

Sang-Hoon Kim

CONTACT INFORMATION

Systems Software Research Group

The Bradley Department of Electrical and Computer Engineering
Virginia Polytechnic Institute and State University

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Blacksburg, VA 24061
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RESEARCH EXPERIENCE

Postdoctoral Associate, Virginia Tech, United States Nov. 2016 – present

- Working with Professor Binoy Ravindran in Systems Software Research Group

Postdoctoral Researcher, Sungkyunkwan University, South Korea

Sep. 2016 – Oct. 2016

- Worked with Professor Jin-Soo Kim in Computer Systems Laboratory

EDUCATION

Ph.D. in Computer Science, KAIST, South Korea

Aug. 2016

- Integrated Master's and Doctoral Degree Program
- Advisors: Professor Seungryoul Maeng and Professor Jin-Soo Kim
- Thesis: Application-aware Memory Management for Mobile Devices

B.S. in Computer Science, KAIST, South Korea

Feb. 2002

INDUSTRIAL EXPERIENCE

Nilex International, Seoul, South Korea

- Part-time consultant
- Full-time software engineer

Sep. 2005 – Nov. 2005
May 2003 – May 2005

Telpion, Incheon, South Korea

- Full-time software engineer

Mar. 2002 – Apr. 2003

TEACHING EXPERIENCE

Teaching assistant

KAIST, Mar. 2006 – Dec. 2008

- CS330 Operating System (Head TA) Fall 2008
- CS202 Problem Solving Spring 2008
- CS230 System Programming Fall 2007
- CS230 System Programming (Head TA) Spring 2007
- CS230 System Programming Fall 2006
- CC510 Introduction to the Computer Science Spring 2006

Guest lecturer

- ECE4984/5984 Linux Kernel Programming Virginia Tech, Spring 2017
- SWE3004 Operating Systems Sungkyunkwan University, Spring 2016
- SSE3044 Operating Systems Sungkyunkwan University, Fall 2013

HONORS AND
AWARDS

- Excellent Teaching Assistant Award, KAIST Department of CS Feb. 2008
- Excellent Teaching Assistant Award, KAIST Department of CS Sep. 2007
- Outstanding Employee Award, Nilex International Oct. 2003
- KAIST Student Fellowship, Korea Government Mar. 2006 – Jan. 2012
- KAIST Student Fellowship, Korea Government Mar. 1996 – Dec. 1999

