

CHENGYUAN WANG (ERIC)

Ph.D Student, Computer Science

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EXPERIENCE

POSIX Shell Compiler Verification

Ongoing Project

📅 Oct. 2023 – Present 📍 Hoboken, USA

- Develop the core shell semantic and kernel process management as well as filesystem behavior in **Coq**.
- **Compiler correctness** verification between sequential shell script and its parallelized version.

Safe Gradual Type Migration

Past Project

📅 Sep. 2022 – Jun. 2024 📍 Hoboken, USA

- Design an inference based algorithm to migrate untyped program to gradual typed program.
- Define the safeness property of type migration and prove it for our algorithm as well as existing SOTA.

Type-oriented Information-flow Control

Master Thesis

📅 Feb. 2022 – Jun. 2022 📍 Gothenburg, Sweden

- Formalize a GDPR policy called purpose limitation.
- Designed a type system as an **Information-flow Control system** to check Purpose Limitation statically and implemented it in Haskell.
- Formalize the type system in **Agda** and prove the soundness and noninterference.

BaaS (Backend as a Service) Framework

Synyi Tech

📅 Jun. 2021 – Aug. 2021 📍 Shanghai, China

- A framework written in Go to automatically generate the backend apis for a medical information system.
- Backend generates the CURD API automatically with an authentication system according to the policy given.
- Frontend is contains a Typescript DSL use user friendly grammar to interact with the backend.

Compiler for a Fragment of Java

Individual Project

📅 Mar. 2021 – Jun. 2021 📍 Gothenburg, Sweden

- Use Rust to write lexer, parser for a fragment of Java, and write a code generator to generate **LLVM** IR code.
- Write **LLVM** passes to optimize the performance.

A Neural Rendering Framework for Free-Viewpoint Relighting

MARS Lab

📅 Sep. 2019 – Feb. 2020 📍 Shanghai, China

- Build a **relightable rendering model**. Use GCN to extract 3D features from point cloud in the Feature Extractor. Paper was accepted by CVPR2020.

R&D Intern

DGene Tech

📅 Mar. 2019 – May. 2020 📍 Shanghai, China

- Participated in 3D face reconstruction project, responsible for building and compressing neural network and deploy it on an android phone.

EDUCATION

Ph.D, Computer Science

Stevens Institute of Technology, Under the supervision of Michael Greenberg

📅 Sep 2022 – Present

M.Eng, Computer Science and Engineering
Chalmers University of Technology

📅 Sep 2020 – Jun 2022

B.Eng, Computer Science and Engineering
Shanghai University

📅 Aug 2016 – Jun 2020

RESEARCH INTEREST

- Programming Language, Effect Handler, Type System
- Compiler Construction and its Correctness
- Language-based Security, Static Information-flow Control for Security and Privacy
- Real-world System Modeling & Verification
- ML System, ML Compiler

SELECTED COURSE

- Advanced Functional Programming
- Language-based Security
- Compiler Construction
- Type of Program and Proof
- Formal Methods in Software Development

SKILLS

- **Programming Languages:** Rust, Haskell, Agda, Coq, Go, C/C++, Python, Matlab
- **Languages:** Mandarin, English