Donghyun Kang

Address	#329, AI Building, Gachon University, (13120) 1342 Seongnamdaero, Sujeong-gu, Seongnam-si, Gyeonggi-do, Korea
Email	donghyun@gachon.ac.kr
Homepage	https://dhkangd.github.io

Research Interests

Operating Systems, Storage Systems, System for AI, Computer Architecture, and Virtualization

Education

Ph.D.	Electrical and Computer Engineering, Sungkyunkwan University, Korea, February 2018 Supervisor : Young Ik Eom Thesis : Providing Crash Consistency along with Efficient Page Cache Management on Flash Storage Devices
M.S.	Electrical and Computer Engineering, Sungkyunkwan University, Korea, February 2010 Supervisor : Young Ik Eom Thesis : Performance Analysis of Solid State Disk for Boot and Block Device
B.S.	Computer Engineering, Tech University of Korea, Korea, February 2007 Supervisor : Gwangil Jeon

Professional Experience

Gachon University	Computer Engineering, Korea Assistant Professor	*Mar. 2023*
Changwon National University	Computer Engineering, Korea Assistant Professor	*Sept. 2020 - Feb. 2023*
Dongguk University	Computer Engineering, Korea Assistant Professor	*Mar. 2019 - Aug. 2020*
Samsung Electronics	Device Solution, Korea Senior Software Engineer	*Mar. 2018 - Feb. 2019*
LSIS CO., LTD	R&D Center, Korea Software Engineer	*Jan. 2011 - Feb. 2013*
HUMAX CO., LTD	Firmware Division, Korea Software Engineer	*Jan. 2010 - Dec. 2010*
Public of Korea Navy	Korea	*Jul. 2000 - Nov. 2012*

Honors and Awards

1. **Best Paper Award**, Korea Institute of Information Scientists and Engineers, Korea, June 2022

2. **Best Paper Award**, The Institute of Electronics and Information Engineers, Korea, December 2021

3. **Best Paper Award**, Korea Computer Congress (KCC), Korea, June 2021

4. **Best Teaching Award (Video Teaching Portfolio)**, Changwon National University, Korea, February 2021

5. **Best Paper Award**, The Institute of Electronics and Information Engineers, Korea, December 2020

6. **Best Presentation Award**, Korea Computer Congress (KCC), Korea, June 2019

7. **Samsung Scholarship**, Samsung Electronics, Korea, March 2014–February 2018

8. **Best Paper Award (2nd Place)**, the IEEE Consumer Electronics Society Chester Sall Awards, January 2018

9. **Best Presentation Award**, Korea Software Congress (KSC), Korea, December 2017

10. **Best Paper Award**, Korea Software Congress (KSC), Korea, December 2017

11. **Best Paper Award**, Korea Institute of Information Scientists and Engineers, Korea, December 2017

12. **Best Paper Award**, Korea Computer Congress (KCC), Korea, June 2017

13. **Best Paper Award**, Korea Institute of Information Scientists and Engineers, Korea, June 2017

14. **Superior Research Award (2nd Prize)**, Sungkyunkwan University, Korea, August 2016

15. **Best Paper Award**, Korea Computer Congress (KCC), Korea, June 2016

16. **Student Grant Award**, the 14th USENIX FAST, USA, February 2016

17. **Best Presentation Award**, the 42nd KIISE Winter Conference, Korea, December 2015

18. **Best Paper Award**, Korea Computer Congress (KCC), Korea, June 2015

19. **Student Grant Award**, the 13th USENIX FAST, USA, February 2015

20. **Best Paper Award**, the 41st KIISE Winter Conference, Korea, December 2014

21. **Best Presentation Award**, Korea Computer Congress (KCC), Korea, June 2014

22. **Best Paper Award**, Korea Computer Congress (KCC), Korea, June 2014

Refereed Publications

Journal Articles

1. Jinseo Choi, Donghyeok An, and **Donghyun Kang**, "Object Recognition Scheme for Digital Transformation in Marine Science and Engineering," *MDPI Journal of Marine Science and Engineering*, Vol. 11, No. 914, pp. 1-21, October 2023.

2. Minseon Cho and **Donghyun Kang**, "FragTracer: Real-time Fragmentation Monitoring Tool for F2FS File System," *MDPI Sensors*, Vol. 23, No. 9, pp. 1-14, May 2023.

