

JAEHO (JAY) LEE

CURRICULUM VITAE

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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*
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*

- 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 holes (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 and 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

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

Currently nominated as the best TA award

Teaching Assistant, 4190.310 Programming Languages

Spring 2022

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.

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.

STAPPL: a STatically typed Probabilistic Programming Language

STAPPL tracks if a variable is a random variable or a plain value, correctly propagating the random variable dependencies. The type system is encoded using OCaml GADTs. The project was done as a part of a graduate course on probabilistic graphical models.

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

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

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

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

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.

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

This is used to provide illustrations in the article, Hyunggyu 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 TikZ and Python

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

MISCELLANEOUS

Korean T_EX Society (KTS)

Jun 2019—Present

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

- Modern T_EX: Engines, AI, and Automation, 2023 KNU L^AT_EX Workshop
- Drawing tables with tabularray, 2022 KNU L^AT_EX Workshop
- Asymptote: The Vector Graphics Language, 2022 KNU L^AT_EX Workshop
- The “key-value” structure in L^AT_EX, 2021 KNU L^AT_EX Workshop
- beamer: Content-focused Presentation, 2020 KNU L^AT_EX Workshop
- T_EXnical Vim, 2020 KTS Conference
- memoir: chapter style, 2019 KNU L^AT_EX 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

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

Jun 2017—Jan 2018

Frontiers Summer Program (Worcester Polytechnic Institute)

Jul 2016

Studied aerospace engineering and psychology

NATURAL LANGUAGES

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