

# Hyungsoo Jung

FULL PROFESSOR · SEOUL NATIONAL UNIVERSITY

Rm 508, Building 43, 1 Gwanak-ro, Gwanak-gu, Seoul, Republic of Korea

☎ (+82) 2-880-9786 | ✉ hyungsoo.jung@snu.ac.kr | 🏠 hyungsoo-jung.github.io | 📠 hyungsoo-jung-3452402

## Research Interests

The primary research focuses on **database-oriented operating systems (DBOS)** designed for AI/ML applications and hybrid transactional/analytical processing (HTAP) workloads. Key areas of interest include developing scalable and efficient DBOS systems optimized for exceptional processing speeds. Additionally, we explore system architectures that enable **distributed, data-parallel computing** to support scalable deep learning frameworks effectively.

## Education

### Seoul National University

Seoul, South Korea

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

Mar 2004 - Aug 2009

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

### Seoul National University

Seoul, South Korea

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

Mar 2002 - Feb 2004

- Study on soft real-time operating systems.

### Korea University

Seoul, South Korea

B.S. IN MECHANICAL ENGINEERING

Mar 1995 - Feb 2002

- Mandatory military service: Dec 1998 - Feb 2001.

## Employment History

### Seoul National University

Seoul, South Korea

FULL PROFESSOR IN GRADUATE SCHOOL OF DATA SCIENCE

Mar 2024 - present

- Database-oriented operating systems (DBOS) - DB and OS synergies for data-centric systems
- Distributed data-parallel computing for scalable AI systems

### Hanyang University

Seoul, South Korea

FULL PROFESSOR IN COMPUTER SCIENCE

Sep 2015 - Feb 2024

- 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

### Amazon Web Services

Seattle, WA, USA

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

Oct 2012 - Aug 2015

- Developed high-performance transaction processing in Amazon Aurora

### National ICT Australia

Kensington, NSW, Australia

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

Apr 2012 - Sep 2012

- Developed a scalable transaction locking system for multicore hardware

### The University of Sydney

Sydney, NSW, Australia

POSTDOCTORAL RESEARCHER (POSTDOC ADVISOR: PROF. ALAN FEKETE)

Apr 2010 - Apr 2012

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

## Professional Services and Research/Teaching Excellence

2026	<b>Program Committee Chair</b> , DASFFA 2026	Jeju, Korea
2025-2026	<b>Review Board Member</b> , The VLDB Journal	
2026	<b>Program Committee Member</b> , ACM SIGMOD Conference 2026	Bengaluru, India
2026	<b>Program Committee Member</b> , VLDB Conference 2026	Boston, USA
2025	<b>Program Committee Member</b> , ACM SIGMOD Conference 2025	Berlin, Germany
2025	<b>Program Committee Member</b> , VLDB Conference 2025	London, UK
2022	<b>Best Teacher Award</b> , Hanyang University	South Korea
2022	<b>Program Committee Member</b> , IEEE ICDE 2022	Malaysia
2021	<b>Program Committee Member</b> , ACM SIGMOD Conference 2021	Xian, China
2021	<b>Best Paper Honorable Mention Award</b> , ACM SIGMOD Conference 2021	Xian, China
2019	<b>Best Teacher Award</b> , Hanyang University	South Korea
2013	<b>One of the Four Best Papers</b> , ACM SIGMOD Conference 2013	New York, USA

## Selected (Top-tier) Publications († - equal contribution)

### Rapid Data Ingestion through DB-OS Co-design

ACM SIGMOD 2025

KYEONGMIN LIM†, MINSEOK YOON†, KIHWAN KIM†, ALAN FEKETE, Hyungsoo Jung

June 2025

### 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](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

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

IEEE ICDE 2014

April 2014

## A Scalable Lock Manager for Multicores

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

ACM SIGMOD 2013

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

Hyungsoo Jung, HYUCK HAN, ALAN FEKETE, UWE ROEHM

VLDB 2011

August 2011

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

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

IEEE INFOCOM 2011

April 2011