Shaowei Zhu

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EDUCATION

Princeton University   Princeton, NJ | Aug 2023 (anticipated)
PhD in Computer Science
Advisor: Zachary Kincaid
Research Area: theory of programming languages, with a focus on predictable program analysis.
Domain knowledge: abstract interpretation, design of numerical abstract domains, invariant generation, algebraic program analysis, termination analysis, algebraic geometry and commutative algebra, linear algebra, theory of linear and integer programming, type theory.
Publications:

- *Name TBA*, in submission to POPL 2023
- *Reflections on Termination of Linear Loops*, with Zachary Kincaid, CAV 2021
- *Termination Analysis without the Tears*, with Zachary Kincaid, PLDI 2021

Georgia Institute of Technology   Atlanta, GA | Dec 2017
BS in computer science with highest honors, GPA of 4.0
Undergraduate Research: interactive fault localization, bioinformatics, and high performance computing
Publications:

- *Enlightened debugging*, with Xiangyu Li, Marcelo d'Amorim, and Alex Orso, ICSE 2018

WORK EXPERIENCE

META REALITY LABS | Research Scientist Intern   Redmond, WA | May 2022 – Sep 2022
Studying the effect of uncertainty in AR localization and mapping. Exploring probabilistic programming paradigms that enable robust access control.

FACEBOOK REALITY LABS | Research Scientist Intern   Remote | May 2021 – Dec 2021
Designing a domain-specific language for access control targeting egocentric devices in Augmented Reality (AR). Studying automatic verification of access control policies.

GOOGLE | Research Intern   Remote | May 2020 – Aug 2020
Designing and implementing a variable type analysis that optimizes static call graph computation for Go that scales to analyze Go targets in the Google monorepo.

AMAZON | Software Engineer   Seattle, WA | Feb 2018 – Aug 2018

- Working with the 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 AWS data pipeline backed by an Elasticsearch cluster that streams, stores, and queries tens of billions of flexible-schema JSON objects every day.

AMAZON | Software Engineering Intern   Seattle, WA | May 2017 – Aug 2017

- Working with the AWS Elastic Compute Cloud (EC2) Linux kernel team. Developed a static code analysis framework for Amazon Linux Kernel source repository.
- The framework employs several static analysis tools that check for coding style, locking behavior, type mismatches, etc. on commits and eliminates more than 95% warnings/errors that previously need human inspection.

SKILLS

Languages: OCaml, Python, Java, C++, C, Go, Coq, F*
Program analysis: Clang, LLVM, SMT-LIB, Z3, CVC4, MathSAT, Yices, Dafny, KLEE, JPF
Others: AWS, Elasticsearch, Scikit-learn, OpenCV, PyTorch, Pyro, MPI