Thomas Randall, PhD Computer Science

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https://tlranda.github.io

EDUCATION:

PhD Computer Science — August 2019 – May 2025
Clemson University — Clemson, SC

Bachelor of Science in Computer Science — May 2019
Minor in Business Administration — Major GPA: 3.93/4.00
Clemson University — Clemson, SC

PhD: A Systemic Approach to Maximize Heterogeneous System Performance

My dissertation is advised by Dr. Rong Ge and focuses on high performance computing optimizations across hardware, software and automatic performance tuning methods, with a special focus in GPGPU workloads. The work provides insights into novel cooling technologies for accelerated clusters, highly effective knowledge transfer for optimizations and maximally effective uses of GPU technology in software applications.

TOP RESEARCH INTERESTS:

1. High Performance Computing / GPU Computing
2. Performance Autotuning / Parameter Search
3. Computer and System Architecture
4. Systems for Machine Learning: Natural Language Processing, Bayesian Optimization, Large Language Models

RESEARCH PUBLICATIONS:

[In Preparation] Guoxi Liu, Thomas Randall, Rong Ge and Federico Iuricich, “Efficient Heterogeneous Coordination for Mesh Data Processing”

[In Preparation] Thomas Randall, Guoxi Liu, Federico Iuricich and Rong Ge, “Vector-Parallel Tetrahedral Mesh Processing for GPUs”

[In Preparation] Arafat Hossain, Thomas Randall, Akash Dutta, Xingfu Wu, Rong Ge, and Ali Jannesari “Accelerating Transfer-Learning-Based Autotuning with Predictive LLVM IR Performance Ranking”

[ICPP’25 via HPAI4S Workshop] Thomas Randall, Akhilesh Bondapalli, Prasanna Balaprakash and Rong Ge, “Is In-Context Learning Feasible for HPC Performance Autotuning?”

[IGSC’24] Thomas Randall, Bennett Cooper, Naman Kulshreshtha and Rong Ge, “Thermal Behaviors in Liquid Immersion Cooling under Various Workloads: a Case Study”, In Proceedings of the 2024 International Green and Sustainable Computing Conference (IGSC ’24)

[DoECyberCon’24] Thomas Randall, Rong Ge, Prasanna Balaprakash, “Copy Cat: Limitations of LLMs in Performance Predictions,” Poster appearing in Department of Energy Cybersecurity and Technology Innovation 2024 (DoECyberCon ’24)

[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:

Oak Ridge National Lab Artificial Intelligence Seminar Series — Spring 2024
Invited Presenter — Oak Ridge, TN

Argonne National Lab Computer Science 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
SoC-GSA & UPE — Clemson, SC

- Invited to discuss undergraduates' interests in pursuing Graduate studies

AWARDS:

ICS'21 Best Paper — Summer 2021

R.C. Edwards Graduate Fellow — Fall 2019 -- Spring 2022

Clemson School of Computing Outstanding Undergraduate Researcher — Spring 2019

Dupont Best Undergraduate Project — Spring 2019

RESEARCH EXPERIENCE:

Graduate Research Assistant — Summer 2019—Spring 2025
Clemson University — Clemson, SC

Undergraduate Research Assistant — Summer 2018—Spring 2019
Clemson University — Clemson, SC

OMNI Internship Program, Graduate Student Researcher — Summer 2024
Oak Ridge National Laboratory — Oak Ridge, TN

GIVENS Scholar, Graduate Student Researcher — Summer 2020, 2022, 2023
Argonne National Laboratory — Lemont, IL

LEADERSHIP EXPERIENCE:

Lead Student Volunteer, Guided Interest Group Leader — Fall 2024
SuperComputing'24 — Atlanta, GA

- Jointly organized Reproducibility efforts with conference committee members
- Managed student volunteers to facilitate conference events
- Organized and engaged new students at SuperComputing through cohort events and discussions

Vice President — Fall 2024—Spring 2025
School of Computing Graduate Student Association — Clemson, SC

- Organized 3 professional workshops, 3 social events and a fundraiser
- Coordinated with University staff to collaboratively enhance events
- Managed organization finances, plans, marketing and personnel

Lead Student Volunteer, Guided Interest Group Leader, HPC Immersion Mentor — Fall 2023
SuperComputing'23 — Denver, CO

- Jointly organized conference Panels and Birds of a Feather with conference committee members
- Managed 100+ student volunteers to facilitate conference events
- Organized and engaged new students at SuperComputing through cohort events and discussions

Student Volunteer, Virtual Student Volunteer — Fall 2020 (Virtual), Fall 2021, Fall 2022
SuperComputing'20, SuperComputing'21, SuperComputing'22 — Online; St. Louis, MO; Dallas, TX

- Moderate online discussions and forward questions to presenters
- Enable communications between conference organizers and presenters

Summer Staff Coordinator — Summer 2017
Isaiah 55 Deaf Ministries — La Feria, TX

- Coordinated volunteer team responsibilities
- Oversaw and participated in construction projects, craft projects, and recreational projects
- Maintained and safeguarded facilities and volunteers

TEACHING EXPERIENCE:

Graduate Teaching Assistant — Fall 2019 — Spring 2023
Clemson University, School of Computing — Clemson, SC

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

Laboratory Teaching Assistant — Spring 2017 — Spring 2019
Clemson University, School of Computing — Clemson, SC

- Prepared and introduced labs and projects for students
- Aided students with questions and problems during lab time and office hours
- Graded laboratory assignments for up to 30 students