

# Nicole Brewer

RESEARCH SOFTWARE ENGINEER

Purdue University, West Lafayette, IN

🏠 nicole-brewer.com | 📧 nicole-brewer | 📺 nicole-brewer | 🐦 catch\_me\_coding

## Education

### Purdue University

MATHEMATICS WITH COMPUTER SCIENCE

West Lafayette, IN

December 2018

## Professional Experience

### ITaP Research Computing

RESEARCH SOFTWARE ENGINEER

Purdue University

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 geospatial and user-defined metadata
- Implemented interactions with this database in a web application in PHP and JavaScript
- Mentored students participating in semester-long internships

### Aptiv

SOFTWARE VERIFICATION ENGINEER

West Lafayette, IN

Nov 2017 – Nov 2018

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

## Training

### San Diego Supercomputer Center

SDSC SUMMER INSTITUTE

Virtual

May 2020

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

### Krannert Executive Education

APPLIED MANAGEMENT PRINCIPLES

West Lafayette, IN

July 2019

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

## Research Experience

### Purdue's All-Women Student Cluster Competition Team

SUPERCOMPUTING 2018

June 2018 - Dec 2018

- Built a small cluster and applied optimization techniques in a non-stop, 48-hour challenge at the SC conference.
- Compiled a scientific application from an accepted paper from the prior year's Technical Program and interacted directly with the paper's authors to reproduce specific results and conclusions from the paper.

### CSol Channels Scholar REU

CENTER FOR SCIENCE OF INFORMATION, NSF STC

Jan 2016 - June 2017

- 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 management 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.

## 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. *Parallel Computing*, 90, 102565. <https://doi.org/10.1016/j.parco.2019.102565>

## Talks and Presentations

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- 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>

## Honors and Awards

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### Underrepresented Philosophy of Science Scholars Delegate

TRAVEL SUPPORT FOR EARLY CAREER SCHOLARS WHO ARE CONSIDERING PURSUING PHILOSOPHY OF SCIENCE

Baltimore, MD

PSA Biennial Meeting 2021

### Young Professional of the Year

HONORARIUM AWARDED FOR NOTABLE ACHIEVEMENT IN THE ADVANCEMENT OF SCIENCE GATEWAYS

Virtual

Gateways 2020

### XSEDE Student Travel Grant

TRAVEL SUPPORT TO ATTEND PEARC18 AND PARTICIPATE IN THE STUDENT PROGRAM

XSEDE

PEARC2018

### Phil Andrews Award

AWARDED FOR POSTER PRESENTATION OF "CLASSIFICATION OF PERIODICITY IN SUBTRACTION GAME SEQUENCES"

Pittsburgh, PA

PEARC2018

## Teaching Experience

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### Object Oriented Programming

UNDERGRADUATE TEACHING ASSISTANT

Purdue University

Aug 2015 - May 2016

## Service

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### Research Software Engineering Association

STEERING COMMITTEE MEMBER

United States

Jan 2022 - Present

- Develop the organization to support RSE's, build an inclusive community, and advocate for the role of RSEs in research. Led meetings and organized events for the diversity, equity, and inclusion working group.

### ITaP Research Computing

CO-CHAIR OF WOMEN IN HIGH PERFORMANCE COMPUTING

Purdue University

June 2020 - Present

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

### Student Cluster Competition

STAFF ADVISOR

SC 2019

Aug - Nov 2019

- Advised students in preparing for the competition I had participated in a year prior.

### Science Gateways Community Institute Hackathon

MENTOR

PEARC 2019

June 2019

- Supported students participating in the three day hackathon.

### Mentors for Aspiring Girls in Computing

NEAR-PEER MENTOR

Purdue University

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

### Purdue Triathlon Club

VICE PRESIDENT

Purdue University

Aug 2016 - Aug 2017

- Led and organized callouts, executive board meetings, social media campaigns, and clothing orders.