Jaeho Lee

Email: jaeho.lee@snu.ac.kr, jhlee@ropas.snu.ac.kr

Website: ropas.snu.ac.kr/~jhlee

GitHub: github.com/Zeta611

Blog: jaylee.xyz

Interests

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

Education

Seoul National University (SNU)	Seoul, Korea
Master of Science in Computer Science and Engineering	*Mar 2024–Present*
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*

- Formal semantics and static analysis of React hooks (github.com/React-Analysis/react-trace)
- Uncaught exception analysis on ReScript (github.com/LimitEpsilon/reanalyze-ropas)
- Prospect analysis of programs with a hole (github.com/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 an implemented a multi-robot exploration algorithm
  - Attended International Science and Engineering Fair (ISEF) 2017 as a finalist
  - Presented result in the Proceedings of the Korea Information Processing Society Conference

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

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.

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

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, *4190.310 Programming Languages*   *Spring 2024*
Teaching Assistant, *4190.310 Programming Languages*   *Spring 2022*

Projects

easyword.kr: Easy Korean Translations of CS Jargons

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

Tech stacks: ReScript, React, and Tailwind CSS

simplebnf: Simple Backus-Naur form (BNF) LaTeX package

The package provides a simple way to format Backus-Naur form (BNF) that parses BNF expressions.

Tech stacks: LaTeX with expl3, an experimental LaTeX3 programming interface

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.

Tech stacks: SwiftUI

PolyCalc: Polynomial Calculator

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

Tech stacks: C, Yacc, and Lex

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.

Tech stacks: SwiftUI and Combine

Cycloidal-Surfaces: Draws cycloid surfaces on parametrized curves

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

Tech stacks: Asymptote and LaTeX

CycloidGen: Draws cycloids on parametrized curves

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

Tech stacks: Python, TikZ, and LaTeX

Miscellaneous

SNULife *Apr 2018—Present*

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

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

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)