

# Junhyeok Park

Computer System Researcher

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## PROFILE

Now I'm a Master's student in Computer Science and Engineering at Sogang University, and a research assistant in DISCOS Laboratory. My goal is to become an awesome computer system researcher who makes the world convenient!

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## EDUCATION

### SOGANG UNIVERSITY

M.S in [Computer Science and Engineering](#) (2024.03-present)

→ Advisor: [Prof. Youngjae Kim](#)

### SOGANG UNIVERSITY

B.S in [Computer Science and Engineering](#) (2024.02)

→ CGPA: 4.15/4.50 (Magna Cum Laude, 5<sup>th</sup> out of 69)

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## WORK EXPERIENCE

**RESEARCH ASSISTANT**, [DISCOS](#) (Data-Intensive Computing & AI Systems) Laboratory, Sogang University, Seoul (2023.01-present)

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## PUBLICATION

### Integrating Distributed SQL Query Engines with Object-Based Computational Storage

J.Ryu, S.Hwang, **J.Park**, S.Ahn, J.Park, J.Lee, J.Yang, S.Yang, J.Noh, Q.Zheng, W.Chung, H.Kim, Y.Kim. [In Proceedings of the 11th International Workshop on Data Analysis and Reduction for Big Scientific Data (DRBSD), St. Louis, MO, USA, November 17, 2025] ([pdf](#)) ([talk](#))

### OpenCXD: An Open Real-Device-Guided Hybrid Evaluation Framework for CXL-SSDs

H.Chung\*, **J.Park\***, T.Noh, S.Ahn, K.Kim, M.Zhao, Y.Kim. [In Proceedings of the 33rd International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (**MASCOTS**), Paris, France, October 21-23, 2025] ([pdf](#)) ([talk](#)) ([arxiv](#))

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## OASIS: Object-based Analytics Storage for Intelligent SQL Query Offloading in Scientific Tabular Workloads

S.Hwang, J.Park, J.Ryu, S.Ahn, **J.Park**, J.Lee, S.Yang, J.Noh, W.Chung, H.Kim, Y.Kim. [arXiv preprint arXiv:2509.01966, September 2, 2025] ([arxiv](#))

## ByteExpress: A High-Performance and Traffic-Efficient Inline Transfer of Small Payloads over NVMe

**J.Park**, J.Lee, Y.Kim. [In Proceedings of the 17th ACM Workshop on Hot Topics in Storage and File Systems (**ACM HotStorage**), Boston, MA, USA, July 10-11, 2025] ([pdf](#)) ([talk](#))  
— **Best Paper Award**

## KVAccel: A Novel Write Accelerator for LSM-Tree-Based KV Stores with Host-SSD Collaboration

K.Kim\*, H.Chung\*, S.Ahn\*, **J.Park**, S.Jamil, H.Byun, M.Lee, J.Choi, Y.Kim. [In Proceedings of the 39th IEEE International Parallel and Distributed Processing Symposium (**IEEE IPDPS**), Milan, Italy, June 3-7, 2025] ([pdf](#)) ([talk](#))

## Maximizing Interconnect Bandwidth and Efficiency in NVMe-Based Key-Value SSDs with Fine-Grained Value Transfer

**J.Park**, C.-G.Lee, S.Hwang, S.-J.Cha, W.Chung, Y.Kim. [IEEE Micro Special Issue on Cache Coherent Interconnects and Resource Disaggregation Techniques (**IEEE Micro**), Early Access, May 23, 2025] ([pdf](#))

## Improving SQL Query Execution of Distributed Query Engines on Object-Based Computational Storage through Multi-Layered Offloading

S.Hwang, **J.Park**, J.Ryu, J.Park, J.Lee, J.Noh, S.Yang, W.Chung, Y.Kim. [Presented at the 9th International Parallel Data Systems Workshop (PDSW) Work-In-Progress (WiP), Atlanta, GA, USA, November 17, 2024] ([pdf](#)) ([talk](#))

