

# Ryang Sohn (손량)

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## Education

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### POSTECH (Pohang University of Science and Technology)

Feb 2022 – Ongoing

Majoring in Computer Science and Engineering, double major in Mathematics (GPA: 4.16/4.30)

## Skills

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Programming Languages	Python, Rust, C/C++, JavaScript, Java, Go
Tooling	Git/GitHub, Docker, Linux, CMake
Natural Languages	Korean (native), English (working proficiency)

## Work Experience

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### Theori

Jan 2024 – Ongoing

ChainLight WARD (Web3 Automated Risk Detection) Intern Researcher

- Skills used: Rust, Static Program Analysis, Solidity
- Worked on security-focused static analysis engine for web3 applications.
- Areas of interest:
  - Translating Solidity code to intermediate representation suitable for data-flow analysis.
  - Simplified memory model of Ethereum Virtual Machine.
  - Vulnerability detection of smart contracts using data-flow analysis.

### PoApper Inc.

Jan 2022 – Mar 2023

Part-time Backend Engineer

- Skills used: Python, Go
- Developed `fight.ai`, an environment for competitive game-playing agents.
- Areas of interest:
  - Developer-friendly Python API for game-playing agents.
  - Server infrastructure based on message queue for competitive gameplay.
  - Isolated per-agent environment for multiplayer games.

## Awards and Honors

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### National Science & Technology Scholarship

May 2024

Endorsed by the university in the 3rd year.

### POSTECH CSE Global Leadership Program 2024 Spring

Mar 2024

A scholarship program for high-performing POSTECH CSE students.

### POSTECH CSE Global Leadership Program 2023 Fall

Sep 2023

A scholarship program for high-performing POSTECH CSE students.

### Crypto Contest 2022, 2nd Prize

Oct 2022

Cryptanalysis competition hosted by South Korean Ministry of Defense.

- Contributions:
  - Multi-threaded PoC code for attacking weak Bitcoin-like wallet scheme.
  - Security analysis of Sponge-based hash function.

### POSTECH Programming Contest 2022, Freshman Prize

Sep 2022

Coding competition for POSTECH students.

- Participated as Team 대쥬패, ranked first among freshman students.

### **Artificial Intelligence Accelerator Design Competition, Encouragement Prize**

*Jun 2022*

Competition to design FPGA-based accelerator for neural networks.

- Worked on: 8-bit quantization algorithm of YOLOv3 neural network.

## **Personal Projects**

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### **stapl – Simple, Type-Annotated Programming Language**

A compiler for imperative programming language with type annotations.

- Written in C++ and based on LLVM.
- Striving to follow best practices of modern C++ and software development (modularity, unit testing, documentation, etc.)

### **GPU-accelerated Ray Tracer**

Developed a ray tracer that can simulate various materials.

- Started as a term-project for computer graphics course.
- Written in Vulkan compute shader, more than 10x speedup compared to CPU based ray tracer.
- Learned internals and low-level details of modern graphics pipeline.
- Notable features:
  - Support for metallic, dielectric, and diffuse materials.
  - Simulation for hypothetical portal materials.
  - Utilization of modern technology stack, such as Vulkan and dynamic rendering.

### **TML (Tiny ML) Compiler**

The final programming assignment of program language course.

- Compiles Tiny ML, a subset of Standard ML, into machine code for virtual machine Mach.
- Written in OCaml.
- Learned internals of compilers for functional languages, and various implementation strategies.
- Notable features:
  - SSA-like intermediate representation.
  - Support for closures, high-order functions, recursive datatypes and pattern matching.

### **PintOS Implementation**

Implementing PintOS, an educational operating system.

- Written in C and x86 assembly.
- Worked on threading, userspace programs, and virtual memory system.
- Notable features:
  - Virtual memory system similar to object-based reverse mapping of Linux.
  - Reduced memory usage by reusing already-loaded code sections.