Joy Kitson

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Research Interests

High Performance Computing, Scientific Computing, Data Science

Education

Doctor of Philosophy, Computer Science — *May 2025 Expected*
University of Maryland, College Park, MD, 3.973 GPA

Bachelor of Science, Computer Science and Applied Mathematics — *May 2020*
University of Delaware, Newark, DE, 3.959 GPA

Honors

- **Computational Science Graduate Fellowship,** Department of Energy — *September 2021 – Present*
- **Computer and Information Sciences Outstanding Sophomore Student Award**, — *May 2018*
- **Dean's List**, UD — *Fall 2016–Spring 2020*
- **Honor's Program**, UD — *Fall 2016–Spring 2020*
- **National AP Scholar** — *August 2015, August 2016*
- **Conference on National Affairs Alternate and Attendee**, YMCA Youth in Government — *April 2016, July 2016*
- **Scholastic Achievement Award**, United States Marine Corps — *June 2016*
- **National Merit Scholarship Finalist** — *February 2016*

Research Experience

Research Assistant, University of Maryland — *September 2020 – Present*
- Developing Loimos, a highly scalable epidemiological simulation based on interaction networks
- Analyzing the performance portability of parallel programming frameworks by comparing mini-apps

Research Intern, Los Alamos National Laboratory — *June 2024 – August 2024*
- Implemented a model of coupled fear and disease spread in a production agent-based model, EpiCast

Research Intern, Oak Ridge National Laboratory — *June 2022 – August 2022*
- Investigated the impact of teleconnections and natural forcings on regional climate extremes

Research Intern, Argonne National Laboratory — *June 2020 – August 2020*
- Analyzed congestion patterns on a Theta, a production HPC system with a Dragonfly topology

Research Intern, Lawrence Livermore National Laboratory — *June 2019 – August 2019*
- Created an interface for collecting data on the I/O of an application
- Integrated I/O data collection into Caliper, a performance analysis library

Research Intern, Los Alamos National Laboratory — *June 2018 – August 2018*
- Created a git-based logging tool, SHELTIE, for measuring development productivity
- Began porting a plasma physics application, VPIC, to use the Kokkos parallelism framework

Research Assistant, Global Computing Lab, University of Delaware — *June 2017 – May 2018*
- Improved existing record and replay tools for debugging nondeterministic distributed computing applications
- Developed and utilized tools for analyzing and visualizing patterns in soil moisture data

Teaching Experience

Teaching Assistant, University of Maryland — *January 2021 – May 2021*
Teaching Assistant, University of Delaware — *August 2019 – December 2019*
Tutor, General Computer Science for Engineers, UD — *March 2017–May 2017*

Publications

- Harrell, S. L., Kitson, J., Bird, R., Pennycook, S. J., Sewall, J., Jacobsen, D., ... & Robey, R. (2018, November). Effective performance portability. In *2018 IEEE/ACM International Workshop on Performance, Portability and Productivity in HPC (P3HPC)* (pp. 24-36). IEEE.
- D. Rorabaugh, M. Guevara, R. Llamas, J. Kitson, R. Vargas and M. Taufer, "SOMOSPIE: A Modular SOil MOisture SPatial Inference Engine Based on Data-Driven Decisions," *2019 15th International Conference on eScience (eScience)*, San Diego, CA, USA, 2019, pp. 1-10.
- Ashfaq, M., Rastogi, D., Kitson, J., Abid, M. A., & Kao, S. C. (2022). Evaluation of CMIP6 GCMs over the CONUS for downscaling studies. *Journal of Geophysical Research: Atmospheres*, *127*(21), e2022JD036659.

Extracurricular Involvement

- **President,** Association for Computing Machinery, UD, *February 2019–May 2020*
- **Events Coordinator**, Association for Computing Machinery, UD *May 2018–February 2019*
- **Treasurer,** Board Game Club, University of Delaware *October 2017–May 2020*

Skills

- Proficient in C, C++, Java, *SL, Bash, Python
- Intermediate knowledge of HTML/CSS, JavaScript, R
- Experience with Linux, Windows 7-11, HPC systems, Codeanywhere, Android Studio, IntelliJ, Vim, gdb, valgrind, Google Apps, Microsoft Office, Kokkos, SLURM, svn, git