Nicole **Brewer**

Research Software Engineer

Purdue University, West Lafayette, IN

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Education

Purdue Univeristy — *West Lafayette, IN*

Mathematics with Computer Science — *December 2018*

- Purdue's All-Women Student Cluster Competition Team
- Vice President of Purdue Triathlon Club

Experience

ITaP Research Computing — *Purdue University*

Research Software Engineer — *Feb 2019 - Present*

- Implemented a highly interactive, Jupyter-based, GUI wrapper for power analysis software in order to expand the audience and ease of use of a rich set of computational functions via a user-friendly interface
- Facilitated software design, the implementation of best practices, and internal tool development, and lab documentation to improve the overall sustainability of lab software
- Transform disparate data acquisition and processing scripts into modular classes to be reused for scientific workflows
- Designed a dynamic Solr schema to index and query layered geospacial and user-defined metadata
- Implemented interactions with this database in a web application in PHP and JavaScript
- Mentored students participating in internships, Science Gateways Student Hackathon 2019, and Purdue's Student Cluster Competition team

Aptiv — *West Lafayette, IN*

Software Verification Engineer — *Nov 2017 – Nov 2018*

- Developed comprehensive Unit Test projects that utilized CAN bus protocol communications to verify automotive controller hardware

Publications

1. Brewer, N., Kim, H., Li, C., Anderson, H., Lanum, J., Cheoh, J., Hillery, B., & Overmyer, T. (2019). *Student cluster competition 2018, team ada six of purdue university: Reproducing extreme scale multi-physics simulations of tsunamigenic 2004 sumatra megathrust earthquake on intel skylake architecture*. *90*, 102565. `https://doi.org/10.1016/j.parco.2019.102565`

Honors and Awards

Young Professional of the Year — *Virtual*

Honorarium awarded for notable achievement in the advancement of science gateways — *Gateways 2020*

XSEDE Student Travel Grant — *XSEDE*

Travel support to attend PEARC18 and attend the student program — *PEARC2018*

Phil Andrews Award — *Pittsburgh, PA*

Awarded for poster presentation of "Classification of Periodicity in Subtraction Game Sequences" — *PEARC2018*

Research Experience

CSoI Channels Scholar REU

Center for Science of Information, NSF STC — *2018*

- Utilized HPC clusters to efficiently create large data sets pertaining to combinatorial game theory
- Analyzed batching strategies of parallel computation to efficiently detect an unknown length of repeating sequences in long strings
- Developed a command line interface and file managment system in Python to prevent human error and enhance the usability of codebase upon inheritance
- Created a data visualization to illuminate patterns and relationships among 5-dimensions for future work

Talks and Presentations

Oct 2021 **How to Recruit and Sustain a Diverse and Inclusive Workforce: A Case Study** (Invited Panelist), International RSE Day, Virtual. `https://us-rse.org/events/2021/2021-10-intnl-rse-day`

Oct 2021 **Leveraging Traits for Highly Interactive Computational Tools in Jupyter** (Video Presentation), Gateways Conference, Virtual. `https://doi.org/10.5281/zenodo.5570605`

Teaching Experience

Object Oriented Programming *Purdue Univeristy*

Undergraduate Teaching Assistant *Aug 2015 - May 2016*

Service

ITaP Research Computing *Purdue University*

Co-Chair of Women in High Performance Computing *June 2020 - Present*

- Started a podcast to continute to improve visibility of women in spite of discontinuing in-person events in the wake of the COVID-19 pandemic

Mentors for Aspiring Girls in Computing *Purdue University*

Near-Peer Mentor *Aug 2018 - Dec 2018*

- Led hands-on activities to teach computer science concepts to local middle and high school students in order to improve the recruitment and retention of young women in technology careers

Training

San Diego Supercomputer Center *Virtual*

SDSC Summer Institute *May 2020*

- Machine learning in R, big data with Spark, parallel programming with Python, and scientific visualization

Krannert Executive Education *West Lafayette, IN*

Applied Management Principles *July 2019*

- Purdue's "mini-MBA" covering accounting, finance, strategy, marketing, negotiations & problem solving