Hojin Choi

Undergraduate student at Sogang University

 cho1hojin.github.io
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Research Interest

- **Software Testing, Program Analysis, Software Security, Program Repair**

Education

Sogang University   Mar. 2020 – Feb. 2026 (Expected)

- *B.S. in Computer Science and Engineering (CGPA: 3.95 / 4.0, 3rd out of 136)*   *Seoul, Republic of Korea*
  (On leave for 2 years: Mandatory military service)

Research Experience

Undergraduate Researcher at Information Security Lab, Sogang University   Jan. 2024 - Present
Advisor: Prof. Jaeseung Choi

Conducted research on **fuzz testing for Ethereum smart contracts**, focusing on constraint-aware argument mutation that leverages semantic dependencies between function arguments and persistent state variables. Implemented a novel fuzzer (**IConFuzz**) and demonstrated improved bug-finding effectiveness on real-world smart contracts compared to three existing state-of-the-art tools (Smartian, SmarTest, and RLF). This work has been **submitted to ACM Transactions on Software Engineering and Methodology (TOSEM)** and is currently under review. (link)

Internship at System Security Lab, Indiana University Bloomington   Feb. 2025 - Jun. 2025
Advisor: Prof. Hyungsub Kim

During this internship, I developed a dynamic analysis tool on **Valgrind** for data-dependency tracking, implemented an **LLVM** ModulePass to build call graphs including indirect calls, and analyzed the **ArduPilot** code base, where I implemented a simple rover control program. Implementation details can be found on my GitHub (link).

Publications

1. **H. Choi** and J. Choi. "IConFuzz: A Constraint-Aware Argument Mutation for Effective Smart Contract Fuzz Testing" *ACM Transactions on Software Engineering and Methodology (TOSEM)*, under review. (artifact)

2. **H. Choi**, J. Park, and J. Choi. "The Impact of Bug Oracle Implementation on the Effectiveness of Smart Contract Analysis Tools" *Korea Software Congress (KSC)*, 2024. (paper)

Academic Experience

Student volunteer

- KIISE SIGPL (Special Interest Group on Programming Languages) Summer School 2025

HONORS AND AWARDS

Capstone Design Competition   *2025*
- *2nd place among 12 teams, Sogang University*
- *Developed applications for a dementia care robot using state-of-the-art TTS, lip-sync models*
- *Awarded $3,800 USD from the sponsor, Wonderful Platform*
- *Presented at the Korea Computer Congress (KCC) 2025 in the poster session*

Scholarship from Woon Hae Foundation   *2024*
- *nominated by Sogang University (15 students) and selected as one of 294 recipients nationwide*
- *$7,000 annual merit-based scholarship (equivalent to one year of tuition)*

Dean's list   *2023*
- *Awarded to top 1% students in Sogang University*

SW Excellence Scholarship for Freshmen   *2020*
- *Awarded to 11 outstanding freshmen, Sogang University*
- *$7,000 annual merit-based scholarship (equivalent to one year of tuition)*

TEACHING EXPERIENCE

Hacking and Information Security   *Fall. 2025*
- *Assisting course instructor with grading and managing assignments*

Introduction to AI Programming   *Fall. 2023 - Spring. 2025*
- *Covered basic Python programming and related frameworks*
- *Assisting lab sessions and managing assignments*

SELECTED ACADEMIC PROJECTS

Fundamentals of Compiler Configuration &   *Fall. 2024*
Personal project using C within the course
- Implement the simplified compiler with three phases:
  Type checker, AST-to-IR translator, and IR optimization

Operating System &   *Fall. 2024*
Personal project using C within the course
- Implement the basic kernel features with PintOS:
  System call, Process scheduling, and Virtual memory

Programming Language &   *Spring. 2024*
Personal project using F# within the course
- Implement simple programming languages and type checker
  Imperative language, Functional language, and Type checker

System Programming &   *Spring. 2024*
Personal project using C within the course
- Three independent implementations:
  A simple shell, A concurrent server, and Custom malloc and free

SKILLS

Programming Languages: C/C++, Python, F#, OCaml, Assembly Language(x86-64)

Tools: Git, GDB, Docker, LaTeX

Languages: Korean (Native), English (TOEFL iBT MyBest score 102/120)