

Thomas Randall

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ABOUT ME:

I am a Graduate Research Assistant and PhD Candidate at Clemson University in the School of Computing (Go Tigers!). My research focuses on performance optimization and autotuning for High Performance Computing (HPC) workloads and applications, especially with GPUs. I am working towards my PhD dissertation at Clemson and have published research with scientists at Argonne and Oak Ridge National Laboratories. You can also regularly meet me in person at the SuperComputing conference -- for 2024 we will be in Atlanta, GA! My long-term career aspirations are to work as a Computer Scientist in the DoE National Labs and to continue serving the community at SuperComputing and other prestigious conferences in the field.

DISSERTATION SUBJECT: Transferable Performance Optimization for HPC

Everyone knows performance matters, but at large scales and with novel hardware, maximizing performance can be a difficult and costly endeavor. My research broadly focuses on maximizing performance of leadership HPC systems with common accelerator hardware. These efforts include application-specific tuning to best utilize available hardware and transferable black-box performance tuning that permits efficient reuse of information.

TOP RESEARCH INTERESTS:

- 1) High Performance Computing / Heterogeneous Computing
- 2) Performance Autotuning AKA Parameter Search
- 3) Computer and System Architecture
- 4) Machine Learning Applications: Natural Language Processing and Graph Neural Networks

RESEARCH PUBLICATIONS:

[ICS'23] Thomas Randall, Jaehoon Koo, Brice Videau, Michael Kruse, Xingfu Wu, Paul Hovland, Mary Hall, Rong Ge and Prasanna Balaprakash, "Transfer-Learning-Based Autotuning Using Gaussian Copula", In Proceedings of the 2023 International Conference on Supercomputing (ICS '23)

[Best Paper ICS'21] Thomas Randall, Tyler Allen, and Rong Ge, "FULL-W2V: Fully Exploiting Data Reuse for W2V on GPU-Accelerated Systems", In Proceedings of the 2021 International Conference on Supercomputing (ICS '21)

INVITED TALKS AND FEATURED COVERAGE:

Argonne National Lab CS Seminar Series	Summer 2023
Invited Presenter	Lemont, IL
I Am HPC	Spring 2023
https://sc23.supercomputing.org/2023/05/hpc-on-the-rise-thomas-randall/	Online
Ask A Grad	Fall 2022
School of Computing Graduate Student Association and Upsilon Pi Epsilon Panelist	Clemson, SC

EDUCATION AND AWARDS:

Entered PhD Program at Clemson University	August 2019
Bachelor of Science (Computer Science)	May 2019
Minor in Business Administration	Major GPA: 3.93/4.00
Clemson University	Clemson, SC
ANL GIVENS Scholar	Summer 2020, Summer 2021, Summer 2023
ICS'21 Best Paper	Summer 2021
Clemson School of Computing Outstanding Undergraduate Researcher	Summer 2019
Dupont Best Undergraduate Project	Summer 2019
Clemson University Graduate Fellow	Fall 2019 – Spring 2022 (Full Term)

LEADERSHIP AND TEACHING EXPERIENCE:

Lead Student Volunteer, Guided Interest Group Leader, HPC Immersion Mentor
SuperComputing'23

Fall 2023
Denver, CO

- * Jointly organized conference Panels and Birds of a Feather with conference's committee members
- * Oversaw 100+ volunteers facilitating conference events
- * Organized and engaged new students at the conference through cohort events and discussions

Student Volunteer, Virtual Student Volunteer (2020)
SuperComputing'20, SuperComputing'21, SuperComputing'22

Fall 2020, Fall 2021, Fall 2022
Online; St. Louis, MO; Dallas, TX

- * Moderated discussions at panels and presentations
- * Facilitated conference events and presentations

Graduate Teaching Assistant
Clemson University, School of Computing

Fall 2019 – Spring 2023
Clemson, SC

- * Graded 30-100+ students each semester
- * Prepared novel assignments, projects and homework for courses
- * Aided students in office hours with course materials and concepts
- * Spring 2023: Developed new course for Clemson University with Assistant Professor Dr. Mert Pesé

Laboratory Teaching Assistant
Clemson University, School of Computing

Spring 2017 – Spring 2019
Clemson, SC

- * Prepared and introduced laboratory assignments and course projects for students
- * Aided students with laboratory content and course concepts, including office hours
- * Graded laboratory assignments for up to 30 students