

Hyungsoo Jung

FULL PROFESSOR · SEOUL NATIONAL UNIVERSITY

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Research Interests

The main research areas lie in database lakehouse systems for AI/ML and hybrid transactional/analytical processing (HTAP) DBMSs. Topics include high-performance data lakehouse platforms and HTAP database systems to deliver amazing processing speed. We pursue data lakehouse systems tightly integrated with underlying operating systems.

Education

Seoul National University

PH.D. IN COMPUTER SCIENCE AND ENGINEERING (ADVISOR: PROF. HEON Y. YEOM)

- Studied on end-to-end Internet congestion control for high bandwidth-delay product networks.

Seoul, South Korea

Mar 2004 - Aug 2009

Seoul National University

M.S. IN COMPUTER SCIENCE AND ENGINEERING (ADVISOR: PROF. HEON Y. YEOM)

- Studied on soft real-time operating systems.

Seoul, South Korea

Mar 2002 - Feb 2004

Korea University

B.S. IN MECHANICAL ENGINEERING

- Mandatory military service: Dec 1998 - Feb 2001.

Seoul, South Korea

Mar 1995 - Feb 2002

Employment History

Seoul National University

FULL PROFESSOR IN GRADUATE SCHOOL OF DATA SCIENCE

- Research on data lakehouse systems for data science

Seoul, South Korea

Mar 2024 - present

Hanyang University

FULL PROFESSOR IN COMPUTER SCIENCE

- Research on new directions towards database operating systems for large-scale data management
- Research on MVCC database systems for hybrid transactional/analytical processing workloads
- Research on high-performance relational databases and key-value storage on new memory technologies

Seoul, South Korea

Sep 2015 - Feb 2024

Amazon Web Services

SR. SOFTWARE DEVELOPMENT ENGINEER (A FOUNDING MEMBER OF AMAZON AURORA DATABASE)

- Developed high-performance transaction processing in Amazon Aurora

Seattle, WA, USA

Oct 2012 - Aug 2015

National ICT Australia

RESEARCHER (RESEARCH GROUP LEADER: PROF. GERNOT HEISER AT UNSW)

- Developed a scalable transaction locking system for multicore hardware

Kensington, NSW, Australia

Apr 2012 - Sep 2012

The University of Sydney

POSTDOCTORAL RESEARCHER (POSTDOC ADVISOR: PROF. ALAN FEKETE)

- Developed a tight theorem for serializable snapshot isolation for replicated snapshot databases

Sydney, NSW, Australia

Apr 2010 - Apr 2012

Professional Services and Teaching Excellence

2025	Program Committee Member , ACM SIGMOD Conference 2025	Germany
2025	Program Committee Member , VLDB Conference 2025	United Kingdom
2022	Best Teacher Award , Hanyang University	South Korea
2022	Program Committee Member , IEEE ICDE 2022	Malaysia
2021	Program Committee Member , ACM SIGMOD Conference 2021	China
2019	Best Teacher Award , Hanyang University	South Korea

Selected (Top-tier) Publications

Deploying Computational Storage for HTAP DBMSs Takes More Than Just Computation Offloading

VLDB 2023

KITAEK LEE, INSOON JO, JAECHAN AHN, HYUK LEE, HWANG LEE, WOONG SUL, Hyungsoo Jung

August 2023

DIVA: Making MVCC Systems HTAP-Friendly

ACM SIGMOD 2022

JONGBIN KIM, JAESEON YU, JAECHAN AHN, SOOYONG KANG, Hyungsoo Jung

June 2022

Rethink the Scan in MVCC Databases

ACM SIGMOD 2021

JONGBIN KIM, KIHWANG KIM, HYUNSOO CHO, JAESEON YU, SOOYONG KANG, Hyungsoo Jung

June 2021

- This paper received **ACM SIGMOD 2021 Honorable Mention Award** (8 out of 209 accepted papers).
- https://2021.sigmod.org/sigmod_best_papers.shtml

Long-lived Transactions Made Less Harmful

ACM SIGMOD 2020

JONGBIN KIM, HYUNSOO CHO, KIHWANG KIM, JAESEON YU, SOOYONG KANG, Hyungsoo Jung

June 2020

BORDER-COLLIE: A Wait-free, Read-optimal Algorithm for Database Logging on Multicore Hardware

ACM SIGMOD 2019

JONGBIN KIM, HYEONGWON JANG, SEOHUI SON, HYUCK HAN, SOOYONG KANG, Hyungsoo Jung

June 2019

Pay Migration Tax to Homeland: Anchor-based Scalable Reference Counting for Multicores

USENIX FAST 2019

SEOKYONG JUNG, JONGBBIN KIM, MINSOO RYU, SOOYONG KANG, Hyungsoo Jung

February 2019

Scalable Database Logging for Multicores

VLDB 2018

Hyungsoo Jung, HYUCK HAN, SOOYONG KANG

August 2018

TCPRand: Randomizing TCP Payload Size for TCP Fairness in Data Center Networks

IEEE INFOCOM 2015

SOOJEON LEE, MYUNGJIN LEE, DONGMAN LEE, Hyungsoo Jung, BYOUNG-SUN LEE

May 2015

A Scalable Lock Manager for Multicores

ACM TODS

Hyungsoo Jung, HYUCK HAN, ALAN FEKETE, GERNOT HEISER, HEON Y. YEOM

December 2014

- This article is an extended version of the SIGMOD'13 paper.

Scalable Serializable Snapshot Isolation for Multicore Systems

IEEE ICDE 2014

HYUCK HAN, SEONGJAE PARK, Hyungsoo Jung, ALAN FEKETE, UWE ROEHM

April 2014

A Scalable Lock Manager for Multicores

ACM SIGMOD 2013

Hyungsoo Jung, HYUCK HAN, ALAN FEKETE, GERNOT HEISER, HEON Y. YEOM

June 2013

- This paper is selected as **one of the four best papers** and invited to ACM Transactions on Database Systems (TODS).
- Forward message: <https://dl.acm.org/doi/abs/10.1145/2697050>
- The key ideas are **fully commercialized** as transaction locking systems in Amazon Aurora Databases.

Serializable Snapshot Isolation for Replicated Databases in High-Update Scenarios

VLDB 2011

Hyungsoo Jung, HYUCK HAN, ALAN FEKETE, UWE ROEHM

August 2011

Adaptive Delay-based Congestion Control for High Bandwidth-Delay Product Networks

IEEE INFOCOM 2011

Hyungsoo Jung, SHIN-GYU KIM, HEON Y. YEOM, SOOYONG KANG, LAVY LIBMAN

April 2011