3. Jinseo Choi and **Donghyun Kang**, "Overlapped Data Processing Scheme for Accelerating Training and Validation in Machine Learning," *IEEE Access*, Vol. 10, pp. 72015-72023, July 2022.

4. Minseon Cho and **Donghyun Kang**, "ML-CLOCK: Efficient Page Cache Algorithm based on Perceptron-based Neural Network," *MDPI Electronics*, Vol. 10, No. 20, pp. 1-16, October 2021.

5. Geunsik Lim, **Donghyun Kang**, and Young Ik Eom, "Thread Evolution Kit for Optimizing Thread Operations on CE/IoT Devices," *IEEE Transactions on Consumer Electronics*, Vol. 66, No. 4, pp. 289-298, November 2020.

6. **Dong Hyun Kang**, Sang-won Lee, Changwoo Min, and Young Ik Eom, "Making Application-level Crash Consistency Practical on Flash Storage," *IEEE Transactions on Parallel and Distributed Systems*, Vol. 31, No. 5, pp. 1009-1020, May 2020.

7. **Dong Hyun Kang**, Sang-won Lee, and Young Ik Eom, "LDJ: Version Consistency Is Almost Free on Commercial Storage Devices," *ACM Transactions on Storage*, Vol. 15, No. 4, pp. 1-20, November 2019.

8. Yongju Song, Sung Kyun Lee, **Dong Hyun Kang**, and Young Ik Eom, "NVRAM-aware Mapping Table Management for Flash Storage Devices," *IEICE Transactions on Information and Systems*, Vol. E102-D, No. 8, pp.1576-1580, August 2019.

9. Minho Lee, **Dong Hyun Kang**, and Young Ik Eom, "M-CLOCK: Migration-optimized Page Replacement Algorithm for Hybrid Memory Architecture," *ACM Transactions on Storage*, Vol. 14, No. 3. pp. 1-17, October 2018.

10. **Dong Hyun Kang**, Woonhak Kang, and Young Ik Eom, "S-WAL: Fast and Efficient Write-Ahead Logging for Mobile Devices," *IEEE Transactions on Consumer Electronics*, Vol. 64, No. 3, pp. 319-327, August 2018.

11. Sun Geol Baek, **Dong Hyun Kang**, Sungkil Lee, and Young Ik Eom, "Efficient Graph Pattern Matching Framework for Network-Based In-Vehicle Fault Detection," *ELSEVIER Journal of Systems and Software*, Vol. 140, pp. 17-31, June 2018.

12. Kirock Kwon, **Dong Hyun Kang**, and Young Ik Eom, "An Advanced SLC-buffering for TLC NAND Flash-based Storage," *IEEE Transactions on Consumer Electronics*, Vol. 63, No. 4, pp. 459-466, November 2017.

13. **Dong Hyun Kang**, Se Jun Han, Young-Chang Kim, and Young Ik Eom, "CLOCK-DNV: A Write Buffer Algorithm for Flash Storage Devices of Consumer Electronics," *IEEE Transactions on Consumer Electronics*, Vol. 63, No. 1, pp. 85-91, February 2017.

14. **Dong Hyun Kang** and Young Ik Eom, "FSLRU: A Page Cache Algorithm for Mobile Devices with Hybrid Memory Architecture," *IEEE Transactions on Consumer Electronics*, Vol. 62, No. 2, pp. 136-143, May 2016.

15. Kihong Lee, Dongwoo Lee, **Dong Hyun Kang**, and Young Ik Eom, "A Paravirtualized File System for Accelerating File I/O," *Applied Mathematics and Information Sciences*. (to appear)

16. **Dong Hyun Kang**, Changwoo Min, and Young Ik Eom, "Block Utilization-Aware Buffer Replacement Scheme for Mobile NAND Flash Storage," *IEICE Transactions on Information and Systems*, Vol. E97-D, No. 9, pp.2510-2513, September 2014.

Conference Publications

1. Geunsik Lim, **Donghyun Kang**, MyungJoo Ham, and Young Ik Eom, "SWAM: Revisiting Swap and OOMK for Improving Application Responsiveness on Mobile Devices," *In proceedings of the 29th Annual International Conference On Mobile Computing And Networking (MobiCom'23)*, Madrid, Spain, October 2023.

2. Jinseo Choi, Minseon Cho, and **Donghyun Kang**, "Interleaved Data Processing Scheme for Optimizing Tensorflow Framework," *In Proceedings of the 2021 IEEE International Conference on Consumer Electronics Berlin (ICCE-Berlin'21)*, Berlin, Germany, November 2021.

