

Yanning Chen

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Education

University of Toronto

Ph.D. in Computer Science

- Advisors: Prof. Ningning Xie & Prof. Fan Long

2024/09 – Now

Toronto, Canada

Shanghai Jiao Tong University

B. Eng in Computer Science and Technology

- GPA 3.70/4.0

- A/A+ Courses: Programming Languages, Program Analysis and Verification, Math Foundations of CS, etc.

2019/09 – 2024/06

Shanghai, China

Research Experience

University of California, Santa Barbara

Optimizing Compiler for Circuits

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

2023/09 – 2024/01

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*.

2020/04 – 2021/03


Related Projects

SimPL Interpreter, *Interpreter for an ML-like Language*

 [SimPL](#)


- 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*

 [SimpleXX/SimpleCompiler:cierra](#)

- 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*

 [magic-in-ten-mins-rs](#)

- 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 (PingCAP)

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

2020/09 – 2020/12

Remote


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.

2020/07 – 2024/06

 [sjtug](#)

Skills & Interests

- Programming Languages: Coq, Rust, OCaml, Python, Golang, C/C++, Java
- Research Interests: Type Systems, Functional Programming