

Minyoung Sung



University of Seoul
Department of
Mechanical and Information Engineering
Seoul, KOREA 02504

Voice: +82-2-6490-2394
Fax: +82-2-6490-2384
mysung@uos.ac.kr
<http://ssl.uos.ac.kr> or
<http://www.uos.ac.kr/en>

Education	<ul style="list-style-type: none">• Ph. D. in Electrical and Computer Engineering, 2002 Seoul National University, Korea• MS. In Computer Engineering, 1997 Seoul National University, Korea• BS. In Computer Engineering, 1995 Seoul National University, Korea
Research	<ul style="list-style-type: none">• Ph. D. Dissertation (Advisor: Prof. Heonshik Shin)<ul style="list-style-type: none">- “Performance Analysis of Packet-Based Inter-processor Communication for Shared-Bus Multiprocessors”• Research area<ul style="list-style-type: none">- Real-time and embedded computing systems- System software- Mechanical information systems- Industrial control systems
Professional Experience	<p>Associate Professor Sep. 2012 ~ Seoul, Korea Dept. of Mechanical and Information Eng., University of Seoul</p> <ul style="list-style-type: none">• Lectures<ul style="list-style-type: none">- Data structures and algorithms, Programming methodology and practice, Mechanical informatics application, Discrete mathematics- Advanced system software, Advanced computing theory, Information networks• System Software Lab.<ul style="list-style-type: none">- http://ssl.uos.ac.kr <p>Assistant Professor Sep. 2006 ~ Aug. 2012 Cheonan, Korea Dept. of Computer Software Eng., Sangmyung University</p> <ul style="list-style-type: none">• Lectures<ul style="list-style-type: none">- Logic circuit design, System programming, Operating systems, Computer architecture, Real-time systems <p>Visiting Scholar Aug. 2005 ~ Feb. 2006 Ann Arbor, MI, USA Real-Time Computing Lab., University of Michigan, Ann Arbor</p> <ul style="list-style-type: none">• “Memory power management for DRAM-based solid state disks”<ul style="list-style-type: none">- Research on a low-power high-performance DRAM-based nonvolatile storage- Power-aware filesystem driver dynamically migrating data blocks for power efficiency. <p>Senior Engineer Oct. 2002 ~ Aug. 2006 Suwon, Korea Software Institute, Samsung Electronics</p> <ul style="list-style-type: none">• Next generation communication software research<ul style="list-style-type: none">- Software radio- Linux smartphone middleware• Simulation & analysis<ul style="list-style-type: none">- Flash memory simulator (using Hyperformix Workbench™)- Home network simulator

