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.

Patents & Publications – Recent and Selected

- Gu, A., Lu, S., **Ram, P.**, Weng, T.-W. (2023). Min-max Bilevel Multi-objective Optimization With Applications In Machine Learning. To appear in *International Conference on Learning Representations*.
- Zhang, Y., Sharma, P., **Ram, P.**, Hong, M., Varshney, K., Liu, S. (2023). What is Missing in IRM Training and Evaluation: Challenges and Solutions. To appear in *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. To appear in *International Conference on Learning Representations*.
- Weidele, D., **Ram, P.**, Wang, D., Valente, A., Chaudhary, A. (2023). Conditional Parallel Coordinates in Automated Artificial Intelligence with Constraints. US Patent 11,556,816.
- Zhang, Y., Yao, Y., **Ram, P.**, Hong, M., Varshney, K., Liu, S. (2022). Advancing Model Pruning via Bilevel Optimization. In *Advances in Neural Information Processing Systems*.
- Gu, A., Lu, S., **Ram, P.**, Weng, T.-W. (2022). Robust Multi-objective Bilevel Optimization With Applications In Machine Learning. *INFORMS Annual Meeting (Session: Bilevel Stochastic Methods for Optimization and Learning)*.
- Teng, Y., Choromanska, A., Campbell, M., Lu, S., **Ram, P.**, Horesh, L. (2022). Overcoming Catastrophic Forgetting via Direction-Constrained Optimization. In *European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases*.
- **Ram, P.** (2022) On the Optimality Gap of Warm-Started Hyperparameter Optimization. In *International Conference on Automated Machine Learning*.
- Zhao, P., **Ram, P.**, Lu, S., Yao, Y., Bouneffouf, D., Lin, X., Liu, S. (2022). Learning to Generate Image Source-Agnostic Universal Adversarial Perturbations. In *International Joint 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. In *Proceedings of the AAAI Conference on Artificial Intelligence*.
- Wang, D., Weisz, J. D., Muller, M., **Ram, P.**, Geyer, W., Dugan, C., Tausczik, Y., Samulowitz, H., and Gray, A. (2019). Human-AI collaboration in data science: Exploring data scientists' perceptions of Automated AI. *Proceedings of the ACM on Human-Computer Interaction (CSCW)*.
- **Ram, P.**, and Sinha, K. (2019). Revisiting kd-tree for Nearest Neighbor Search. In ACM SIGKDD International Conference on Knowledge Discovery and Data Mining.
- Gibiansky, M., Riegel, R., Yang, Y., **Ram, P.**, Gray, A. (2016). Configurable Machine Learning Method Selection and Parameter Optimization System and Method. US Patent App. 14/883,522.
- 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. In *SIAM International Conference on Data Mining*.

. **Ram, P.** and Gray, A. G. (2012). Maximum Inner-Product Search using Cone Trees. In *ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*.

. Koenigstein, N., **Ram, P.**, Shavitt, Y. (2012). Efficient Retrieval of Recommendations in a Matrix Factorization Framework. In *ACM International Conference on Information and Knowledge Management*.

. **Ram, P.** and Gray, A. G. (2011). Density Estimation Trees. In *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. In *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*.

Service & Recognition

- IBM Research 2022 Accomplishment for *Federated Learning Security & Privacy*
- NeurIPS 2022 Top Reviewer
- IBM Invention Plateau, November 2022
- ICML 2022 Top Reviewer
- IBM Invention Plateau, January 2022
- IBM Invention Plateau, 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, 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*
- Regular reviewer for top AI/ML conferences NeurIPS, ICML, AISTATS, ICLR, UAI, KDD.