David H. Joy

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Experience

Oak Ridge National Laboratory January – August 2024

Research Student Internship (RSI)

- Created a **Python Gaussian Process** service in ORNL's autonomous science ecosystem
- Used service to optimize computational chemistry model through active learning
- Analyzed radiation portal data by fine-tuning large multi-modal LLaVA model

Oak Ridge National Laboratory May – December 2023

Science Undergraduate Labratory Internship (SULI)

- Created new **C++** phase-field code using **Kokkos** for Summit and Frontier supercomputers
- Presented at CHiMaD workshop about issue in phase-field community benchmark suite
- Designed and implemented method to improve genetic algorithms using quantum computing
- Implemented method using **Python** and **IBM Qiskit**; tested it on Max-Cut and Iris dataset
- Method beat classical GA, regardless of hyperparameters, at $p<.01$ significance

AuburnHacks 2023 Hackathon February 2023

Best Overall Hack

- Won Best Overall Hack out of 106 participants with schedule-creating website
- Wrote team's **Python Flask** backend using **MongoDB Atlas**, **OpenAI API**, and **Google Cloud**

Georgia State REU Summer 2022

Undergraduate Researcher

- Designed & implemented **Python** 360-degree annotation tool and annotated 2100 images
- Informed new research direction by testing existing YOLO detector on new firefighting dataset

UDA Technologies 2021 – 2022

Software Engineering Co-op

- Full-stack development (**Javascript**, **VB.NET**, and **SQL**) on 850,000 user web platform
- Added search and draft features, added new pdf and excel reports, and maintained codebase

Publications

Samuel Reeve, Jean-Luc Fattebert, Stephen DeWitt, **David Joy**, et al. "Co-design for Particle Applications at Exascale." Computing in Science & Engineering (2024).

Education

University of Texas at Austin August 2024 – December 2025

- Pursing Master of Science in Computer Science

Auburn University August 2019 – May 2023

- Bachelor of Software Engineering, Minors in Physics and Mathematics
- **GPA: 4.0** | Dean's List: All Semesters

Technical Skills

Languages: Python, C++, Javascript + HTML/CSS, SQL, Java
Libraries/Tools: Git, LaTeX, IBM Qiskit, Kokkos, Flask, jQuery, Selenium
Techniques: Quantum Computing, High-Performance Computing, Genetic Algorithms, Gaussian Processes

Involvement

Auburn ACM Competitive Programming Team Fall 2019 – Spring 2023

- Placed in the 2020 ICPC Southeast Regional, qualifying for the divisional round

Auburn ACM Artificial Intelligence Club & Makerspace Fall 2019 – Fall 2022

- President Spring 2021 to Fall 2022

Eagle Scout 2019