3. **Dong Hyun Kang**, Gihwan Oh, Dongki Kim, In Hwan Doh, Changwoo Min, Sang-Won Lee, and Young Ik Eom, "When Address Remapping Techniques Meet Consistency Guarantee Mechanisms," *In Proceedings of the 10th USENIX Workshop on Hot Topics in Storage and File Systems (HotStorage'18)*, Boston, USA, July 2018.

4. Daekyu Park, **Dong Hyun Kang**, and Young Ik Eom, "OFTL: Ordering-aware FTL for Maximizing Performance of the Journaling File System," *In Proceedings of the the ACM Design Automation Conference (DAC'18)*, San Francisco, USA, June 2018.

5. **Dong Hyun Kang** and Young Ik Eom, "iDiscard: Enhanced Discard() Scheme for Flash Storage Devices," *In Proceedings of the 2018 IEEE International Conference on Big Data and Smart Computing (BigComp'18)*, Shanghai, China, January 2018.

6. Kitae Lee, **Dong Hyun Kang**, Daeho Jeong, and Young Ik Eom, "Lazy TRIM: Optimizing the Journaling Overhead Caused by TRIM Commands on Ext4 File System," *In Proceedings of the 2018 IEEE International Conference on Consumer Electronics (ICCE'18)*, Las Vegas, USA, January 2018.

7. Youngho Choi, **Dong Hyun Kang**, JaeOok Kwon, and Young Ik Eom, "Optimizing Memory Swapping Scheme on the Memory Debugging Platform of CE Devices," *In Proceedings of the 2018 IEEE International Conference on Consumer Electronics (ICCE'18)*, Las Vegas, USA, January 2018.

8. Daekyu Park, **Dong Hyun Kang**, Seung Min Ahn, and Young Ik Eom, "The Minimal-Effort Write I/O Scheduler for Flash-based Storage Devices," *In Proceedings of the 2018 IEEE International Conference on Consumer Electronics (ICCE'18)*, Las Vegas, USA, January 2018.

9. **Dong Hyun Kang** and Young Ik Eom, "TO FLUSH or NOT: Zero Padding in the File System with SSD Devices," *In Proceedings of the 8th ACM SIGOPS Asia-Pacific Workshop on Systems (APSys'17)*, Mumbai, India, September 2017.

10. **Dong Hyun Kang** and Young Ik Eom, "Dynamic Hot-Cold Separation Scheme on the Log-structured File System for CE Devices," *In Proceedings of the 2017 IEEE International Conference on Consumer Electronics (ICCE'17)*, Las Vegas, USA, January 2017.

11. Sung Jae Park, **Dong Hyun Kang**, and Young Ik Eom, "CoW Link: Duplicated Data Block Management Scheme for Multi-user Consumer Electronics Devices," *In Proceedings of the 2017 IEEE International Conference on Consumer Electronics (ICCE'17)*, Las Vegas, USA, January 2017.

12. Kirock Kwon, **Dong Hyun Kang**, Jonggyu Park, and Young Ik Eom, "An Advanced TRIM Command for Extending Lifetime of TLC NAND Flash-based Storage," *In Proceedings of the 2017 IEEE International Conference on Consumer Electronics (ICCE'17)*, Las Vegas, USA, January 2017.

13. Minkyeong Lee, **Dong Hyun Kang**, Minho Lee, and Young Ik Eom, "Improving Read Performance by Isolating Multiple Queues in NVMe SSDs," *In Proceedings of the 11st ACM International Conference on Ubiquitous Information Management and Communication (IMCOM'17)*, Beppu, Japan, January 2017.

14. Kyoung Don Jang, **Dong Hyun Kang**, Do Hyoung Kim, Hyun Jin Park, and Young Ik Eom, "A Lightweight Pseudo CPU Hotplug Mechanism for Mobile Devices," *In Proceedings of the IEEE 10th International Conference on Next Generation Mobile Applications, Security and Technologies (NG-MAST'16)*, Cardiff, UK, August 2016.

15. Jongkyu Park, **Dong Hyun Kang**, and Young Ik Eom, "File Defragmentation Scheme for a Log-Structured File System," *In Proceedings of the ACM Asia-Pacific Workshop on Systems (APSys'16)*, Hong Kong, China, August 2016.

