

SeungWuk Eun

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Experienced Compiler Engineer

Education



Korea Advanced Institute of Science and Technology
MASTER OF AI COMPUTING

Yuseong, Daejeon
2026.09 - present



Seoul National University
BACHELOR OF EARTH AND ENVIRONMENTAL SCIENCE

Gwanak, Seoul
2016.03 - 2022.08

- GPA: 3.4/4.3
- Course: Algorithm | Data Structure | Fundamental Computing for Data Science

Professional Experience



ENERZAI Corporation
MACHINE LEARNING COMPILER ENGINEER

GangNam, Seoul
2023.08 - 2024.09

- Design Programming Language “**Nadya**” from scratch for optimizing Machine Learning
- Implement the entire language frontend including **AST, Parser, Type Inference, Closure compilation, MLIR Lowering, Language Compiler Executable “ndc”** including cross-compilation
- Link : About “Nadya”, ENERZAI tech blog

Programming Language LLVM MLIR Clang Nadya

Projects

ENERZAI Corporation

DESIGN AND IMPLEMENT LANGUAGE “NADYA”

GangNam, Seoul
2023.08 - 2024.09

- Design** multi-paradigm programming language “Nadya” including **Functional features, Metaprogramming, and Native typed Tensor for ML**
- Implement a **Recursive Descent Parser** by Pratt parsing which is **context-sensitive, indentational, and double-passed** for hoisting declarations
- Implement simple AST Canonicalization and Folding by implementing **AST Pattern Matcher**
- Research Type inference algorithm in Hindley-Milner type system for “Nadya” and Implement it using “**Algorithm W**”
- Design **Functional Closure Compilation** using native Nadya features
- Implement **Template instantiation** for template functions, structs, and unions
- Lowering AST to MLIR middle-end
- Implement the **Nadya Compiler Executable “ndc”** which can cross-compile Nadya programs to executables or libraries by adapting Nadya frontend, backend, and LLVM C compiler “Clang”

Lexer Parser Type Inference MLIR Clang

Personal Project

DESIGNING INTERPRETER LANGUAGE “CAPYBARA”

2024.10 - 2024.11

- Design** non-typed interpreted programming language “Capybara” from scratch with LLVM framework
- Implement a **Recursive Descent Parser** and **Interpreter** with **Garbage Collector**
- Link: github(Bara)

Lexer Parser Interpreter Garbage Collector LLVM

Personal Project

IMPLEMENT “KECC”(KAIST EDUCATIONAL C COMPLIER) IN C++

2025.5 - 2024.10

- Implement **C Compiler “Kecc”** in C++ for educational purpose which compiles a subset of C language to riscv64 assembly
- Use a **C frontend** with Clang’s LibTooling
- Implement **IR framework** from scratch referencing MLIR design
- Implement **IR pattern matcher** for optimization passes
- Implement **Optimization passes** including Mem2Reg, Constant Folding, Dead code elimination, Global Value Numbering
- Implement **Code generation** to convert IR to riscv64 assembly
- Link: github(kecc-c)
- Link: original kecc github(kecc-public) – by KAIST cp lab

Lexer Parser Interpreter Garbage Collector LLVM

Extracurricular Activity

Samsung Software Academy For Youth

EMBEDDED SOFTWARE EDUCATION IN SSAFY

GangNam, Seoul

2023.01 - 2023.08

- Learn Linux system programming
- Implement simple cli game using pthread
- Design simple circuit and control them via software
- Work with embedded boards, like Renesas, Aduino, STM, and Raspberry Pi

Embedded System C Linux RaspberryPI

Software Maestro

WEB FRONTEND/BACKEND ENGINEERING IN SOFTWARE MAESTRO

GangNam, Seoul

2022.04 - 2022.12

- Design web server serving GAN-based AI Model to create 3D Models
- Implement a 3D interactive website using 3D avatars created by AI

Web frontend Web backend Java Spring Boot Javascript Three.js

Algorithm community in Software Maestro

HOLD COMPETITIVE ALGORITHM CONTEST

GangNam, Seoul

2022.08-2022.09

- Plan an algorithm contest for Software Maestro Trainees
- Write algorithm problems and verify their correctness
- *Link : problem set*

Algorithm Competitive Problem Solving

Skills

Programming C/C++ | Python | Java | Go | Javascript | HTML/CSS
Frameworks LLVM | MLIR | TableGen | Spring Boot | FastAPI
OS Linux (Fedora, Ubuntu)

Personal Interests Compiler | Machine Learning Optimization | LLVM | Programming Language | Linux | Vim | Open Source Programming

Scholarships

2016 - 2022 **Presidential Science Scholarship**, Ministry of Science and ICT

Military Service

2018.11 - 2020.07 **Completed mandatory military service in the Republic of Korea Army**