

Minguk Choi

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RESEARCH INTEREST

Past: Linux Kernel, Key-Value Store

Present: Systems for ML, ML for Systems

ON-GOING PROJECTS

Apache SystemDS: An open source ML system for the end-to-end data science lifecycle.

Accelerating Learned Index via SIMD: Accelerating learned indexes through the parallelism of internal ML models.

EDUCATION

Dankook University

M.S. in AI-based Convergence

Advisor: Prof. Seehwan Yoo and Prof. Jongmoo Choi

Yongin, South Korea

Mar 2023 – Aug 2024

Dankook University

B.S. in Software Science, GPA: 4.1/4.5 (**Salutatorian**)

Yongin, South Korea

Mar 2017 – Feb 2023

PUBLICATIONS

International Conference

[SIGMOD 2024] Can Learned Indexes be Built Efficiently? A Deep Dive into Sampling Trade-Offs

Minguk Choi, Seehwan Yoo, Jongmoo Choi

Top Conference

International Journal

[Electronics 2023] An Empirical Study of Segmented Linear Regression Search in LevelDB

Ramadhan Agung Rahmat, Minguk Choi, Yoojin Chung, Jongmoo Choi.

Selected Domestic Conference (+7 more)

[KCC 2024] Analysis of RMI Using CPU-Optimized Search Algorithms

Yejin Oh, Minguk Choi, Boseung Kim, Yongjie Zhu, Seehwan Yoo, Jongmoo Choi

Best Paper Award

[KCC 2024] Breakdown Internal Operations in Updatable Learned Index

Suhwan Shin, Minguk Choi, Nakyeong Kim, Seehwan Yoo, Jongmoo Choi

Best Presentation Award

EXPERIENCES

Research Collaboration

Advisor: Prof. Matthias Boehm (Technische Universität Berlin, Germany)

• System for ML, Apache SystemDS

Remote, Korea

Aug 2024 – Present

Student Researcher

System Software Laboratory

• Advisor: Prof. Seehwan Yoo and Prof. Jongmoo Choi

• Linux kernel: CPU scheduler, Memory allocator, Block I/O stack

• Key-value store: LevelDB, RocksDB, Skiplist, SST file

• Learned index structure: Sampling, Semi-ordered, SIMD

Dankook University, Korea

Jun 2021 – Aug 2024

Teaching Assitant

Operating Systems

• Assignments: CPU scheduler simulator, Concurrent data structure. Ext2 file forensics

Dankook University, Korea

Spring 2024

Index Structure Study

Winter 2023

<ul style="list-style-type: none"> • Lecture: Introduction on traditional and learned index structures • Research Mentor: 5 Domestic conference papers (1 best paper, 1 best presentation award) 	Fall 2023
Operating System Practice <ul style="list-style-type: none"> • Lecture: Operating system overview, Practical exercises • Practices: Basic (vim, ssh, gcc, gdb), File (myCat, myCreate), Concurrency (Dining Philosophers, Readers-Writers), myShell 	Fall 2023
System Programming <ul style="list-style-type: none"> • Assignments: myLs, myCreate, myCat, myCopy, and myShell 	Fall 2023
LevelDB Study <ul style="list-style-type: none"> • Lecture: Introduction on LevelDB (Key-Value Store) • Research Mentor: 4 Domestic conference papers, Tuning contest (YCSB), Open-source document 	Summer 2022
Compulsory Military Service Honorable Discharge	Korean Air Force Jan 2019 – Oct 2020

PROJECTS

Apache SystemDS	Aug 2024 – Present
Key-value Store with Predictable Latency Support, NRF	Mar 2022 – Aug 2024
(SW StarLab) Key-value DB for Unstructured Big Data , IITP	Jun 2021 – Aug 2024

HONORS AND AWARDS

Best Assitant Award , Dankook University	Jul 2024
Best Presentation Award , Korea Computuer Congress (KCC) 2024	Jun 2024
Best Paper Award , Korea Computuer Congress (KCC) 2024	Jun 2024
Certificate of Appreciation , Korea Computuer Congress (KCC) 2024	Jun 2024

SERVICES

ARI Program Committee, ACM SIGMOD 2024

LANGUAGE AND TECHNICAL SKILLS

Languages: Korean (Native), Englsih (TOEIC 970/990, OPIc IH)

Programming Languages: C/C++, Java, Python

PERSONAL INTERESTS

Fitness: Running, Weight lifting

Cooking: Korean Cuisine, Japanese Cuisine, Grilling

REFERENCES

Prof. Jongmoo Choi choijm@dankook.ac.kr

Software Science, Dankook University

Prof. Seehwan Yoo seehwan.yoo@dankook.ac.kr

Mobile Systems Engineering, Dankook University