HYOGI SIM

hyogi@vt.edu, (540) 391-0202
Dept. of Computer Science, Virginia Tech
2202 Kraft Drive, Blacksburg, VA 24060

Objective: Graduate-Level Research and Development Position

RESEARCH INTERESTS

File and Storage Systems, Distributed Systems, Operating Systems, Database Management Systems
- Large-scale heterogeneous storage systems
- Computation offloading, active computation in storage systems

EDUCATION

Ph.D., Computer Science, Virginia Tech, VA — *present*
- Advisor: Dr. Ali R. Butt

M.S., Computer Science, Virginia Tech, VA — *Jan 2015 (expected)*
- Advisor: Dr. Ali R. Butt
- Thesis: AnalyzeThis: An Analysis Workflow-Aware Storage System

M.S., Electronics and Computer Engineering, Hanyang Univ., S. Korea — *Feb 2008*
- Advisor: Dr. Jaehyuk Cha, Dr. Sooyong Kang
- Thesis: A Study of Performance Impact of Merging Storage Layers on Flash-Based DBMS

B.S., Urban Planning, Hanyang Univ., S. Korea — *Feb. 2005*

RESEARCH EXPERIENCES

Deploying SSDs in HPC systems — *2011-present, Virginia Tech*
Exploring emerging storage technologies in a HPC environment.

Managing Multimedia Data for Contents Servers with Hybrid Storage — *2007-2009, Database Lab., Hanyang University*
Developed contents server log analyzer. Developed a prototype file system for storage class memory device. (Linux, Linux Kernel, Windows Media Server)
- The Basic Research Program of KOSEF, the Korea Science & Engineering Foundation

Design of a NAND Flash Memory-Based File System Supporting Transaction and Record Structure — *2006-2008, Database Lab., Hanyang University*
Developed a framework to identify FTL mapping schemes of NAND Flash memory storage devices. Developed a DBMS which directly manages raw NAND Flash memory. (Linux, Wisconsin Storage System, ARM-based embedded board)
- The Basic Research Program of KOSEF, the Korea Science & Engineering Foundation

Construction of a Protein Function Database — *2006-2008, Database Lab., Hanyang University*
Developed a GUI frontend program which verifies protein graphs extracted from academic documents. (Windows, SQLServer, Delphi)
- The Research Program of Functional Proteomics Center, S. Korea

WORK EXPERIENCES

Oak Ridge National Laboratory — *Research Intern, Jan-Aug 2013*
Designed and developed a node local SSD-based, active storage system in a HPC environment. (Linux, Linux Kernel, C, FUSE, OSD protocol, SQLite, ExoFS, Lustre)

Pitapat Mobile, S. Korea — *Jan-June 2011*
Developed a social marketing web application and a social quiz game running on Facebook. (C#, Javascript, JQuery, HTML, PHP, SQL Server, MySQL, Amazon EC2)

Dept. of English Education, Hanyang University — *Feb 2010, Aug 2009*
Developed an online-survey web application. (Linux, PHP, MySQL, Apache)
- National Research Project on English Co-teaching

Metabuild co., S. Korea — *Dec 2008*
Developed a lane recognition system module for self-driving vehicles. (Linux, C, ARM-based embedded board)

TEACHING EXPERIENCES

Computer Organization II — *Spring 2012, Fall 2011*
- Graduate Teaching Assistant, Dept. of Computer Science, Virginia Tech

File Structure — *Spring 2009, Fall 2007*
- Graduate Teaching Assistant, Division of Computer Science and Engineering, Hanyang University

Data Structures — *Spring 2007*
- Graduate Teaching Assistant, Division of Computer Science and Engineering, Hanyang University

Object Oriented Programming — *Spring 2005*
- Graduate Teaching Assistant, Dept. of Computer Science Education, Hanyang University

PUBLICATIONS

- Hyogi Sim, Youngjae Kim, Sudharshan S. Vazhkudai, Devesh Tiwari, Ali Anwar, Ali R. Butt, Lavanya Ramakrishnan, *AnalyzeThis: An Analysis Workflow-Aware Storage System*, The 13th USENIX Conference on File and Storage Technologies (FAST '15) — *under submission*

- Hyogi Sim, Hoyoung Jung, Sungmin Park, Sooyong Kang, Jaehyuk Cha, *Identifying the FTL Mapping Scheme for USB Flash Devices*, The 4th International Conference on Convergence Technology and Information Convergence, CTIC 2009, Oct. 12

- Sooyong Kang, Sungmin Park, Hoyoung Jung, Hyogi Sim, Jaehyuk Cha, *Performance Tradeoffs in Using NVRAM Write Buffer for Flash Memory-based Storage Devices*, IEEE Transactions on Computers, Vol. 58, Issue 6 (Jun. 2009) Pages 744-758

- Hoyoung Jung, Hyogi Sim, Sungmin Park, Sooyong Kang, Jaehyuk Cha, *LRU-WSR: Integration of LRU and Writes Sequence Reordering for Flash Memory*, IEEE Transactions on Consumer Electronics, Volume 54, Issue 3 (Aug. 2008)

- Sungmin Park, Hoyoung Jung, Hyogi Sim, Sooyong Kang, Jaehyuk Cha, *Using Non-Volatile RAM as a Write Buffer for NAND Flash Memory-based Storage Devices*, 2008 IEEE International Symposium on Modeling, Analysis & Simulation of Computer & Telecommunication Systems, MASCOTS 2008, Sept 8-10, Balimore, MD

- Sungmin Park, Hoyoung Jung, Hyogi Sim, Sooyong Kang, Jaehyuk Cha, *Write Buffer-aware Address Mapping for NAND Flash Memory Devices*, 2008 IEEE International Symposium on Modeling, Analysis & Simulation of Computer & Telecommunication Systems, MASCOTS 2008, Sept 8-10, Balimore, MD

- Hoyoung Jung, Kyunghoon Yoon, Hyogi Sim, Sungmin Park, Sooyong Kang, Jaehyuk Cha, *LIRS-WSR: Integration of LIRS and Write Sequence Reordering for Flash Memory*, The 2007 International Conference on Computational Science and Its Applications, ICCSA LNCS 2007, Aug. 29

GRADUATE-LEVEL COURSES

Virginia Tech: Statistics in Research, Multiprocessor Programming, Research Method in CS, Advanced Parallel Computation, Advanced Topics in System and Network Security, Operating Systems

AWARDS & SCHOLARSHIPS

Virginia Tech: Graduate Research Assistantship — *Fall 2011, 2012, 2013, Spring 2012, 2014*
Hanyang Univ.: BK21 Scholarship — *2009*, A Half-Fee Tuition Scholarship — *2005*

TECHNICAL SKILLS

- Linux system/kernel programming, Web programming
- Languages: C, C++, Python, PHP, JAVA, C#, BASH, Javascript, HTML, CSS, Latex
- Databases: PostgreSQL, MySQL, MS SQLServer, IBM DB2, SQLite
- Tools: gcc, gdb, vim, Glade, Eclipse, Visual Studio, gnuplot