

# Hojin Choi

Undergraduate student at Sogang University

CHO1HOJIN

hojinchoi.2001@gmail.comw

## RESEARCH INTEREST

I have interests across a wide range of topics in software engineering and security, including but not limited to:

- Software security, software testing, fuzz testing, static analysis

## EDUCATION

<b>Sogang University</b>	Seoul, Republic of Korea
<i>Bachelor of Science in Computer Science and Engineering (CGPA: 4.13 / 4.3, Salutatorian)</i>	<i>Expected Graduation: Feb. 2026</i>
<i>Relevant Coursework: Programming Language, Fundamentals of Compiler Configuration, Hacking and Information Security, System Programming, Operating System</i>	

## RESEARCH EXPERIENCE

<b>Undergraduate Internship at Information Security Lab</b>	Sogang University
<i>Advisor: Prof. Jaeseung Choi</i>	<i>Jan. 2024 - Present</i>
Conducted research on <b>fuzz testing for Ethereum smart contracts</b> , focusing on constraint-aware argument mutation that leverages semantic dependencies between function arguments and persistent state variables. Implemented a novel fuzzer ( <b>IconFuzz</b> ) and demonstrated improved bug-finding effectiveness compared to existing state-of-the-art tools. This work has been <b>submitted to ACM Transactions on Software Engineering and Methodology (TOSEM)</b> and is currently under review.	
<b>Remote Internship at System Security Lab</b>	Indiana University, Bloomington
<i>Advisor: Prof. Hyungsub Kim</i>	<i>Jan. 2025 - Jun. 2025</i>
During this internship, I studied system security topics and completed several hands-on assignments. I developed a dynamic analysis tool on <b>Valgrind</b> for data-dependency tracking, implemented an <b>LLVM</b> ModulePass to build call graphs including indirect calls, and analyzed the <b>ArduPilot</b> code base, where I implemented a simple rover control program. Implementation details can be found on my GitHub (link).	

## PUBLICATIONS

- **H. Choi**, J. Park, and J. Choi, "The Impact of Bug Oracle Implementation on the Effectiveness of Smart Contract Analysis Tools" in *Korea Software Congress (KSC)*, 2024.
- **H. Choi** and J. Choi, "IconFuzz: A Constraint-Aware Argument Mutation for Effective Smart Contract Fuzz Testing" in *ACM Transactions on Software Engineering and Methodology (TOSEM)*, under review.

## ACADEMIC SERVICE

<b>Student volunteer</b>
- KIISE SIGPL (Special Interest Group on Programming Languages) Summer School 2025

## HONORS AND AWARDS

<b>Scholarship from Woon Hae Foundation</b>	<i>₩10,000,000 a year</i>	<i>2024</i>
<b>Dean's list</b>	<i>Top 1% GPA honor, Sogang University</i>	<i>2023</i>
<b>SW Excellence Scholarship for Freshmen</b>	<i>Sogang University</i>	<i>2020</i>
<b>Capstone Design Competition</b>	<i>2nd place, Sogang University</i>	<i>2025</i>

## TEACHING EXPERIENCE

<b>Introduction to AI Programming</b>	<i>Fall. 2023 - Spring. 2025</i>
- Covered basic <i>Python</i> programming and related frameworks	
- Assisting lab sessions and managing assignments	
<b>Hacking and Information Security</b>	<i>Fall. 2025</i>
- Assisting course instructor with grading 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:** C/C++, Python, F#, OCaml, Assembly Language(x86-64)

**Languages:** Korean (Native), English (TOEFL iBT MyBest score 98/120)