Mirabel Reid

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EDUCATION

Georgia Institute of Technology, *Atlanta, GA, USA*   Sep 2020-Present
Pursuing PhD in Computer Science   GPA: 3.91
University of Pittsburgh, *Pittsburgh, PA, USA*
Bachelor of Science   Sep 2016-April 2020
Double Major in Computer Science, Mathematics   GPA: 4.0

RESEARCH INTERESTS

- Mathematically tractable models for neural computation.
- Cognitive abilities of Large Language Models (LLMs).
- Interplay between machine and human learning and computation.

WORK EXPERIENCE

Max Planck Institute for Intelligent Systems   *Tübingen, DE*
Research Intern   May 2023-Aug 2023

- Devised a model of online human/AI expert systems under budget constraints.
- Simulated the model in **Python** on real and artificial Human/AI performance data.

Los Alamos National Laboratory   *Los Alamos, NM, USA*
Research Intern   May 2022-Oct 2022

- Researched improvements for Machine Learning workflows for scientific applications.
- Built a metadata visualization platform in **Python** in collaboration with domain scientists.
- Built a database backend in **SQL** to support visual training data selection.

Software Engineering Institute   *Pittsburgh, PA, USA*
Intern: Emerging Technology Center, Software Solutions Division   Jan 2020-Aug 2020

- Investigated novel applications of Graph Neural Networks for software development
- Implemented machine learning solutions in **PyTorch** and **ROS**

Georgia Tech   *Atlanta, GA, USA*
Civic Data Science Intern   May 2019-Aug 2019

- Collaborated with city officials and research faculty to analyze the impact of federal housing policies in the city of Albany, Georgia.
- Created a research-grade database by connecting disparate civic data sources with **Python** and **SQL**

University of Pittsburgh   *Pittsburgh, PA, USA*
Research Assistant   Jan 2017-Dec 2019

- Researched a mathematical model for common properties of natural transportation networks.
- Built algorithms in **MATLAB** and **C++** to automatically process Digital Elevation Models

HONORS/AWARDS

Georgia Tech ARC-ACO Fellowship	Nov 2023
ARC Triad Research Fellowship	Nov 2021
Georgia Tech Presidential Fellowship	Apr 2020
Culver Award (Achievement in Mathematics)	Apr 2020
Brackenridge Research Fellowship	May 2018

PUBLICATIONS

Reid, M., & Vempala, S. S. (2024). Does GPT Really Get It? A Hierarchical Scale to Quantify Human vs AI's Understanding of Algorithms. Accepted at AAAI 2025, Oral Presentation. *arXiv preprint arXiv:2406.14722.*

Reid, M., Sühr, T., Vernade, C., and Samadi, S. (2024) "Online Decision Deferral under Budget Constraints", *arXiv preprint arXiv:2409.20489*

Reid, M. & Vempala, S. S. (2023). The k -Cap Process on Geometric Random Graphs. In *The Thirty Sixth Annual Conference on Learning Theory* (pp. 3469-3509). PMLR.

Reid, M., Sweeney, C., and Korobkin, O. (2024) "Improving Radiography Machine Learning Workflows via Metadata Management for Training Data Selection", *arXiv preprint arXiv:2408.12655*

PRESENTATIONS

"Does GPT Really Get It? A Hierarchical Scale to Quantify Human vs AI's Understanding of Algorithms".
- Poster Presentation, Workshop on Behavioral ML at NeurIPS 2024.
- Lightning Talk, Simons Institute Workshop on Understanding Higher-Level Intelligence 2024.

"Assemblies and the k-Cap Process: The Effects of Locality on Neural Firing Dynamics", Poster presentation, Computational and Systems Neuroscience (COSYNE) 2023

"Convergence of the k-cap Process on Graphs with Weight Reciprocity", Poster presentation, INFORMS Applied Probability Society Meeting 2023.

"The k-Cap Process on Geometric Random Graphs", Poster presentation, Mathematical and Scientific Foundations of Deep Learning Annual Meeting 2022

TEACHING
- *Fall 2023* Teaching Assistant for Advanced Algorithms
- *Fall 2021* Teaching Assistant for the Introduction to Graduate Algorithms
- *Spring 2019* Teaching Assistant for Discrete Mathematics