

# Hojoon Kim

Last Update: Sep 2024

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## Education

### KAIST

B.S. in Computer Science and Electrical Engineering

- GPA: 4.14/4.30

Daejeon, Republic of Korea

Mar. 2021 – Current

### EPFL

Exchange Student in Computer Science

- **Coursework:** Advanced Compiler Construction, Intro to Machine Learning, Computer Vision, Undergrad Research

Lausanne, Switzerland

Feb. 2024 – Jul. 2024

## Research Interest

My research interests lie at the intersection of system architecture and complex challenges. I am passionate about applying core principles of computer systems to optimize high-level problems in areas like computer vision.

## Research Experience

### Parallel Systems Architecture Lab (PARSA)

Visiting Researcher; Advisor: Babak Falsafi

- Contributed to the Midgard project, a novel virtual memory design that divides address translation into two parts.
- Proposed a lazy invalidation technique for translations in the Midgard virtual memory system, reducing unnecessary cache flushes and enhancing memory management efficiency.
- Designed experiments using the Linux kernel to evaluate the effectiveness of the proposed method.

Lausanne, Switzerland

Mar. 2024 – Jun. 2024

### Computer Architecture and Systems Lab (CASYS)

Undergraduate Researcher; Advisor: Jongse Park

- Contributed to a Video Understanding project aimed at leveraging temporal redundancy between frames to enhance training and inference performance.
- Calculated computational ratios of ViT and non-ViT components within the Video Language Model to evaluate our method's effectiveness.
- Conducted comprehensive literature reviews, summarizing relevant research papers for the project.

Daejeon, Republic of Korea

Jun. 2023 – Jan. 2024

## Projects

### L3 Project (CS-420 Advanced Compiler Construction) at EPFL | Scala, C, Compiler & Virtual Machine Concepts

- L3 (Lisp-like Language) is a special functional language designed for CS-420 course.
- Developed the backend interpreters for the L3 Compiler using Scala.
- Implemented components of the L3 Virtual Machine using C.
- Focused on CPS conversion, value representation, closure conversion, and garbage collection.

### CS320 Project (CS320 Programming Language) at KAIST | Scala, Programming Language Concepts

- Built interpreters for various toy languages using Scala.
- Gradually added complex features like continuations, closures, scoping, and type systems.

## Technical Skills

**Technologies / Environments:** PyTorch, Git, Docker

**Concepts:** Microarchitecture, Operating System, Virtual Memory, Cache Memory, Compiler, Artificial Intelligence, Machine Learning, Computer Vision

## Teaching/Mentoring

**Teaching Assistant:** KAIST CS101 Introduction to Programming

Sep. 2023 – Dec. 2023

**Mentor:** KAIST CS101 Introduction to Programming

Sep. 2023 – Dec. 2023

## Services

**Team Leader:** of Director at KAIST Broadcasting System

**Association Member:** at KAIST Freshman Student Council & KAIST School of Computing Student Council