16. **Dong Hyun Kang** and Young Ik Eom, "FS-LRU: A Page Cache Algorithm for Eliminating Fsync Write on Mobile Devices," *In Proceedings of the 2016 IEEE International Conference on Consumer Electronics (ICCE'16)*, Las Vegas, USA, January 2016.

17. Se Jun Han, **Dong Hyun Kang**, and Young Ik Eom, "Hybrid Write Buffer Algorithm for Improving Performance and Endurance of NAND Flash Storages," *In Proceedings of the 2016 IEEE International Conference on Consumer Electronics (ICCE'16)*, Las Vegas, USA, January 2016.

18. Changsoo Oh, **Dong Hyun Kang**, Minho Lee, and Young Ik Eom, "A Buffer Cache Algorithm Using the Characteristic of Mobile Applications based on Hybrid Memory Architecture," *In Proceedings of the 10th ACM International Conference on Ubiquitous Information Management and Communication (IMCOM'16)*, Danang, Vietnam, January 2016.

19. Minhoon Yi, **Dong Hyun Kang**, Minho Lee, Inhyeok Kim, and Young Ik Eom, "Performance Analyses of Duplicated I/O Stack in Virtualization Environment," *In Proceedings of the 10th ACM International Conference on Ubiquitous Information Management and Communication (IMCOM'16)*, Danang, Vietnam, January 2016.

20. Chansoo Oh, **Dong Hyun Kang**, Minho Lee, and Young Ik Eom, "A Buffer Cache Algorithm for Hybrid Memory Architecture in Mobile Devices," *In Proceedings of the 6th EAI International Conference on Cloud Computing (CloudComp'15)*, Daejeon, Korea, October 2015.

21. Tae Yong Kim, **Dong Hyun Kang**, Dongwoo Lee, and Young Ik Eom, "Improving Performance by Bridging the Semantic Gap between Multi-queue SSD and I/O Virtualization Framework," *In Proceedings of the 31st IEEE International Conference on Massive Storage Systems and Technologies (MSST'15)*, Santa Clara, USA, June 2015.

22. Minho Lee, **Dong Hyun Kang**, Junghoon Kim, and Young Ik Eom, "M-CLOCK: Migration-optimized Page Replacement Algorithm for Hybrid DRAM and PCM Memory Architecture," *In Proceedings of the 30th ACM Symposium On Applied Computing (SAC'15)*, Salamanca, Spain, April 2015.

23. Se Jun Han, **Dong Hyun Kang**, and Young Ik Eom, "Low Power Killer: Extending the Battery Lifespan by Reducing I/O on Mobile Devices," *In Proceedings of the 2015 IEEE International Conference on Consumer Electronics (ICCE'15)*, Las Vegas, USA, January 2015.

24. Hyun ku Lee, Junghoon Kim, **Dong Hyun Kang**, and Young Ik Eom, "Minimizing Consistency-Control Overhead with Rollback-Recovery for Storage Class Memory," *In Proceedings of the 9th ACM International Conference on Ubiquitous Information Management and Communication (IMCOM'15)*, Bali, Indonesia, January 2015.

25. Jeehong Kim, **Dong Hyun Kang**, Byungmin Ha, Hyunjin Cho, and Young Ik Eom, "MAST: Multi-Level Associated Sector Translation for NAND Flash Memory-Based Storage System," *In Proceedings of the 9th KIPS International Conference on Ubiquitous Information Technologies and Applications (CUTE'14)*, Guam, USA, December 2014.

26. Byungjo Kim, **Dong Hyun Kang**, Changwoo Min, and Young Ik Eom, "Understanding Implications of Trim, Discard, and Background Command for eMMC Storage Device," *In Proceedings of the IEEE 3rd Global Conference on Consumer Electronics (GCCE'14)*, Tokyo, Japan, October 2014.

27. Jaewon Kim, Changwoo Min, Jeehong Kim, **Dong Hyun Kang**, Inhyeok Kim, and Young Ik Eom, "Page Allocation Scheme for Anti-Fragmentation on Smart Devices," *In Proceedings of the IEEE 3rd Global Conference on Consumer Electronics (GCCE'14)*, Tokyo, Japan, October 2014.

28. **Dong Hyun Kang**, Changwoo Min, and Young Ik Eom, "An Efficient Buffer Replacement Algorithm for NAND Flash Storage Devices," *In Proceedings of the IEEE 22nd International Symposium on Modelling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS'14)*, Paris, France, September 2014.

