Yanning Chen

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Education

Shanghai Jiao Tong University

B. Eng in Computer Science and Technology

- GPA 3.66/4.0
- A/A+ Courses: Programming Languages, Program Analysis and Verification, Math Foundations of CS, etc.
- Programming Languages: Coq (2 years; research), Rust (2 years; hobby), OCaml (3 months; research), Python (4 years), Golang (4 months; intern), C/C++, Java

Research Experience

University of California, Santa Barbara

Optimizing Compiler for ZK circuits, advised by Prof. Yu Feng

- Proposed a optimization oriented stream-based domain-specific language for ZK circuits.
- Designed a compiler for the language, leveraging program synthesis to super-optimize the circuits.

Shanghai Jiao Tong University

Verification-aided Source Code Optimization, advised by Prof. Qinxiang Cao

- Designed an assertion language for specifying program state and properties based on *separation logic*.
- Implemented a symbolic execution engine for CompCert, and verified its soundness in Coq.
- Established a verification framework for compiler optimizations based on symbolic execution, and verified the compiler correctness property of alias analysis.

SJTU Participation in Research Program

Formal Semantics of Meta Programming in Functional Languages, advised by Prof. Qinxiang Cao

- Formalized the denotational semantics of Lambda Calculus with Constructors in Coq.
- Semi-automatic synthesis of programs from denotation and proof construction for correctness by Ltac.

Related Projects

SimPL Interpreter, Interpreter for an ML-like Language

- Defined the operational semantics and typing rules of a simplified dialect of ML.
- Supports lazy evaluation, HM type inference, and copy garbage collection.

Cierra Prover, Deductive Prover for a Subset of C

• Automatic verification of annotated (require, ensure, invariants) C programs using Hoare Logic by SMT solvers. • Winner of Best Quality Award in the Open Source Promotion Plan by ISCAS.

Magic in Ten Minutes, Tutorial for "Black Magic" in Rust

- A tutorial catered for Rustaceans, offering insights into programming idioms, type systems, computing theory, and formal verification.
- Topics include: GADT, co-ADT, HKT, CH-iso, CPS, and more.

Intern Experience

Linux Foundation

Mentee of CNCF LFX Mentorship Program

- Proposed a Role-Based Access Control system for TiKV PD, the placement driver of a distributed key-value database.
- Implemented a system prototype and wrote an RFC for the community.

Open-Source Contributions

Shanghai Jiao Tong University Linux User Group

Leader, Mirror Maintainer

- Leads a team to maintain one of the biggest mirror services in China, serving 2 million requests per day.
- Organizes events and workshops to promote open-source culture.

September 2019 - June 2024 (Expected) Shanghai, China

September 2023 - January 2024

August 2021 - Present

April 2020 - March 2021

O magic-in-ten-mins-rs

SimpleXX/SimpleCompiler:cierra

September 2020 - December 2020

O SimPL

Remote

O situg

July 2020 - Present