Yongwei **Yuan**

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Final year Ph.D. student in programming languages and formal methods looking for full-time positions in industry.

Education

Purdue University
PH.D. IN COMPUTER SCIENCE
West Lafayette, IN, USA
2020 - 2025 (expected August)

- Thesis: Trace-Guided Reasoning of Functional Programs
- Selected Courses: Programming Languages | Compiling and Programming Systems | Neurosymbolic Program Synthesis

University of Michigan
B.S. IN COMPUTER SCIENCE
Ann Arbor, MI, USA
2018 - 2020

- Selected Courses: Operating System | Introduction to Machine Learning | Conversational Artificial Intelligence

Shanghai Jiao Tong University
B.S. IN ELECTRICAL AND COMPUTER ENGINEERING
Shanghai, China
2016 - 2020

Experience

Automated Reasoning Group @Amazon, Inc
APPLIED SCIENTIST INTERN
Seattle, WA, USA
Summer 2023

- Devised and implemented algorithmic optimization for policy evaluation in Identity and Access Management (1 billion calls per second).
- Profiled the policy evaluation engine, discovered mutiple unusual patterns, and turned them into optimization opportunities.
- Proved the correctness of all these optimizations in Dafny and improved the performance of the policy evaluation engine by about 10%.

Automated Reasoning Group @Amazon, Inc
APPLIED SCIENTIST INTERN
Seattle, WA, USA
Summer 2022

- Proved the correctness of IP address parsing in Dafny, which is a critical component of Identity and Access Management.
- Identified Dafny's limitation in bitvector reasoning and devised an effective workaround for it, enabling sound analysis of IP addresses.
- Implemented a Dafny-to-Java transpilation pass to generate idiomatic bitvector manipulation code.
- Adopted the Checker Framework to enable various safety checks in the generated Java code, providing future proof to developers.

Purdue University
GRADUATE RESEARCH ASSISTANT
West Lafayette, IN, USA
2023 - now

Under the supervision of Dr. Suresh Jagannathan.

Purdue University
GRADUATE RESEARCH ASSISTANT
West Lafayette, IN, USA
2020 - 2023

Under the supervision of Dr. Roopsha Samanta.

Honors and Awards

- Merit Recognition Award 2024, Purdue University
- **OOPSLA 2023 Distinguished Paper Award**, ACM SIGPLAN
- **PLDI 2023 Distinguished Paper Award**, ACM SIGPLAN
- Honorable Mention, Mathematical Contest in Modeling 2017

Publications

[1] Guannan Wei, Danning Xie, Wuqi Zhang, Yongwei Yuan, and Zhuo Zhang. 2024. Consolidating Smart Contracts with Behavioral Contracts. *Proc. ACM Program. Lang.* 8, PLDI (June 2024), 965–989. https://doi.org/10.1145/3656416

[2] Yongwei Yuan, Scott Guest, Eric Griffis, Hannah Potter, David Moon, and Cyrus Omar. 2023. Live Pattern Matching with Typed Holes. *Proceedings of the ACM on Programming Languages* 7, OOPSLA1 (April 2023), 609–635. https://doi.org/10.1145/3586048

[3] Yongwei Yuan, Arjun Radhakrishna, and Roopsha Samanta. 2023. Trace-Guided Inductive Synthesis of Recursive Functional Programs. *Proceedings of the ACM on Programming Languages* 7, PLDI (June 2023), 860–883. https://doi.org/10.1145/3591255

Services

- PLDI 2024 Artifact Evaluation Committee

Skills

Programming	OCaml	C / C++	F#	Scala	Haskell	Python	TypeScript
Formal Methods	Dafny	Z3	Coq	Lean	LLVM