

Hanzhi Liu

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EDUCATION

- **Shanghai Jiao Tong University** 2019.09 - Now Bachelor of Engineering
 - Major in **Electrical Engineering**
 - Minor in **Computer Science**
 - GPA: **3.72/4.3** Ranking: **1/119** (first 1 year) **8/118** (first 2 year)

SKILLS

- **Programming Language**: Mainly work with **Coq Haskell OCaml Rust Python C/C++**

RESEARCH

- **Metaprogramming Theory Based on Functional Program** 2020.08 - 2021.02
 - Learn Software foundations Volume 1&2 (Coq & operational semantics).
 - Use Coq to formalize the semantics of the lambda calculus with constructors (metalanguage).
 - Build denotational semantics between metalanguage and Coq.
 - Prove the relationship between metaprograms and object programs.
 - Instructed by Professor Cao Qinxiang.
- **Verification-aided Compiler Optimization** 2021.04 - Now
 - An expedition to support compiler optimization aided by verification information carried by programs.
 - Build a VST-like deep embedded assertion language based on CompCert memory model using separation logic and prove the soundness of the symbolic execution of this language on Clight.
 - Instructed by Professor Cao Qinxiang.

EXPERIENCE

- **Summer 2021** *Institute of software, Chinese Academy of Sciences* 2021.07 - 2021.09
 - Improve compiler framework of Simple-XX (a project designed to provide instructional projects to novices).
 - Build handwritten LL parser for C in C++.
 - Implement type checker for C AST and generate high-level IR.
 - Generate low-level IR and implement code generator from low-level IR to RISC-V.

AWARDS

- **The Interdisciplinary Contest in Modeling** *Meritorious Winner* 2020
- **Zeyuan Scholarship of Shanghai Jiaotong University** *Ranked first in the major* 2020
- **Excellent Scholarship for Undergraduates of Shanghai Jiaotong University** *top 10%* 2020

PUBLICATIONS

- **CIRD-F: Spread and Influence of COVID-19 in China** 2020 (co)First Author

- Author: Lingyun Zhou* ,**Hanzhi Liu*** , Kaiwei Wu* , Yuaning Gao and Xiaofeng Gao[✉]
- Journal of Shanghai Jiaotong University (Science)

- **The Dynamic Persuasive and Informative Advertising Strategy of a Two-part Tariff Monopolist with Advertising Spillover Effects** (*Submitted to Applied Economics*) Second Author

- Author: Lingyun Zhou, **Hanzhi Liu** and Genyuan Zhong[✉]

OTHERS

Volunteer Service: Shanghai Marathon 2020, POPL 2021

Research Interests: Programming Language Theory, Formal Verification

Github: @MisakaCenter

TOY PROJECTS

- OPG_Parser: Operator precedence grammar parser, in Coq.
- RayTracer.ml: Path tracer implemented in OCaml based on “Ray Tracing in One Weekend” .
- Pistolet: Toy ML-like Imperative Programming Language Interpreter, in Rust.
- STLC: a simply typed lambda calculus read-eval-print-loop(REPL) in Coq & Haskell.