YEONSU PARK

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SUMMARY

I am an assistant professor in the Department of Computer Science and Engineering at Kangwon National University. Previously, I was a postdoctoral research scientist at POSTECH. I received my Ph.D. in Computer Science and Engineering from POSTECH, where I was fortunate to be advised by Professor Wook-Shin Han. Before that, I obtained my B.S. degree in Software Engineering from Sungkyunkwan University. My research interests include big data processing, query processing, and query optimization.

EDUCATION

Ph.D. in Computer Science and Engineering, POSTECH — Feb. 2018 - Feb. 2024
Advisor: Prof. Wook-Shin Han

B.S. in Software Engineering, Sungkyunkwan University — Mar. 2011 - Feb. 2017
Graduated with 1st rank in Dept. of Software
GPA: 4.35/4.5 (Major-only GPA: 4.43/4.5)
Took leave of absence for two years (for mandatory military service)

EMPLOYMENT

Assistant Professor, Kangwon National University, Republic of Korea — Sep. 2024 - Present
Postdoctoral Research Scientist, POSTECH, Republic of Korea — Feb. 2024 - Aug. 2024
Researcher, POSTECH, Republic of Korea — Oct. 2017 - Feb. 2018
Software Engineer Intern, NCSOFT, Republic of Korea — Jan. 2012 - Feb. 2012

RESEARCH INTERESTS

Big Data Processing, Database Query Processing and Optimization, Algorithms

PUBLICATIONS

Peer-reviewed Conference Papers

[1] QaaD (Query-as-a-Data): Scalable Execution of Massive Number of Small Queries in Spark
Yeonsu Park, Byungchul Tak, and Wook-Shin Han
ACM SIGMOD 2023 (Top Database Conference)

[2] A Study on the Construction of a Database for On-site Safety Accidents in Hazardous Chemical Workplaces
Jaehyun Ha, Sangoh Lee, Taesung Lee, Yeonsu Park, and Wook-Shin Han
KDBC 2023

[3] G-CARE: A Framework for Performance Benchmarking of Cardinality Estimation Techniques for Subgraph Matching
Yeonsu Park, Seongyun Ko, Sourav S. Bhowmick, Kyoungmin Kim, Kijae Hong, and Wook-Shin Han
ACM SIGMOD 2020 (Top Database Conference)

[4] A Survey on Worst-case Optimal Join Algorithms
Yeonsu Park, Taesung Lee, Seung-Min Lee, Junseung Hwang, and Wook-Shin Han
Korean Information Science Society Conference, 2018

[5] A Survey of Methods for Dynamic Graph Updates on the State-of-the-art Graph Processing Systems
Seung-Min Lee, Jeong-Hwan Kim, Byeonghoon So, Yeonsu Park, and Wook-Shin Han
Korean Information Science Society Conference, 2018

[6] Performance Evaluation of RocksDB Depending on Sync Option
Yeonsu Park, Gihwan Oh, Jong-baek Lee, Woon-Hak Kang, and Sang-Won Lee
Korean Information Science Society Conference, 2014

Dissertation

[7] Scalable Execution of Massive Number of Small Queries in Spark
Yeonsu Park
Ph.D. Dissertation, 2024

Patents

[8] DISTRIBUTED PROCESSING SYSTEM AND METHOD FOR PROCESSING DATA
Wook-Shin Han, Yeonsu Park, and Kijae Hong
KR Patent No. 10-2022-0110236, 2022

[9] ELECTRONIC APPARATUS AND DATA PROCESSING METHOD THEREOF, AND SYSTEM FOR DISTRIBUTED PROCESSING
Young Hwa Lee, Wook-Shin Han, Hyeonji Kim, and Yeonsu Park
KR Patent No. 10-2021-0172678, 2021

AWARDS AND HONORS

Google Conference Scholarship 2023
Samsung Humantech Paper Award (Computer Science & Engineering) 2020
- Silver Prize
Graduation with 1st rank in Dept. of Software, Sungkyunkwan University 2017
ACM International Collegiate Programming Contest (ACM-ICPC) World Finals 2014
- Special Award
- 45th Place
ACM International Collegiate Programming Contest (ACM-ICPC) Asia Regional (Korea Site) 2013
- 4th Place
ACM International Collegiate Programming Contest (ACM-ICPC) World Finals 2013
- 48th Place
ACM International Collegiate Programming Contest (ACM-ICPC) Asia Regional (Korea Site) 2012
- 2nd Place
Sungkyun Software Scholarship 2011 - 2016
Dean's List, College of Computing, Sungkyunkwan University 2011 - 2016
- Recognized on the Dean's List for seven semesters
Korea Olympiad in Informatics (KOI) 2009
- Silver Medal

PROJECTS

Scalable Execution of Massive Number of Small Queries in Spark 2022 - 2023
Ph.D. Student, POSTECH Pohang, Republic of Korea

- Achieved substantial performance improvement in Spark for small query workloads by proposing and implementing a query merge-based technique, resulting in 10.6× to 36.6× faster processing compared to standard Spark executions.
- Published at SIGMOD 2023.

Scalable Sequential Pattern Mining in Spark 2020 - 2022
Ph.D. Student, POSTECH (collaborated with Samsung Electronics) Pohang, Republic of Korea

- Parallelized the cSPADE algorithm in Spark, achieving a 100× improvement in scalability compared to the sequential pattern mining algorithm of Spark MLlib.

Performance Benchmarking of Cardinality Estimation Techniques for Subgraph Matching 2018 - 2020
Ph.D. Student, POSTECH Pohang, Republic of Korea

- Proposed and developed a comprehensive framework for cardinality estimation techniques, enabling the realization of existing methods and providing insights on their performance, by identifying serious accuracy issues in various scenarios and datasets.
- Discovered that a simple method designed for relational data consistently outperforms all others on graph data.
- Published at SIGMOD 2020.

ACADEMIC TALKS

QaaD (Query-as-a-Data): Scalable Execution of Massive Number of Small Queries in Spark

- ACM SIGMOD 2023, Seattle, WA, USA Jun. 2023

G-CARE: A Framework for Performance Benchmarking of Cardinality Estimation Techniques for Subgraph Matching

- Top Conference Session, Korea Computer Congress 2020 (Virtual) Jul. 2020
- ACM SIGMOD 2020, Portland, OR, USA (Virtual) Jun. 2020
- SAP Labs Korea, Seoul, Republic of Korea Nov. 2019

ACADEMIC SERVICES

Reviewer SIGMOD Record (2024)

TEACHING EXPERIENCE

Instructor	Kangwon National University – 4471030 Database	Fall 2024
	Kangwon National University – 4471016 Algorithms	Fall 2024
	Kangwon National University – 1410033 C Programming	Fall 2024
Teaching Assistant	POSTECH – CSED421 Database System	Spring 2021
	Samsung – Advanced Data Programming	2020
	POSTECH – CSED421 Database System	Fall 2020
	POSTECH – CSED421 Database System	Fall 2019

SKILLS

Programming Languages C/C++, Python, Scala, Bash
Software & Technologies Big Data Framework (Apache Spark), Databases

REFERENCES

Wook-Shin Han, Professor, POSTECH ✉ wshan@dblab.postech.ac.kr
Byungchul Tak, Associate Professor, Kyungpook National University ✉ bctak@knu.ac.kr