PUBLICATIONS

International conferences and workshops

- **Sang-Hoon Kim**, Jinkyu Jeong, and Jin-Soo Kim, "*Application-aware Swapping for Mobile Systems*," To appear in the 2017 International Conference on Embedded Software (EMSOFT'17), Seoul, South Korea, October 15-20, 2017.
- Pierre Olivier, **Sang-Hoon Kim**, and Binoy Ravindran, "*OS Support for Thread Migration and Distribution in the Fully Heterogeneous Datacenter*," in Proceedings of the 16th Workshop on Hot Topics in Operating Systems (HotOS XVI), Whistler, British Columbia, Canada, May 7-10, 2017.
- Sejun Kwon, **Sang-Hoon Kim**, Hyeong-Jun Kim, and Jin-Soo Kim, "*LZ4m: A Fast Compression Algorithm for In-Memory Data*," in Proceedings of the 34th IEEE International Conference on Consumer Electronics (ICCE'17), Las Vegas, TX, USA, January 2017.
- Sejun Kwon, **Sang-Hoon Kim**, Jin-Soo Kim, and Jinkyu Jeong, "*Managing GPU Buffers for Caching More Apps in Mobile Systems*," in Proceedings of the 2015 ACM SIGBED International Conference on Embedded Software (EMSOFT'15), Amsterdam, The Netherlands, October 2015.
- Sangwook Kim, Hwanju Kim, **Sang-Hoon Kim**, Joonwon Lee, and Jinkyu Jeong, "*Request-Oriented Durable Write Caching for Application Performance*," in Proceedings of the 2015 USENIX Annual Technical Conference (USENIX ATC'15), Santa Clara, CA, USA, July 2015.
- **Sang-Hoon Kim**, Sejun Kwon, Jin-Soo Kim, and Jinkyu Jeong, "*Controlling Physical Memory Fragmentation in Mobile Systems*," in Proceedings of the 2015 ACM SIGPLAN International Symposium on Memory Management (ISMM'15), Portland, OR, USA, June 2015.
- Jung-Hoon Kim, **Sang-Hoon Kim**, and Jin-Soo Kim, "*Subpage Programming for Extending the Lifetime of NAND Flash Memory*," in Proceedings of the 18th Conference on Design, Automation and Test in Europe (DATE'15), Grenoble, France, March 2015.
- Youg-Sik Lee, **Sang-Hoon Kim**, Jin-Soo Kim, Jaesoo Lee, Chanik Park and Seungryoul Maeng, "*OSSD: A Case for Object-based Solid State Drives*," in Proceedings of the 29th IEEE Conference on Massive Data Storage (MSST'13), Long Beach, CA, USA, May 2013.
- **Sang-Hoon Kim**, Jin-Soo Kim, and Seungryoul Maeng, "*Using Solid State Drives (SSDs) for Virtual Block Devices*," in Proceedings of the 2nd Workshop on Runtime Environments, Systems, Layering and Virtualized Environments (RESoLVE'12), London, UK, March 2012.
- **Sang-Hoon Kim**, Dawoon Jung, Jin-Soo Kim, and Seungryoul Maeng, "*Hetero-Drive: Reshaping the Storage Access Pattern of OLTP Workload Using SSD*," in Proceedings of the 4th International Workshop on Software Support for Portable Storage (IWSSPS'09), pp.13–17, Grenoble, France, October 2009.

- **Sang-Hoon Kim**, Youngjae Lee, and Jin-Soo Kim, “*FlexRPC: A Flexible Remote Procedure Call Facility for Modern Cluster File Systems*,” in Proceedings of the 9th IEEE International Conference on Cluster Computing (CLUSTER’07), Austin, TX, USA, September 2007.

Journals

- Young-Sik Lee, Luis Cavazos Quero, **Sang-Hoon Kim**, Jin-Soo Kim, and Seungryoul Maeng, “*ActiveSort: Efficient External Sorting using Active SSDs in the MapReduce Framework*,” *Future Generation Computer Systems*, Vol. 65, pp. 76–89, December 2016.
- **Sang-Hoon Kim**, Jinkyu Jeong, Jin-Soo Kim, and Seungryoul Maeng, “*SmartLMK: A Memory Reclamation Scheme for Improving User-perceived App Launch Time*,” *ACM Transactions on Embedded Computing Systems*, Vol. 15, Issue 3, Article No. 47, June 2016.
- **Sang-Hoon Kim**, Sejun Kwon, Jin-Soo Kim, and Jinkyu Jeong, “*Controlling Physical Memory Fragmentation in Mobile Systems*,” *ACM SIGPLAN Notices*, Vol. 50, Issue 11, pp. 1–14, November 2015.
- Eunji Pak, **Sang-Hoon Kim**, Jaehyuk Huh, and Seungryoul Maeng, “*Revisiting Shared Cache Contention Problems: A Practical Hardware-Software Cooperative Approach*,” *IEICE Transactions on Information and Systems*, Vol. E96-D, No. 7, pp. 1457–1466, July 2013.
- Wook Jung, Daewoo Lee, Eunji Pak, Youngjae Lee, **Sang-Hoon Kim**, Jin-Soo Kim, Taewoong Kim, and Sungwon Jun, “*BeanFS: A Distributed File System for Large-scale E-mail Services*,” *Journal of Korea Information Science Society*, Vol. 36, No. 4, pp. 247–258, August 2009.
- **Sang-Hoon Kim**, Jin-Soo Kim, and Seungryoul Maeng, “*Modeling and Evaluation of Serial Multicast Remote Procedure Calls (RPCs)*,” *IEEE Communications Letters*, Vol. 13, No. 4, pp.283–285, April 2009.

