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Personal Information

Birth : 1979. 01. 15

Education :

- PhD student at [Dept of Computer Science and Engineering](#) of [Seoul National University](#) (2005. 03 ~)
- M.S. degree at [Dept of Computer Science and Engineering](#) of [Seoul National University](#) (2005. 02)
- B.S. degree at [Dept of Computer Science and Engineering](#) of [Seoul National University](#) (2003. 02)

Career :

- Assistant Student : [ABEEK](#). School of Computer Science & Engineering. Seoul National University. (2006. 10. ~ 2007. 03)
- An Internship. Storage Firmware R&D Department, Samsung Electronics in Suwon (2008. 02. 01. ~ 2008. 03. 31)

Research Interests

File systems, Storage systems, Operating Systems, and I/O System Analysis.

Main subject : **"Blurring Line between Host System and Storage"**

- Storage Systems :
 - Disk modeling & low-level feature extraction.
 - **New storage interface & firmware design for real-time and multimedia system.**
 - **Data placement on disk : tree-structured data, database table...**
- File Systems :
 - **File system data integrity & consistency + I/O performance.**
- System Analysis :
 - NCQ vs Disk I/O Scheduler.

Research Issue

- ✓ ***Disk modeling & low-level feature extraction.***
 - Refined Modeling of a Modern Disk Drive System (SPECTS 2006)
 - Timing model of disk I/O operation.
 - Shedding Light in the Black-Box : Structural Modeling of Modern Disk Drives (MASCOTS 2007)
 - Extract the multi-dimensional disk structure and validate the structural model empirically.
- ✓ ***New disk interface & firmware design for real-time system.***
 - Real-timeness in disk.
 - Disk & IO request must support two important real-time features. – predictability and IO request preemptibility.
 - Predictability : Real-time system can predict the expected completion time (waiting time + service time) of an I/O request.
 - Preemptibility : Higher-priority (Early-Deadline) request must preempt lower-priorit (Late-Dealine) request in a permitted time limit.
- ✓ ***File system data integrity & consistency***
 - IO performance degradation in the general file systems : There are many synchronous small writes for metadata-data or metadata-metadata

dependency guarantee.

■ Do sync, Journaling, Soft-Update.

✓ ***IO System Analysis***

➤ NCQ vs Disk I/O Scheduler

Projects

1. Fault-Tolerant System

A. MPICH-GF : Fault-Tolerant MPI over Grid(Globus2). (2003~2004)

B. M-Cube : Fault-Tolerant MPI over Myrinet. (2004)

C. SHIELD : Fault-Tolerant MPI over Infiniband. (2005)

2. Grid-based system

A. KOCED (Korea Construction Engineering Development Collaboratory),
(2004 ~ 2006)

B. Smart U-City (2006 ~)