Jay Lee 이재호   Curriculum Vitae

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GitHub:	Zeta611
Blog:	jaylee.xyz

Research Interests

Programming Languages, Program Analysis, Functional Programming, and Software Engineering

Education

Seoul National University (SNU)   Seoul, Korea

Master of Science in Computer Science and Engineering   *Mar 2024–Present*

    Advised by Kwangkeun Yi

    GPA: 4.15/4.3

Bachelor of Science in Electrical and Computer Engineering   *Mar 2018–Feb 2024*

    Cum laude; GPA: 3.81/4.3

    National Presidential Scholarship for Science (full-tuition scholarship)

    Leave of absence for military duty during 2020–2021

Korea Science Academy of KAIST (KSA)   Busan, Korea

    Graduated; GPA: 4.05/4.3   *Mar 2015–Feb 2018*

    High school for gifted students, KSA Fund Scholarship

Research Experiences

Programming Research Laboratory (ROPAS)   Seoul, Korea

Master's student, advised by Prof. Kwangkeun Yi   *Mar 2024–Present*

Undergraduate research intern, advised by Prof. Kwangkeun Yi   *Feb 2022–Feb 2024*

- Retargeting an Abstract Interpreter for a New Language by Partial Evaluation

  Ongoing research

- React-tRace: A Semantics for Understanding React Hooks (Zeta611/react-trace)

  Submitted to OOPSLA '25

- STAPPL: Statically Typed Probabilistic Programming Language (Zeta611/stappl)

  Final project for a graduate course on Probabilistic Graphical Models (ranked top-3)

- Uncaught exception analysis on ReScript (LimitEpsilon/reanalyze-ropas)

- Prospect analysis of programs with holes (Zeta611/L)

Security Optimization Research Laboratory (SOR)   Seoul, Korea

Undergraduate graduation project, advised by Prof. Yunheung Paek   *May 2022–Dec 2023*

- Escape analysis of unsafe Rust (https://github.com/Zeta611/rust-escape-analysis-thesis)

Neuro-Machine Augmented Intelligence Laboratory (NMAIL)   Daejeon, Korea

R&E and High School Research & Education Program (HRP), advised by Prof. Sungho Jo   *Jan 2016–Nov 2017*

- Designed and implemented a multi-robot exploration algorithm

  - Attended Intel International Science and Engineering Fair (ISEF) 2017 as a finalist

  - Presented result in the Proceedings of the Korea Information Processing Society Conference

Selected Honors

National Presidential Scholarship for Science *Mar 2018–Feb 2024*

National science scholarship offered to top students in the field of science and technology

Intel International Science and Engineering Fair (ISEF) Finalist *May 2017*

Title: The Next Generation Multi-Robot Exploration: Biased Viewpoint Sampling via Dynamic Voronoi Space Partitioning and Receding Horizon Scheme

Korea Science Academy Fund Scholarship *Mar 2015–Feb 2018*

Scholarship for freshmen with high GPAs

Teaching Experiences

Seoul National University

Teaching Assistant, *4190.664A Program Analysis* *Spring 2025*

Teaching Assistant, *4190.310 Programming Languages* *Spring 2025*

Teaching Assistant, *4190.310 Programming Languages* *Spring 2024*

   Received the best TA award

Teaching Assistant, *4190.310 Programming Languages* *Spring 2022*

Work Experiences

Jeongyookgak Seoul, Korea

Software engineer *Apr 2019–Dec 2019*

• Developed an iOS application as a one person developer

• Jeongyookgak is a distribution business startup that delivers fresh meat to customers

Domestic Publications

J. Lee, C. Lee, W. Jung, S. Song, and S. Jo, "Receding Horizon Next-Best-View Planner Based Voronoi-Biased 3D Multi-Robot Exploration Algorithm," *Proceedings of the Korea Information Processing Society Conference*, pp. 579–580, Oct. 2016.

Miscellaneous Projects

easyword.kr: a platform for translating CS jargons

The website provides a platform to suggest, discuss, and vote easy korean translations of CS jargons. It is created using ReScript, a cousin of OCaml that transpiles to React.

simplebnf: a simple Backus-Naur form (BNF) LaTeX package

The package provides a simple way to typeset Backus-Naur form using a DSL.

Cycloidal-Surfaces: draws cycloid surfaces on parametrized curves with Asymptote

This is used to provide illustrations in: Hyounggyu Choi. (2023) Invariance of the Area and Volume of Cycloid Surfaces and Trochoid Surfaces. *The American Mathematical Monthly* 130:1, 49-62.

CycloidGen: draws cycloids on parametrized curves with Ti*k*Z and Python

This is used to provide illustrations in: Hyounggyu Choi. (2020) Invariance of the Length and the Area of Cycloids. *The American Mathematical Monthly* 127:6, 537-544.

PolyCalc: a polynomial calculator

PolyCalc calculates and expands polynomials, equations, and relations, with a support for simple variable assignments for the ease of handling expressions.

Video-Converter: a simple video converter for Mac

The app is a simple video converter for Mac, implemented using a unidirectional data flow pattern with a View-State-Interactor structure.

SwiftUI-Fractals: the Sierpinski carpet, triangle, and a fractal tree using SwiftUI

The app demonstrates the Sierpinksi carpet & triangle, and a fractal tree using SwiftUI. There is an accompanying article (in Korean) as well.

Miscellaneous Experiences

Korean TeX Society (KTS)   *Jun 2019—Present*

As a member of the Korean TeX Society, I have given a few talks including:

- Modern TeX: Engines, AI, and Automation, 2023 KNU LaTeX Workshop
- Drawing tables with `tabularray`, 2022 KNU LaTeX Workshop
- Asymptote: The Vector Graphics Language, 2022 KNU LaTeX Workshop
- The "key-value" structure in LaTeX, 2021 KNU LaTeX Workshop
- `beamer`: Content-focused Presentation, 2020 KNU LaTeX Workshop
- TeXnical Vim, 2020 KTS Conference
- `memoir`: chapter style, 2019 KNU LaTeX Workshop

SNULife   *Apr 2018—May 2024*

Development head of SNULife, the web community for Seoul National University with 180k+ monthly visitors

- Created an iOS app for planning timetables and sharing lecture reviews, used by 5k+ users

ROK Army   *Jun 2020–Dec 2021*

Served and discharged from ROK Army as a signaller, sergeant

Student Representative   *Mar 2018–Dec 2018*

Student representative of the Department of Electrical and Computer Engineering

Korea Young Physicists' Tournament (KYPT 2016/2017)   *Jun 2016–Jan 2017*
Jun 2017–Jan 2018

Team lead, won a gold medal in KYPT 2017 & a bronze medal in KYPT 2016

Frontiers Summer Program (Worcester Polytechnic Institute)   *Jul 2016*

Studied aerospace engineering and psychology

Natural Languages

Korean (native), **English** (fluent), **Spanish** (elementary)