29. Hyun Ku Lee, Junghoon Kim, **Dong Hyun Kang**, and Young Ik Eom, "MinL2R: Minimal Logging to Rollback-Recovery Scheme for Storage Class Memory," *In Proceedings of the KIPS International Conference on Computer Applications and Information Processing Technology (CAIPT'14)*, Ulaanbaatar, Mongolia, June 2014.

30. Geunsik Lim, Changwoo Min, **Dong Hyun Kang**, and Young Ik Eom, "User-aware Power Management for Mobile Devices," *In Proceedings of the 2013 IEEE 2nd Global Conference on Consumer Electronics (GCCE'13)*, Tokyo, Japan, October 2013.

31. Hyunsu Jang, Jung Hwan Choi, **Dong Hyun Kang**, Changhwan Song, and Young Ik Eom, "Authentication Scheme for Information Retrieval System based on Mobile Agents," *In Proceedings of the KIPS International Conference on Ubiquitous Information Technologies and Applications (ICUT'08)*, Ho Chi Minh, Vietnam, December 2008.

32. Jung Hwan Choi, **Dong Hyun Kang**, Hyunsu Jang, and Young Ik Eom, "Adaptive Access Control Scheme Utilizing Context Awareness in Pervasive Computing Environments," *In Proceedings of the 27th IEEE International Performance Computing and Communications Conference (IPCCC'08)*, Austin, USA, December 2008.

Posters

1. Soyee Choi, **Dong Hyun Kang**, Sang-Won Lee, and Young Ik Eom, "Concurrent Sequential Writes Also Considered Harmful in Solid State Drives," *In Proceedings of the 18th USENIX Conference on File and Storage Technologies (FAST'17)*, Santa Clara, USA, February 2020.

2. Sung Kyun Lee, **Dong Hyun Kang**, and Young Ik Eom, "Optimizing L2P Mapping of NAND Flash Storage based on Hybrid Memory Architecture," *In Proceedings of the 15th USENIX Conference on File and Storage Technologies (FAST'17)*, Santa Clara, USA, February 2017.

3. **Dong Hyun Kang** and Young Ik Eom, "Understanding the Behaviors of Discard Command in both the Filesystem and the Flash-based Storage Layer," *In Proceedings of the 14th USENIX Conference on File and Storage Technologies (FAST'16)*, Santa Clara, USA, February 2016.

4. Se Jun Han, **Dong Hyun Kang**, and Young Ik Eom, "Hybrid Buffer Management using NVM Write Buffer on SSDs," *In Proceedings of the 10th ACM European Conference on Computer Systems (EUROSYS'15)*, Bordeaux, France, April 2015.

5. **Dong Hyun Kang** and Young Ik Eom, "A Buffer Replacement Algorithm for Providing Self-Logging in Hybrid Memory Architecture," *In Proceedings of the 13th USENIX Conference on File and Storage Technologies (FAST'15)*, Santa Clara, USA, February 2015.

6. Tae Yong Kim, **Dong Hyun Kang**, Dongwoo Lee, and Young Ik Eom, "Improving Performance by Bridging the Semantic Gap between Multi-queue SSD and QEMU I/O Virtualization," *In Proceedings of the 13th USENIX Conference on File and Storage Technologies (FAST'15)*, Santa Clara, USA, February 2015.

7. **Dong Hyun Kang**, Changwoo Min, and Young Ik Eom, "TS-CLOCK: Temporal and Spatial Locality Aware Buffer Replacement Algorithm for NAND Flash Storages," *In Proceedings of the 2014 ACM International Conference on Measurement and Modeling of Computer Systems (SIGMETRICS'14)*, Austin, USA, June 2014. (Recommended for poster presentation among submitted papers)

8. **Dong Hyun Kang**, Changwoo Min, and Young Ik Eom, "Flash-friendly Buffer Replacement Algorithm for Improving Performance and Lifetime of NAND Flash Storages," *In Proceedings of the 12th USENIX Conference on File and Storage Technologies (FAST'14)*, Santa Clara, USA, February 2014.

9. Minho Lee, **Dong Hyun Kang**, Junghoon Kim, and Young Ik Eom, "Page Replacement Algorithm with Lazy Migration for Hybrid PCM and DRAM Memory Architecture," *In Proceedings of the 12th USENIX Conference on File and Storage Technologies (FAST'14)*, Santa Clara, USA, February 2014.

