

Joohyung Yun

PH.D. STUDENT IN COMPUTER SCIENCE

Data Systems Lab, POSTECH, Pohang, South Korea

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Summary

Hi! I'm Joohyung Yun, a 4th year integrated M.S./Ph.D. student (2nd year Ph.D.) in Computer Science at POSTECH, advised by Professor Wook-Shin Han in the Data Systems Lab. My research sits at the intersection of Natural Language Processing and Information Retrieval, with a focus on Retrieval-Augmented Generation (RAG) for complex, real-world documents.

I'm particularly interested in multimodal document RAG: collections that mix text, tables, and images. My recent projects explore multihop reasoning across these modalities and how to combine retrieval with LLM reasoning effectively. Currently, I'm extending this work toward Agentic RAG—building autonomous, data-centric systems that go beyond simple retrieval into complex reasoning with history-aware backtracking and adaptive traversal strategies.

Looking ahead, I aim to scale these ideas to Enterprise-level RAG: high-velocity, high-trust systems powered by Knowledge Graphs and Multi-Modal RAG that deliver verifiable, multi-modal insights. My long-term vision is to contribute to cost-efficient, data-centric platforms designed for AGI-level reasoning and agentic autonomy across enterprise ecosystems.

Education

Pohang University of Science and Technology (POSTECH)

INTEGRATED M.S./PH.D. IN COMPUTER SCIENCE

- Member of Data Systems Lab
- Advised by Professor Wook-Shin Han

Pohang, South Korea

Mar. 2023 - Present

Pohang University of Science and Technology (POSTECH)

B.S. IN COMPUTER SCIENCE

- Summa Cum Laude, GPA 4.11 / 4.30

Pohang, South Korea

Mar. 2019 - Feb. 2023

Hyundai Chungun High School

HIGH SCHOOL DIPLOMA

Ulsan, South Korea

Mar. 2016 - Feb. 2019

Publications

Failure is Feedback: History-Aware Backtracking for Agentic Traversal in Multimodal Graphs

ARXIV 2025 (UNDER REVIEW)

2025

- **Joohyung Yun**, Doyup Lee, and Wook-Shin Han
- Under review at the 43rd International Conference on Machine Learning (ICML 2026)

LILaC: Late Interacting in Layered Component Graph for Open-domain Multimodal Multihop Retrieval

EMNLP MAIN 2025

Nov. 2025

- **Joohyung Yun**, Doyup Lee, and Wook-Shin Han
- In Proc., the 2025 Conference on Empirical Methods in Natural Language Processing

Suzhou, China

HELIOS: Harmonizing Early Fusion, Late Fusion, and LLM Reasoning for Multi-Granular Table-Text Retrieval

ACL MAIN 2025

Jul. 2025

- Sungho Park, **Joohyung Yun**, Jongwuk Lee, and Wook-Shin Han
- In Proc., 63rd Annual Meeting of the Association for Computational Linguistics

Vienna, Austria

reCG: Bottom-Up JSON Schema Discovery Using a Repetitive Cluster-and-Generalize Framework

Guangzhou, China

VLDB 2024

Aug. 2024

- **Joohyung Yun**, Byungchul Tak, and Wook-Shin Han
- In 50th Int'l Conf. on Very Large Data Bases (VLDB) / Proc. the VLDB Endowment (PVLDB)

KDD Cup Meta CRAG 2024 Technical Report: Three-step Question-Answering Framework

Barcelona, Spain

KDD CUP 2024 WORKSHOP

Aug. 2024

- Sungcho Park, Jeongeum Seok, Jooyoung Lee, **Joohyung Yun**, and Wonseok Lee
- 2024 KDD Cup Workshop for Retrieval Augmented Generation

Work Experience

New York University (NYU)

New York, USA

VISITING RESEARCHER

Apr. 2026 - Aug. 2026

- Joint research collaboration
- Funded by Global AI Frontier Lab of IITP

KJMD 2025 (7th Joint Korea-Japan Workshop on Management of Data)

Busan, South Korea

WORKSHOP CHAIR

Oct. 2025

- Managed the overall program
- Coordinated management and supervision of submissions
- <https://kjmd-po.github.io/kjmd2025/>

VLDB 2024: PhD Workshop

Guangzhou, China

SESSION CHAIR

Aug. 2024

- Moderated technical session: introduced speakers, managed timing, facilitated Q&A
- <https://vldb.org/2024/?program=schedule-phd-workshop>

SK Hynix Inc.

Icheon, South Korea

FULL STACK DEVELOPER (INTERN)

Jun. 2021 - Jul. 2021

- Web interface manipulation via Selenium, Python
- Server development using Springboot, Java
- Frontend development using NodeJS, JavaScript

Honors & Awards

2026	2026 Overseas Dispatch Program for Graduate Students (Long-term) , Funded for long-term international research visit program	POSTECH
2025	2025 POSTECH Research Excellence Award , Department of Computer Science and Engineering	POSTECH
2025	2025 POSTECH CSE Outstanding Paper Award , Department of Computer Science and Engineering	POSTECH
2025	2025 BK POSTECHIAN Fellowship , BK21 Fellowship for outstanding graduate students	BK21
2024	1st Place (Comparison & Post-processing Tests) , KDD Cup 2024: Meta CRAG Challenge (Team dRAGonRAnGers)	
2021	National Science and Technology Scholarship , Awarded to students with outstanding academic ability in science and engineering	South Korea
2021	Global Leadership Program Scholarship , Awarded to outstanding students majoring in computer science at POSTECH	POSTECH
2020	Global Leadership Program Scholarship , Awarded to outstanding students majoring in computer science at POSTECH	POSTECH

Patents

Subgraph Retrieval System Based on Layered Component Graph for Open-Domain Multimodal Document Retrieval

Application No. 10-2025-0195617

KOREAN PATENT APPLICATION

Dec. 2025

- Wook-Shin Han and **Joohyung Yun**

Apparatus and Method for Table and Document Retrieval Based on Questions

PCT INTERNATIONAL APPLICATION

Application No. PCT/KR2025/003037

Mar. 2025

- Wook-Shin Han, Sungho Park, **Joohyung Yun**, and Jeonghoon Lee

AI Technology for Predicting On-site Safety Accidents in Hazardous Chemical Facilities

KOREAN PATENT APPLICATION

Application No. 10-2024-0167340

Nov. 2024

- Wook-Shin Han, Jaehyun Ha, and **Joohyung Yun**

Teaching Experience

Design of Digital System (CSED273)

TEACHING ASSISTANT

POSTECH

2024

- Worked as an assistant for the Design of Digital System course

Advanced Machine Learning

TEACHING ASSISTANT

Samsung Electronics Co.

2022

- Worked as an assistant in Advanced Machine Learning class held under Data Systems Lab
- Guided Samsung Electronics employees to understand the implementation of machine learning concepts

Data Processing, Distributed Database & Deep Learning

TEACHING ASSISTANT

Samsung Electronics Co.

2021

- Worked as an assistant in Data Processing, Distributed Database & Deep Learning class held under Data Systems Lab
- Guided Samsung Electronics employees to understand the implementation of above concepts

Skills

Programming Python, C++, \LaTeX

Languages Korean (native), English (fluent), Japanese (fluent)