

HOBIN YOON

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RESEARCH INTERESTS

My research interests center around distributed systems, storage systems, and operating systems.

The current research project on which I am working is providing an efficient multi-datacenter storage management system by analyzing and configuring applications' data consistency/urgency requirements and optimizing their inter-datacenter communication. The research targets globally distributed applications such as Facebook or Google's services. The storage system includes distributed key-value stores such as Apache Cassandra and object stores. As an experimental test bed, I am running a storage cluster, where each of the participating nodes is virtualized by Xen hypervisor and grouped by data centers with realistic inter-data center network packet delays among them. It provides an Amazon EC2-like environment with more control on the underlying platform.

EDUCATION

Georgia Institute of Technology, Atlanta, GA

Ph.D. Student in Computer Science

Aug. 2010 - present

Advisor: Karsten Schwan

GPA 4.0/4.0

Seoul National University, South Korea

Master of Science in Electrical Engineering & Computer Science

Feb. 2001

Advisor: Kunsoo Park

GPA 4.04/4.3

Bachelor of Science in Computer Engineering

Feb. 1999

PROFESSIONAL EXPERIENCE

Microsoft Research, Seattle, WA

May - Aug. 2012

Summer Intern

- Designed and implemented Microsoft Cosmos store performance monitoring tool prototype that helped detect performance outliers.

Advanced Technology Labs, Adobe Systems, San Jose, CA

May - Aug. 2011

Summer Intern

- Participated in the Virtual Analytics project that analyzed the Omniture customers' data using Hadoop.
- Designed and implemented Amazon SQS (Simple Queue Service) message latency monitoring system.
- Optimized Amazon S3 (Simple Storage Service) TransferManager and achieved up to 4x speedup.

Samsung Advanced Institute of Technology, South Korea

2008 – 2010

Senior Research Engineer

- Participated in the Intelligent Robotic System project; designed the robotic software architecture and configured Linux kernel for a multi-core system with the performance comparable to commercial RTOSes.
- Developed the EtherCAT device driver for communication among sensors and actuators.
- Developed a real-time performance profiler and its web user interface.
- Managed software development environment, which was used by 100+ developers.

Software Laboratories, Samsung Electronics, South Korea

2005 – 2007

Senior Research Engineer

- As a team leader, developed the Linux-based Mobile Application Framework, deployed the framework to 40+ mobile phones as of 2009, and trained 500+ developers to use the framework.
- Promoted the framework as the standard of Limo Foundation in competition with the founding companies, which included Motorola, Panasonic, NEC, NTT Docomo, as well as Samsung Electronics.

Thinkware Systems, South Korea

2001 – 2005

Senior Engineer

(2004 – 2005)

- Led a team that developed the Display Engine of iNavi, a GPS Navigation System, which became the company's flagship product.

Senior Engineer

(2003 – 2004)

- Developed an online map service system and deployed it to Maptopia - the company's map service – and to SK Telecom's FriendFinder service. The system includes: map display engine, map distribution servers, and user feedback system.

Engineer / Assistant Engineer

(2001 – 2003)

- Developed the Road Sign Management System ordered by the Korean government; developed the road sign database and application servers.

PUBLICATIONS

- **Hobin Yoon**, Jim Donahue, Ada Gavrilovska, Karsten Schwan. *Interactive Use of Cloud Services: Amazon SQS and S3*. CCGGrid 2012, Ottawa, Canada, May 2012.
- **Hobin Yoon**, Madhumitha Ravichandran, Ada Gavrilovska, Karsten Schwan. *Distributed Cloud Storage Services with FleCS Containers*. 5th OpenCirrus Summit, Moscow, Russia, June 2011.
- **Hobin Yoon**, Jungmoo Song, and Jamee Lee. *Real-Time Performance Analysis in Linux-Based Robotic Systems*. In Proceedings of the Linux Symposium, OLS 2009, pages 331–339, Montreal, Canada, 2009.
- Sean Sangwoo Kang, **Hobin Yoon**, No Joon Park, Kyung Wha Hong, Jin Mook Lim, Jae Hwa Shin, Bum Seok Lee, Hee Gyu Kim, and Cheol Ho Park. *An Open-Source Based Application Framework for Open Linux Platform*. Open Source in Mobile, OSiM 2007, Madrid, Spain, 2007. **Hobin Yoon** presented the paper at the conference.

- **Hobin Yoon** and Kunsoo Park. *A Watermark for Data Embedding and Image Verification*, In Proceedings of the 5th Korea-Japan Joint Workshop on Algorithms and Computation, Pusan, Korea, 2001.

PATENTS

- Apparatus and Methods for Communication between Event Systems, 2008, Korean Patent #1020080011926
- Method and System for Providing Information on Traffic Enforcement Camera, 2004, Korean Patent #1020040016214

AWARDS

- *Special Promotion* to Senior Engineer, Thinkware Systems, 2004.
- *Summa cum laude*, College of Engineering, Seoul National University, 2001.

SKILLS

- Languages: C++, C, Java, Assembly, JavaScript, Perl, and Python.
- Software Platforms: *NIX, Windows, RTOSes, and Xen.
- Cloud computing: Apache Hadoop, Cassandra, and Amazon Web Services.
- Parallel/GPU programming: TBB, OpenMP, MPI, CUDA.
- Database programming: RDBs and NoSQLs.
- Profiling and performance optimization.
- Linux kernel configuration and device driver development.
- 3D Graphics.
- Software configuration management.