Journal Articles in Korean

1. Jinseo Choi and **Donghyun Kang** "A Parallel Processing Scheme on TensorFlow for Improving Training and Validation Performance," *Journal of Korea Institute of Information Scientists and Engineers*, Vol. 49, No. 6, pp. 407-415, June 2022.

2. Jinseo Choi and **Donghyun Kang** "Thread-based Shuffling Scheme for Improving the Training Time of Deep Learning," *Korea Institute of Information Scientists and Engineers Transactions on Computing Practices*, Vol. 28, No. 2, pp. 75-80, February 2022.

3. Minseon Cho and **Donghyun Kang** "L2LRU: Learning-based Page Movement Policy for LRU Page Replacement Policy," *Journal of Korea Institute of Information Scientists and Engineers*, Vol. 48, No. 9, pp. 981-987, September 2021.

4. Geunsik Lim, **Dong Hyun Kang**, and Young Ik Eom "CPU Mediator for Optimizing Thread Operations on IoT Devices," *Korea Institute of Information Scientists and Engineers Transactions on Computing Practices*, Vol. 25, No. 12, pp. 616-612, December 2019.

5. **Dong Hyun Kang**, Sang-Won Lee, and Young Ik Eom "A Compression-based Data Consistency Mechanism for File Systems," *Journal of Korea Institute of Information Scientists and Engineers*, Vol. 46, No. 9, pp. 885-891, September 2019.

6. Kirock Kwon, **Dong Hyun Kang**, and Young Ik Eom "An Efficient SLC-buffer Management Scheme for TLC NAND Flash-based Storage," *Journal of Korea Institute of Information Scientists and Engineers*, Vol. 45, No. 7, pp. 611-617, July 2018.

7. Jongkyu Park, **Dong Hyun Kang**, Euiseong Seo, and Young Ik Eom "An Efficient Cleaning Scheme for File Defragmentation on Log-Structured File System," *Journal of Korea Institute of Information Scientists and Engineers*, Vol. 43, No. 6, pp. 627-635, June 2016.

8. Yongju Song, Junghoon Kim, **Dong Hyun Kang**, Minho Lee, and Young Ik Eom "Analyses of the Effect of System Environment on Filebench Benchmark," *Journal of Korea Institute of Information Scientists and Engineers*, Vol. 43, No. 3, pp. 411-418, April 2016.

9. Se Jun Han, **Dong Hyun Kang**, and Young Ik Eom "Dual Write Buffer Algorithm for Improving Performance and Lifetime of SSDs," *Journal of Korea Institute of Information Scientists and Engineers*, Vol. 43, No. 2, pp. 177-185, February 2016.

10. Tae Yong Kim, **Dong Hyun Kang**, and Young Ik Eom, "Improving Performance on I/O Virtualization Framework based on Multi-queue SSD," *Journal of Korea Institute of Information Scientists and Engineers*, Vol. 43, No. 1, pp. 27-33, January 2016.

11. Seung Joon Noh, **Dong Hyun Kang**, Junghan Kim, Inhyeok Kim, and Young Ik Eom, "Address Space Maintaining Scheme for Fast Program Execution in Linux-based Systems," *Korea Institute of Information Scientists and Engineers Transactions on Computing Practices*, Vol. 21, No. 12, pp. 786-791, December 2015.

12. Chansoo Oh, **Dong Hyun Kang**, Minho Lee, and Young Ik Eom, "Hybrid Main Memory based Buffer Cache Scheme by Using Characteristics of Mobile Applications," *Journal of Korea Institute of Information Scientists and Engineers*, Vol. 42, No. 11, pp. 1314-1421, November 2015.

13. Dong Su Kim, **Dong Hyun Kang**, Eun Seok Lee, Kyu Sung Lee, and Young Ik Eom "CTIS: Cross-platform Tester Interface Software for Memory Semiconductor," *Korea Institute of Information Scientists and Engineers Transactions on Computing Practices*, Vol. 21, No. 10, pp. 645-650, October 2015.

14. **Dong Hyun Kang** and Young Ik Eom, "A Buffer Cache Replacement Algorithm for Considering both Hybrid Main Memory and Storage," *Journal of Korea Institute of Information Scientists and Engineers*, Vol. 42, No. 8, pp. 947-953, August 2015.

15. Minho Lee, **Dong Hyun Kang**, Junghoon Kim, and Young Ik Eom, "Page Replacement Algorithm for Improving Performance of Hybrid Main Memory," *Korea Institute of Information Scientists and Engineers Transactions on Computing Practices*, Vol. 21, No. 1, pp. 88-93, January 2015.

