

RESEARCH INTERESTS

I build tools and abstractions to help programmers and domain experts easily build reliable systems.

Areas *Programming Languages · Static Analysis · Program Synthesis · Human–Computer Interaction*

EDUCATION

- Mar 2024–Feb 2026 **Seoul National University (SNU)**, *M.S. in Computer Science and Engineering*
Advised by Kwangkeun Yi.
Thesis: REACT-TRACE: A Semantics for Understanding React Hooks
- Mar 2018–Feb 2024 **Seoul National University (SNU)**, *B.S. in Electrical and Computer Engineering (cum laude)*
Advised by Yoonchan Jeong.
Leave of absence for mandatory military service during 2020–2021.
- Mar 2015–Feb 2018 **Korea Science Academy of KAIST (KSA)**, *High school for gifted students*

SELECTED RESEARCH

-  **Retargeting an Abstract Interpreter for a New Language by Partial Evaluation (Short Paper)**,
(accepted)
Jay Lee, Joongwon Ahn, Kwangkeun Yi
Proceedings of the 2026 ACM SIGPLAN International Workshop on Partial Evaluation and Program Manipulation (PEPM '26), January 13, 2026, Rennes, France.
-  **REACT-TRACE: A Semantics for Understanding React Hooks**
Jay Lee, Joongwon Ahn, Kwangkeun Yi
Proc. ACM Program. Lang. 9, OOPSLA2, Article 289 (October 2025). (Acceptance rate: 35.6%)
-  **ReDemon UI: Reactive Synthesis by Demonstration for Web UI**
Jay Lee, Gyuhyeok Oh, Joongwon Ahn, Xiaokang Qiu
The 38th Annual ACM Symposium on User Interface Software and Technology (UIST Adjunct '25), September 28–October 1, 2025, Busan, Republic of Korea. (Acceptance rate: 43.8%)
Awarded a Best Poster Honorable Mention Award.
-  **Retargeting an Abstract Interpreter for a New Language by Partial Evaluation**
Jay Lee
Awarded 2nd place in the graduate category.

SELECTED HONORS

- Oct 2025 **UIST 2025 Best Poster Honorable Mention Award, ACM SIGCHI & SIGGRAPH**
ReDemon UI: Reactive Synthesis by Demonstration for Web UI
- Aug 2025 **SIGPL Summer School 2025 Presentation Award 1st Place, KIISE SIGPL**
REACT-TRACE: A Semantics for Understanding React Hooks
- Jun 2025 **PLDI 2025 Student Research Competition (SRC) Graduate Category 2nd Place, ACM SIGPLAN**
Retargeting an Abstract Interpreter for a New Language by Partial Evaluation
- Sep 2024 **Outstanding Teaching Assistant Award, SNU College of Engineering**
SNU 4190.310 Programming Languages
- Aug 2024 **SIGPL Summer School 2024 Presentation Award 2nd Place, KIISE SIGPL**
Let's Catch Incorrect React Hook Usage Early!
- Mar 2018–Feb 2024 **Presidential Science Scholarship, Korea Student Aid Foundation**
Full tuition waiver with an incentive offered to top 120 undergraduates in the field of science.
- May 2017 **Intel International Science and Engineering Fair (ISEF) Finalist, Korean representative**
Receding Horizon Next-Best-View Planner Based Voronoi-Biased 3D Multi-Robot Exploration Algorithm
- Mar 2015–Feb 2018 **Korea Science Academy Fund Scholarship, Korea Science Academy of KAIST**
For students with high GPAs.

TEACHING


Teaching Assistant

Fall 2025	SNU V10.118 Future
Spring 2025	SNU 4190.664A Program Analysis
Spring 2025	SNU 4190.310 Programming Languages
Fall 2024	SNU 4190.209 Computer Engineering Seminar
Spring 2024	SNU 4190.310 Programming Languages, Outstanding Teaching Assistant Award
Spring 2022	SNU 4190.310 Programming Languages, Undergraduate TA







Tutoring


Fall 2024	SNU SPLIT Basic Programming Tutoring, Python tutor
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INDUSTRY EMPLOYMENT