## BandSlim: A Novel Bandwidth and Space-Efficient KV-SSD with an Escape-from-Block Approach

**J.Park**, C.-G.Lee, S.Hwang, S.Yang, J.Noh, W.Chung, J.Lee, Y.Kim. [In Proceedings of the 53rd International Conference on Parallel Processing (**ICPP**), Gotland, Sweden, August 12-15, 2024] ([pdf](#)) ([talk](#)) ([nvramos24](#)) ([kiise24](#))

## OctoFAS: A Two-Level Fair Scheduler that Increases Fairness in Network-Based Key-Value Storage

Y.Park, [J.Park](#), **J.Park**, A.Khan, K.Kim, S.-S.Park, Y.Kim. [MDPI Electronics Special Issue on Distributed Computing and Storage Challenges for Emerging Applications (MDPI Electronics), Volume 13, Number 3, February 1, 2024] ([pdf](#))

## OCTOKV: An Agile Network-based Key-Value Storage System with Robust Load Orchestration

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Y.Park, **J.Park**, A.Khan, J.Park, C.-G.Lee, W.Chung, Y.Kim. [In Proceedings of the 31st International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (**MASCOTS**), Stony Brook, NY, USA, October 16-18, 2023] ([pdf](#)) ([talk](#))

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## PROJECT

### SK Hynix & Los Alamos National Laboratory.

#### *Object-based Computational Storage for Accelerating Data Analytics*

(2024.01-present) ([sc23](#)) ([fms24](#)) ([sc24](#)) ([ces25](#)) ([fms25](#))

**My Role:** Designed and implemented an in-storage query processing framework with a strong focus on horizontally and vertically distributed execution within a computational object storage system, comprising a network gateway and multiple storage arrays, each equipped with multiple data-aware CSDs.

### Capstone Design Project.

#### *TravelPT: OpenAI ChatGPT-based Seoul Travel Guide Web Application*

(2023.03-2023.06) ([poster](#))

**My Role:** Designed and implemented an early-stage, low-latency Retrieval-Augmented Generation (RAG) pipeline using the OpenAI API and Firebase API.

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## HONOR + AWARD

Received the Pure Storage Best Paper Award at ACM HotStorage 2025 Workshop (2025.07)

Received a Graduate Scholarship from SK hynix Memory Systems Research (2024.06)

Albatross Fellowship upon the admission to the Sogang University Graduate School (2024.01)

Best Excellence Award at the 2023-1 Sogang Convergence Technology Competition (2023.06)

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## TEACHING + TALK

Designed and developed new coursework for Embedded Systems Software (CSE4116) at Sogang University, covering the kernel I/O stack, SSD architecture, NVMe protocol, PCIe interconnect, and SSD firmware development on a Xilinx FPGA-based Cosmos+ OpenSSD board (2025.03-present)

Optimizing NVMe-Based Key-Value Interfaces and Leveraging KVSSDs: A Comprehensive Study (Special Seminar at Soongsil University, presented by Prof. Youngjae Kim, 2025.04) ([pdf](#))

State of the Key-Value Computational Solid State Drive (Special Lecture for Advanced Database Systems (CSE6401), Sogang University Graduate School, 2024.04) ([pdf](#))

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**TA Experience (Sogang University):** Computer Science and Engineering Laboratory II (CSE3016-01, Spring 2025), Operating Systems (CSE4070-01, Fall 2024), Database Systems (CSE4110-02, Spring 2024)

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**SKILL +  
INTEREST**

**Tool:**

Vim, Git, Linux, C, C++, Python, Go, Scala, NVMe, SPDK, Xilinx SDK, AWS SDK, DOCA, gRPC, Spark, DuckDB, RocksDB, Arrow, Parquet, Substrait, Photoshop, draw.io, and etc

**Research Interest:**

Next-Generation Storage and Memory Devices,  
File and Storage Systems, Heterogeneous Computing,  
Database Management, Data Analytics Platforms, and etc

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**LANGUAGE**

**KOREAN:** fluent (native)

**ENGLISH:** advanced