

# 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 internships, Science Gateways Student Hackathon 2019, and Purdue's Student Cluster Competition team

### 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

- 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.