Others

- Joohyung Park, Kisik Jeong, **Sang-Hoon Kim**, and Jin-Soo Kim, “*DDZTrace: An Online Semantic-aware Block Tracing Tool*,” Poster on the 14th USENIX Conference on File and Storage Technologies (USENIX FAST’16), Santa Clara, CA, USA, February 2016.
- **Sang-Hoon Kim**, Jinho Seol, Seungryoul Maeng, and Jin-Soo Kim, “*Design and Implementation of Full-Disk Encryption Using Hardware Support*,” Poster on the Korea Information Science Society Workshop on Special Interest Group on Computer Systems, No. 30, January 2010.
- Wook Jung, Daewoo Lee, Eunji Pak, Youngjae Lee, **Sang-Hoon Kim**, Jin-Soo Kim, Taewoong Kim, and Sungwon Jun, “*BeanFS: A Distributed File System for a Large Number of Immutable Files*,” Technical Report CS-TR-2008-289, KAIST Computer Science Department, August 2008.

PATENTS

- Sunae Seo, **Sang-Hoon Kim**, Jin-Soo Kim, and Dongjun Shin, “*Method and Apparatus for Controlling Memory in Electronic Device*,” Patent Filed No. 20150261547 (March 17, 2015), United States.

- Sunae Seo, **Sang-Hoon Kim**, Jin-Soo Kim, and Dongjun Shin, "*Method and Apparatus for Controlling Memory in Electronic Device*," Patent Filed No. 10-2015-0108257 (March 17, 2014), Korea.
- Taewoong Kim, Sungwon Jun, Yuncheol Joo, Jin-Soo Kim, Wook Jung, Daewoo Lee, Eunji Pak, Youngjae Lee, **Sang-Hoon Kim**, and Myeongah Yang, "*Distributed File System and Method for Operating File Using Owner-based File Grouping*," Patent No. 1009149 (January 11, 2011), Korea.
- Taewoong Kim, Sungwon Jun, Yuncheol Joo, Jin-Soo Kim, Wook Jung, Daewoo Lee, Eunji Pak, Youngjae Lee, **Sang-Hoon Kim**, and Myeongah Yang, "*Distributed File System and Method for Replica-based Fault Treatment*," Patent No. 0994342 (November 12, 2010), Korea.
- Taewoong Kim, Sungwon Jun, Yuncheol Joo, Jin-Soo Kim, Wook Jung, Daewoo Lee, Eunji Pak, Youngjae Lee, **Sang-Hoon Kim**, and Myeongah Yang, "*Distributed File System and File Consistency Management Method Using Replica State Matching*," Patent No. 0988107 (October 8, 2010), Korea.

PROFESSIONAL
SERVICES

Invited Talk

- The Anatomy of Ceph I/O, Ceph Day Seoul Aug. 26, 2016

Reviewer

- Software: Practice and Experience (2017, 2016)
- IEEE Transactions on Computers (2016)

Sub-reviewer

- MSST (2017, 2016)
- IMCOM (2017, 2016)
- LCTES, INFLOW, IC2E (2015)
- EUC, ICDE (2009)
- ACM Transactions on VLSI (2015)
- IEEE Transactions on Computers (2012)

TECHNICAL
SKILLS

- Certification of Information Technology (1st grade), Human Resource Development Service of Korea, Aug. 2001
- Linux kernel programming: file systems, memory subsystem, device drivers, etc.
- Mobile system programming: Android
- Programming languages: C/C++, Python, Java, PHP, HTML, SQL, shell scripts, etc.
- UNIX-based system maintenance

July 9, 2017