16. Hyun Ku Lee, Junghoon Kim, **Dong Hyun Kang**, and Young Ik Eom, "Data Consistency Control Scheme using a Rollback-Recovery Mechanism for Storage Class Memory," *Journal of Korea Institute of Information Scientists and Engineers*, Vol. 42, No. 1, pp. 7-14, January 2015.

17. **Dong Hyun Kang**, Yong Ik Lee, Jong Ho Park, and Yong Hack Shin, "An Integrated Interface based on CIM between Energy Management System and Heterogeneous Systems," *Journal of Software Engineering Society*, Vol. 24, No. 3, pp. 111-115, September 2011.

18. **Dong Hyun Kang**, Hyunsu Jang, Changhwan Song, and Young Ik Eom, "An Integrated Context Generation Scheme based on Ant Colony System," *Journal of Korea Information Processing Society*, Vol. 16-A, No. 2, pp. 135-142, April 2009.

19. Hyunsu Jang, Younwoo Kim, Jung Hwan Choi, **Dong Hyun Kang**, Changhwan Song, and Young Ik Eom, "AIM: Design and Implementation of Agent-based Intelligent Middleware for Ubiquitous HCI Environments," *Journal of Korea Information Processing Society*, Vol. 16-A, No. 1, pp. 43-54, February 2009.

Patents

1. **Donghyun Kang**, Cheolhyeon Kwon, and Jaeha Shin, "Method and System for Memory Management of TensorFlow Lite," Patent Filed No. 10-2022-0068223, Korea, June 03 2022

2. **Donghyun Kang** and Jinseo Choi, "Apparatus and Method for Improving Training and Validation Performance based on Parallel Processing," Patent Filed No. 10-2022-0000138, Korea, January 03 2022

3. **Donghyun Kang** and Minseon Cho, "Machine Learning based Page Replacement Method," Patent Filed No. 10-2021-0089771, Korea, July 08 2021

4. Young Ik Eom and **Dong Hyun Kang**, "Data Discard Method for Journaling Filesystem and Memory Management Apparatus Thereof," Patent No. 10552377, USA, February 04 2020

5. Young Ik Eom and **Dong Hyun Kang**, "An Apparatus of Flash Storage and Method for Writing Data on A Flash Storage," Patent No. 10-1974731, Korea, April 25 2019

6. Young Ik Eom, Inhyeok Kim, **Dong Hyun Kang**, Junghan Kim, and Seung Joon Noh, "Apparatus and Method for Providing of Address Space Maintaining," Patent No. 10-1839503, Korea, March 16 2018

7. Young Ik Eom and **Dong Hyun Kang**, "Apparatus and Method for Consistency of Database," Patent No. 10-1809679, Korea, December 11 2017

8. Young Ik Eom and **Dong Hyun Kang**, "Data Discard Method for Journaling Filesystem and Memory Management Apparatus Thereof," Patent No. 10-1779174, Korea, September 19 2017

9. Young Ik Eom, **Dong Hyun Kang**, Jongkyu Park, Euiseong Seo, and Minho Lee, "Segment Cleaning Method for File System and Memory Management Apparatus Thereof," Patent No. 10-1769916, Korea, August 14 2017

10. Young Ik Eom and **Dong Hyun Kang**, "Apparatus and Method for Power Control," Patent No. 10-1611467, Korea, April 5 2016

11. Young Ik Eom, Ki Hong Lee, Dongwoo Lee, **Dong Hyun Kang**, and Young Hyun Joo, "Apparatus and Method for Virtualization," Patent No.10-1559929, Korea, October 6 2015

12. Young Ik Eom, **Dong Hyun Kang**, Junghoon Kim, and Hyun Ku Lee, "Method and Apparatus for Data Consistency Control of Storage Class Memory," Patent No. 10-1541532, Korea, July 28 2015

13. Young Ik Eom, Minho Lee, **Dong Hyun Kang**, and Junghoon Kim, "Apparatus and Method of Page Replacement for Hybrid Memory Architecture," Patent Filed No. 10-2015-0097227, Korea, July 8 2015

14. Young Ik Eom, **Dong Hyun Kang**, and Minho Lee, "Method for Replacing Page in Flash Memory," Patent No. 10-1477776, Korea, December 23 2014

