

# Nicole Brewer

RESEARCH SOFTWARE ENGINEER

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## Education

### Purdue University

West Lafayette, IN

BACHELOR OF SCIENCE IN MATHEMATICS WITH COMPUTER SCIENCE

December 2018

- Vice President of Purdue Triathlon Club
- Mentor for Aspiring Girls in Computing
- Purdue's All-Women Student Cluster Competition Team

## Skills

**Languages** Python, R, PHP, JavaScript, Java, C, C#, HTML/CSS

**Containers** Docker, Kubernetes

**Databases** Solr, Elasticsearch, MongoDB

**Platforms** Linux (CentOS, RHEL, Ubuntu), MacOS, Windows

**Development Tools** Git, Vim, RStudio, IntelliJ, AndroidStudio, Visual Studio, SVN

## Experience

### Scientific Solutions Group - ITaP Research Computing

Purdue University

SOFTWARE ENGINEER

Feb 2019 - Present

- Improved code performance and implemented versioned packaging in R to facilitate research software development
- Transform scientific data acquisition and processing scripts into modular and reusable classes
- 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
- Created a Jupyter notebook analyze supercomputing cluster job performance data using Elasticsearch queries

### Aptiv West Lafayette Lab

Purdue Research Park

SOFTWARE VERIFICATION ENGINEER

Nov 2017 - Nov 2018

- Maintained and expanded upon legacy applications in C# that utilized CAN bus protocol communications to verify serial variable data
- Developed comprehensive Unit Test projects to verify solutions in conjunction with automotive controller hardware on test bench
- Interfaced with Delphi Engineers at the Kokomo and Mexican Technical Centers to develop software solutions and troubleshoot errors with remote users

### Object Oriented Programming

Purdue University

UNDERGRADUATE TEACHING ASSISTANT

Aug 2015 - May 2016

- Taught object oriented programming in Java, debugging in IntelliJ, JUnit Testing, and app development in Android Studio in laboratory
- Collaborated with other TA's to effectively communicate programming concepts and reinforce lecture material to students

## Awards

### Center for Science of Information, NSF STC

Purdue University

CSOI CHANNELS SCHOLAR REU RECIPIENT

Jan 2018 - May 2018

- Utilized Purdue's Halstead cluster to conduct research on an unsolved problem in combinatorial game theory
- Implemented part of the KMP string matching algorithm in C to efficiently detect periodicity in long strings
- Used Bash scripting to parallelize the creation of 5-dimensional data sets up to cardinality 3.9 million
- Developed a command line interface in Python to parse program arguments and prevent data management errors
- Performed data manipulations and visualizations in R to illuminate relationships in data

## Publications

Student cluster competition 2018, team Ada Six of Purdue University: Reproducing Extreme Scale Multi-Physics Simulations of Tsunami

2004 Sumatra Megathrust Earthquake on Intel Skylake architecture

Nicole Brewer, HyeJin Kim, Claudia Li, Heidi Anderson, Jessica Lanum, Jia Cheoh, Betsy Hillery, Trinity Overmyer

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