

## Parikshit Ram

Principal Research Staff Member  
Mathematics & Theoretical Computer Science  
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## Education & Training

Georgia Institute of Technology	Atlanta, GA	Computer Science	Ph.D., 2013
Georgia Institute of Technology	Atlanta, GA	Optimization	Minor, 2013
Indian Institute of Technology	Kharagpur, India	Mathematics & Computing	M.Sc., 2007
Indian Institute of Technology	Kharagpur, India	Mathematics & Computing	B.Sc., 2006

## Research & Professional Experience

2018 – present	Principal Research Staff Member, IBM Research
2017 – 2018	Principal Product Architect, Infosys Ltd
2015 – 2017	Senior Staff Research Scientist, Skytree Inc
2013 – 2015	Member of Technical Staff, Skytree Inc

## Research Interests

Optimization, Automated Machine Learning & Data Science, Large Scale Learning, Computational Geometry, Efficient All-Pairs Algorithms & Analysis.

## Selected Publications (see full list [here](#))

- . Jia, J., Liu, J., **Ram, P.**, ao, Y., Liu, G., Liu, Y., Sharma, P., Liu, S. (2023). Model Sparsity can Simplify Machine Unlearning. *Advances in Neural Information Processing Systems*.
- . Saha, B., Krotov, D., Zaki, M. J., **Ram, P.** (2023). End-to-end Differentiable Clustering with Associative Memories. *International Conference on Machine Learning*.
- . Gu, A., Lu, S., **Ram, P.**, Weng, T.-W. (2023). Min-max Bilevel Multi-objective Optimization With Applications In Machine Learning. *International Conference on Learning Representations*.
- . Zhou, Y., **Ram, P.**, Salonidis, T., Baracaldo, N., Samulowitz, H., Ludwig, H. (2023). Single-shot General Hyperparameter Optimization for Federated Learning. *International Conference on Learning Representations*.
- . Zhang, Y., Yao, Y., **Ram, P.**, Hong, M., Varshney, K., Liu, S. (2022). Advancing Model Pruning via Bilevel Optimization. *Advances in Neural Information Processing Systems*.
- . Teng, Y., Choromanska, A., Campbell, M., Lu, S., **Ram, P.**, Horesh, L. (2022). Overcoming Catastrophic Forgetting via Direction-Constrained Optimization. *European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases*.
- . **Ram, P.**, and Sinha, K. (2022). Federated Nearest Neighbor Classification with a Colony of Fruit-flies. *Proceedings of the AAAI Conference on Artificial Intelligence*.
- . Liu, S., **Ram, P.**, Vijaykeerthy, D., Bouneffouf, D., Bramble, G., Samulowitz, H., Wang, D., Conn, A., Gray, A. (2020). An ADMM based framework for AutoML pipeline configuration. *Proceedings of the AAAI Conference on Artificial Intelligence*.
- . **Ram, P.**, and Sinha, K. (2019). Revisiting kd-tree for Nearest Neighbor Search. *ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*.
- . Curtin, R. R., Cline, J. R., Slagle, N. P., March, W. B., **Ram, P.**, Mehta, N. A., and Gray, A. G. (2013). MLPACK: A scalable C++ machine learning library. *Journal of Machine Learning Research*
- . Curtin, R. R., **Ram, P.**, and Gray, A. G. (2013). Fast Exact Max-kernel Search. *SIAM International Conference on Data Mining*.
- . **Ram, P.** and Gray, A. G. (2012). Maximum Inner-Product Search using Cone Trees. *ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*.
- . **Ram, P.** and Gray, A. G. (2011). Density Estimation Trees. *ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*.
- . March, W. B., **Ram, P.**, and Gray, A. G. (2010). Fast Euclidean Minimum Spanning Tree: Algorithm, Analysis, and Applications. *ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*.
- . **Ram, P.**, Lee, D., March, W., and Gray, A. (2009). Linear-time Algorithms for Pairwise Statistical Problems. *Advances in Neural Information Processing Systems*.

## Recognition

- IBM Invention Plateau 5, January 2024.
- IBM Research 2023 Accomplishment for *Neurobiologically Inspired Foundation Models*.
- NeurIPS 2023 Top Reviewer.
- TMLR 2023 [Expert Reviewer](#).
- IBM Research 2022 Accomplishment for *Federated Learning Security & Privacy*.
- NeurIPS 2022 Top Reviewer.
- IBM Invention Plateau 4, November 2023.
- ICML 2022 Top Reviewer.
- IBM Invention Plateau 3, January 2023.
- IBM Invention Plateau 2, January 2021.
- IBM Research 2020 Pat Goldberg Best Paper Finalist for *An ADMM based Framework for AutoML Pipeline Configuration*.
- IBM Research 2020 Accomplishment for *AutoAI: The Next Level*.
- NeurIPS 2020 Top Reviewer.
- IBM Invention Plateau 1, May 2020.
- IBM Research 2019 Accomplishment for *Towards Automating AI Lifecycle with AutoAI*.
- SIAM Data Mining 2013 Best Paper Finalist for *Fast Exact Max-Kernel Search*.

## Service

- Organizer, NeurIPS 2023 Workshop on [Associative Memory and Hopfield Networks](#).
- Senior PC member AAAI 2024.
- Office-hours, ICLR 2023.
- Regular PC member for top AI/ML conferences NeurIPS, ICML, AISTATS, ICLR, UAI, KDD.

## Invited Talks

- Robust Multi-objective Bilevel Optimization With Applications In Machine Learning, **INFORMS 2022** session on *Bilevel Stochastic Methods for Optimization and Learning*.
- Density Estimation Trees, **SIAM Uncertainty Quantification 2014 (UQ14)** mini-symposium on *Non-parametric Density Estimation*.
- Max-kernel Search: How to search for just about anything?, **MLConf Atlanta 2014**. [\[video\]](#)

## Teaching

- Bilevel Optimization at the [Polyhedra and Combinatorial Optimization Days 2023 \(JPOC13\) summer school on Combinatorial Optimization & Machine Learning](#).
- Compositional Generalization at the [Neuro-Symbolic Summer School 2023](#).
- Teaching Assistant, *Data and Visual Analytics (Spring 2011, 2013)*, Georgia Tech.

## Research Grants

- Co-PI, *FIT: Fast Inference using Transformer Models*, RPI-IBM Future of Computing Research Collaboration Program, 2024
- Co-PI, *Data Distillation in Tabular Data: A Foundation Model Approach*, RPI-IBM Future of Computing Research Collaboration Program, 2024
- Co-PI, *A Framework for Automating Decentralized Training of Foundation Models*, RPI-IBM AI Research Collaboration Program, 2023
- Co-PI, *AutoDML: A Framework for Automating Decentralized Machine Learning*, RPI-IBM AI Research Collaboration Program, 2022

## **Mentorship**

Summer interns at IBM

- Inwon Kang (RPI) 2023
- Momin Abbas (RPI) 2023
- Bishwajit Saha (RPI) 2022, 2023
- Xinying Qi (RPI) 2022, 2023
- Lucky Yerimah (RPI) 2021

Undergraduate researchers at MIT-IBM

- Alex Gu (MIT) 2021