15. Young Ik Eom, Jung Hwan Choi, Hyunsu Jang, Youn-Woo Kim, **Dong Hyun Kang**, and Chang-Hwan Song, "Context-aware Role-based Access Control System and Control Method Thereof," Patent No. 8387117, USA, February 26 2013

16. Young Ik Eom, Jung Hwan Choi, Hyunsu Jang, Youn-Woo Kim, **Dong Hyun Kang**, and Chang-Hwan Song, "Context-aware Role-based Access Control System and Control Method Thereof," Patent No. 10-1019322, Korea, February 24 2011

17. Young Ik Eom, Hyunsu Jang, Jung Hwan Choi, Youn-Woo Kim, **Dong Hyun Kang**, and Chang-Hwan Song, "Service Call Processing Method and Middleware Bridge," Patent No. 10-1059444, Korea, August 19 2011

Teaching

Courses Taught

Spring 2023   Software Engineering (03671006)
Web Programming (14207001)

Courses Taught @ Changwon National University

Fall 2022   Operating Systems (CDA0017)
Software Engineering (CDA0028)
Mobile Programming (CDA0125)
Paper Writing (for graduates) (CDB2106)
Advanced Web Programming (for graduates) (CDF0028)

Spring 2022   Operating Systems (CDA0017)
Open Source Software (CDA0156)
Software Design (CDA0154)
Advanced Web Programming (for graduates) (ABC3012)

Fall 2021   System Programming (CDA0006-01)
Advanced System Programming (for graduates) (CDB2104)
Software Engineering (CDA0028)
Mobile Programming (CDA0125)
Advanced Web Programming (for graduates) (ABC3012)

Spring 2021   Operating Systems (CDA0017-00 & CDA0017-01)
Open Source Software (CDA0156)
Software Design (CDA0154)
Advanced Operating Systems (for graduates) (CDB2103)

Fall 2020   Software Engineering (CDA0028-00 & CDA0028-01)
Mobile Programming (CDA0125)

Courses Taught @ Dongguk University WISE

Spring 2020   Unix System and Practice (ICT237-01 & ICT237-02)
Systems Analysis and Design (COM309-01 & COM309-02)
Computer Engineering Capstone Design II (COM409-05)

Fall 2019   Operating Systems (COM304-01)
System Programming and Practice (COM404-01)
Embedded System and Practice (COM406-01)
Computer Engineering Capstone Design I (COM316-06)

Spring 2019   Unix System and Practice (ICT237-01 & ICT237-02)
Web Programming and Practice (ICT133-02)
Computer Engineering Capstone Design II (COM409-05)

Courses Taught @ Tech University of Korea

Fall 2016   Server Operation and Management (AEB 33015)
Spring 2016   Operating Systems (ACS 20021)
Fall 2015   Server Operation and Management (AEB 33015)
Spring 2015   Operating Systems (ACS 20021)

Service

Peer Review Activities

- *IEEE Transactions on Computers (TC)*, 2023

- *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)*, 2023

- *ACM Transactions on Embedded Computing Systems (TECS)*, 2021

- *ACM Transactions on Storage (TOS)*, 2020-2021

- *MDPI Applied Sciences*, 2021

- *IEEE Access*, 2018, 2021

- *MDPI Entropy*, 2020

- *KIISE Transactions on Computing Practices*, 2021

Committee Activities

- Guest Editor, *MDPI Electronics*, 2022-2023

- Technical Committee, *IEEE CTSoc Smartphone and Mobile Device Technologies (MDT)*, 2021-2023

- Organizing Committee, *Next Generation Large Scale NVRAM (NVRAMOS)*, 2020-2023

- Program Committee, IEEE International Conference on Consumer Technology in Berlin (ICCE-Berlin), 2021-2022

- Program Committee, *Communications of the Korean Institute of Information Scientists and Engineers*, 2022

- Program Committee, *Ubiquitous Computing and Web Information Technology (UCWIT)*, 2020

- Program Committee, *IEEE Non-Volatile Memory Systems and Applications Symposium (NVMSA)*, 2020

- Local Informatization Promotion Committee, *Gyeongsangnam-do*, 2021-2022

Referees

Ph.D. Young Ik Eom
Professor
College of Software
Sungkyunkwan University, Korea
Email – yieom@skku.edu
Homepage – https://dclab-skku.github.io

Ph.D. Sang-Won Lee
Professor
Graduate School of Data Science
Seoul National University, Korea
Email – swlee69@snu.ac.kr

Ph.D. Changwoo Min
Igalia, Spain
Homepage – https://multics69.github.io