Apr 2019–Dec 2019	 Jeongyookgak, iOS application developer Developed an iOS app for Jeongyookgak, a distribution business startup that delivers fresh meat to customers.
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MISCELLANEOUS

2025–Present	PL Reading Group @ Seoul/Tokyo, Co-organizer PL reading group with participants from <i>Programming Research Laboratory at Seoul National University</i> and <i>Programming Research Group at the Institute of Science Tokyo</i> . Wednesday every week at 15:30 KST/JST.
2025–Present	 OCaml organization, Opam repository maintainer Maintaining the OCaml package repository.
2023–Present	 easyword.kr, Designer & developer A platform to suggest and discuss Korean translations of computer science jargons. Led by Prof. Kwangkeun Yi and funded by the Korean Institute of Information Scientists and Engineers (KIISE).
2020–Present	 simplebnf, Developer A \LaTeX package that provides a simple way to typeset BNF using a DSL. Available on CTAN .
2023	 Cycloidal-Surfaces, Illustrator & developer Illustrations of cycloid surfaces on parametrized curves with Asymptote, used in Hyounghy Choi (2023), Invariance of the Area and Volume of Cycloid Surfaces and Trochoid Surfaces. <i>The American Mathematical Monthly</i> 130:1, 49–62.
2020	 CycloidGen, Illustrator & developer Illustrations of cycloids on parametrized curves with TikZ and Python, used in Hyounghy Choi (2020), Invariance of the Length and the Area of Cycloids. <i>The American Mathematical Monthly</i> 127:6, 537–544.
2019–2024	Korean \LaTeX Society (KTS), Member I have given a few talks including: <ul style="list-style-type: none"> • Modern \LaTeX: Engines, AI, and Automation, 2023 KNU \LaTeX Workshop • Drawing tables with tabularray, 2022 KNU \LaTeX Workshop • Asymptote: The Vector Graphics Language, 2021 KNU \LaTeX Workshop • The “key-value” structure in \LaTeX, 2021 KNU \LaTeX Workshop • beamer: Content-focused Presentation, 2020 KNU \LaTeX Workshop • \LaTeXnical Vim, 2020 KTS Conference • memoir: chapter style, 2019 KNU \LaTeX Workshop
2018–2024	 SNULife, Development head SNULife is the web community for SNU with 180k+ monthly visitors. I created an iOS app for planning timetables and sharing lecture reviews, used by 5k+ users.
2020–2021	Republic of Korea (ROK) Army, Sergeant signaler Completed mandatory military service in the ROK Army.
2018	Student Representative, Department of Electrical and Computer Engineering Elected as a student representative for the Department of Electrical and Computer Engineering at SNU.

- KYPT 2016, 2017 **Korea Young Physicists' Tournament (KYPT)**, *Team lead*
 KYPT is a physics competition for high school students. I led the team that won a gold medal in KYPT 2017 and a bronze medal in KYPT 2016.
-  KIPS 2016 **Receding Horizon Next-Best-View Planner Based Voronoi-Biased 3D Multi-Robot Exploration Algorithm**
 J. Lee, C. Lee, W. Jung, S. Song, S. Jo
A domestic conference paper.
- 2016 **Frontiers Summer Program**, *Worcester Polytechnic Institute*
 Studied aerospace engineering and psychology at Worcester Polytechnic Institute in the USA.

NATURAL LANGUAGES

Korean/한국어 (native, 1999), **English** (fluent, 2006), **Spanish/Español** (elementary, 2022)

PROGRAMMING LANGUAGES

C (2012), **Python** (2013), C++ (2016), **T_EX** (2016), Swift (2018), R (2018), TikZ (2018), SwiftUI (2019), OCaml (2019), λ calculus (2019), **L^AT_EX3/expl3** (2019), Scheme (2019), Kotlin (2019), MATLAB (2019), Asymptote (2020), AWK (2020), JavaScript (2020), Lua (2021), CWEB (2021), Yacc (2021), **ReScript** (2022), **React** (2022), Rocq/Coq (2023), Rust (2023), **TypeScript** (2023), Typst (2024), Penrose (2024), Nix (2024), Lean (2025). I use the **bolded** languages frequently.