Parikshit Ram
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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.
- Regular PC member for top AI/ML conferences NeurIPS, ICML, AISTATS, ICLR, UAI, KDD.

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