# Shaowei Zhu

https://www.linkedin.com/in/shaowei-zhu-33173a103/
shaoweiz@cs.princeton.edu | 404.901.1843

## EDUCATION

### PRINCETON UNIVERSITY
**PhD in Computer Science**
2018-2023 (ECD) | Princeton, NJ
Field: Programming languages
Automated reasoning
Program analysis
Numerical abstraction domains

### GEORGIA TECH
**BS in Computer Science**
2015-2017 | Atlanta, GA
GPA: 4.0/4.0
Thread: AI & Modeling/Simulation
Faculty Honors (all semesters)

## COURSEWORK

Programming Languages
Automated Reasoning
Advanced Algorithm Design
Advanced Computational Complexity
Theoretical Machine Learning
Advanced Computer Networks
Computer Vision

## SKILLS

### PROOF ASSISTANTS
Coq • F* • Dafny

### PROGRAM ANALYSIS
Clang • LLVM
Z3 • APRON
KLEE • Java Path Finder

### GENERAL PROGRAMMING
Java • Python • C/C++
OCaml • Matlab • LaTeX

### MACHINE LEARNING
Scikit-learn • PyTorch

### DISTRIBUTED COMPUTING
AWS products • Elasticsearch
MPI • MapReduce • Hadoop

## WORK EXPERIENCE

### GOOGLE | Software Engineering Intern
May 2020 - Aug 2020 | Sunnyvale, CA
- Static Analysis Team and Go team.
- Designing and implementing a highly scalable interprocedural static analysis for Golang that reduces the number of unnecessary call edges by more than $70\%$ in the dynamic dispatch call graph.

### AMAZON | Software Development Engineer
Feb 2018 - Aug 2018 | Seattle, WA
- Working with AWS Pinpoint team to develop an auditing framework for the internal data storage system that ensures GDPR and HIPAA compliance.
- End-to-end design, implementation, testing, and maintenance of a native AWS data pipeline that streams, stores, and serves queries against tens of billions of flexible-schema JSON objects every day.

### AMAZON | Software Development Engineer Intern
May 2017 - Aug 2017 | Seattle, WA
- AWS Elastic Compute Cloud (EC2) Linux kernel team.
- Developed a static code analysis framework for Amazon Linux Kernel source repository that checks for coding style, locking behavior, type mismatches, etc. The framework reduces $> 95\%$ warnings/errors that need human inspection.

### QBITLOGIC | Research Intern
Aug 2016 - Dec 2016 | Atlanta, GA
- Creating dynamic benchmarks for the company's automatic bug-fixing product that covers a wide range of common vulnerabilities listed in CVE.
- Preparing the training and testing datasets using fine-grained abstract syntax tree (AST) differencing, dependency analysis, and symbolic execution results.

## RESEARCH

### PROGRAMMING LANGUAGES GROUP | PhD Student
Advisor: Dr. Zachary Kincaid | Princeton
Automatically generating sound conditions under which a C program terminates using convex analysis, linear algebra, and number theory in a compositional and monotone way.
- Shaowei Zhu, Zachary Kincaid. **Termination Analysis without Tears**. In submission to POPL 2021.

### THE ARKTOS RESEARCH GROUP | Undergrad Researcher
Advisor: Dr. Alessandro Orso | Georgia Tech
Program analysis with an emphasis on interactive fault localization and applications of symbolic execution.
- Xiangyu Li, Shaowei Zhu, Marcelo d'Amorim, and Alessandro Orso. **Enlightened Debugging**. In proceedings of the 40th International Conference on Software Engineering (ICSE 2018).

### COMPUTATIONAL BIOLOGY GROUP | Undergrad Researcher
Advisor: Dr. Srinivas Aluru and Dr. Vijay Vazirani | Georgia Tech
Parallel algorithms for genome assembly including approximating k-mer counts and scalable read alignment methods.
- Rahul Nihalani, Sriram Chockalingam, Shaowei Zhu, Vijay Vazirani, and Srinivas Aluru. **Probabilistic Estimation of Overlap Graphs for Large Sequence Datasets**. 2017 IEEE International Conference on Bioinformatics and Biomedicine.