–2025.

- ▷ **AFOSR Young Investigator Award:** “Finding Higher-order Stationary Points of Non-convex Optimization Problems in Multi-agent, Uncertain and Adversarial Environments,” Sole-PI, Period: 2022–2024.
- ▷ Funded by **Google Research:** “Private Learning With Public Data: From Theory to Practice and Back,” Sole PI, Period: 2023-2024.
- ▷ Funded by **Meta Platforms:** “Privacy Capabilities for User Data in Feature Engineering,” Multi-PIs (Own share 75K), Period: 2023-2024.
- ▷ Funded by **3M NTFA Award:** “Robust and Reliable Machine Learning in the Presence of Environmental Uncertainties,” Sole-PI, Period: 2021– 2024.
- ▷ Funded by **Amazon:** “Fair Federated Learning With Private Access to Sensitive Features,” Sole-PI, the USC–Amazon Center; Period: 2022–2023.
- ▷ **Zumberge Research Coordination & Team Building (RCTB) Award, USC:** “Re-designing Diagnosis and Treatment of Mental Health Disorders,” Co-PI, Period: 2022-2023.
- ▷ Funded by the **NIH:** “Robust Inference in the Presence of Data Heterogeneity and Missing Data in Health Datasets,” Lead PI, Period: 2019-2023.
- ▷ Funded by the **National Center for Sustainable Transportation:** “Incentive Systems for New Mobility Services,” Lead-PI, Period: 2021-2021.
- ▷ **Provost Strategies Research Award, USC:** “Towards Pandemic Preparedness: Development of Robust Platform Diagnostics for Rapid Point-of-Care Detection of Pathogen,” Co-PI, Period: 2021-2022.
- ▷ Funded by the **Seed Funding, Center for Sustainability, USC:** “An Inexpensive Portable Ion Sensing Platform for Sustainable Agriculture and Sustainable Healthcare,” Co-PI, Period: 2020-2021.
- ▷ Funded by the **NCST:** “Congestion Reduction via Personalized Incentives” and “Incentive Systems for New Mobility Services,” Sole-PI, Period: 2020 - 2021.
- ▷ Funded by the **National Center for Sustainable Transportation:** “Congestion Reduction via Personalized Incentives,” Lead-PI, Period: 2020-2020.