Publications**Journal publication**

- M. Sung and Y. Ko, "Machine-Learning-Integrated Load Scheduling for Reduced Peak Power Demand," *IEEE Trans. on Consumer Electronics*, May 2015.
- Y. G. Kim, et al., "A Novel GPU Power Model for Accurate Smartphone Power Breakdown," *ETRI Journal*, Feb. 2015.
- M. Sung, "Evaluation and Analysis of Scheduling Algorithms for Peak Power Reduction," *Journal of the Korea Academia-Industrial Cooperation Society*, vol.16, no.4, 2015. (in Korean)
- W. Kim and M. Sung, "Evaluation of EtherCAT Clock Synchronization in Distributed Control Systems," *Trans. Korean Society of Mechanical Engineers*, vol.38, no.7, 2014. (in Korean)
- Y. Kim, et al., "Formal Modeling and Verification of Motor Drive Software for Networked Motion Control Systems," *Journal of Universal Computer Science*, vol.20, no.14, 2014.
- M. Sung, et al., "Toward a Holistic Delay Analysis of EtherCAT Synchronized Control Processes," *Int'l Journal of Computers, Comm. and Control*, Aug 2013.
- K. Kim, M. Sung, and H.-W. Jin, "Design and Implementation of a Delay-guaranteed Motor Drive for Precision Motion System," *IEEE Trans. on Industrial Informatics*, vol.8, no.2, 2012.
- M. Sung and K. Kim, "Asymmetric Flash Volume Management," *IEEE Trans. on Consumer Electronics*, May. 2012.
- I. Kim, S. Park, M. Sung, and T. Kim, "Design and Implementation of a Real-Time Motion Controller using Open Source Software," *Journal of KIISE: Computer Systems and Theory*, 2012. (in Korean)
- M. Sung and K. Kim, "Implementation and Analysis of a Networked Motor Drive using Real-Time Ethernet," *Journal of KIISE: Computing Practices and Letters*, 2011. (in Korean)
- M. Sung, "A Rich Media Framework for Communication-Broadcasting Converged IPTV," *IEEE Trans. on Consumer Electronics*, vol.56, May 2010.
- M. Sung, et al., "Development of Emotional Messenger for IPTV," *Journal of the Korea Contents Association*, 2010. (in Korean)
- M. Sung, "Development of a Rich Media Framework for Hybrid IPTV," *Journal of KIISE: Computing Practices and Letters*, 2010. (in Korean)
- M. Sung, "A MAC Parameter Optimization Scheme for IEEE 802.11e-based Multimedia Networks," *Journal of the Korea Academia-Industrial Cooperation Society*, 2008. (in Korean)
- M. Sung, "Performance Evaluation of Flash Memory-Based File Storages: NAND vs. NOR," *Journal of the Korea Academia-Industrial Cooperation Society*, 2008. (in Korean)
- M. Sung, "Co-Validation Environment for Memory Card Compatibility Test," *Journal of the Korea Academia-Industrial Cooperation Society*, 2008. (in Korean)
- M. Sung, "Design and Implementation of Dual-Mode Cordless Phone and Walkie-Talky System: A Software Radio Approach," *Journal of the Korea Academia-Industrial Cooperation Society*, 2008. (in Korean)
- J. Cho, M. Sung, and H. Shin, "A Design Framework for Multi-resolution Video Servers," *Multimedia Tools and Applications*, vol.20, pp.237-262, 2003.
- M. Sung, S. Kim, S. Park, N. Chang, and H. Shin, "Comparative Performance Evaluation of Java Threads for Embedded Applications: Linux Thread vs. Green Thread," *Information Processing Letters*, vol.84, no.4, pp.221-225, Oct. 2002.
- M. Sung, et al., "Performance Analysis of BusNet Protocol for Backplane Bus-Based Interprocessor Communication," *Computer Communications*, vol.24, 2001.

Conference presentation

- M. Sung, W. Kim, and S. Lee, "A Cluster Architecture Motion Controller using EtherCAT Multicast," *Shanghai-Seoul Forum*, Shanghai, July, 2016.
 - W. Kim and M. Sung, "Scalable Motion Control System Using EtherCAT-based Shared Variables," *IEEE Conf. on Emerging Technologies and Factory Automation (ETFA)*, Luxembourg, Sep. 2015
 - M. Sung and Y. Ko, "Machine-Learning-Integrated Load Scheduling for Peak Electricity Reduction," *IEEE Conf. on Consumer Electronics (ICCE)*, Las Vegas, Jan. 2015.
 - I. Kim, et al., "An Open-source Development Environment for Industrial Automation with EtherCAT and PLCopen Motion Control," *IEEE conf. on Emerging Technologies and Factory*
-

Automation, Cagliari, Sep. 2013

- M. Sung, et al., "An EtherCAT-based Motor Drive for High Precision Motion Systems," *IEEE Conf. on Industrial Informatics (INDIN)*, Lisbon, Jul. 2011.
- M. Sung and T. Kim, "A Motor Control Framework for Cyber-Awareness," *US-Korea Conference (UKC)*, Seattle, Aug. 2010.
- M. Sung and N. Yoon, "A MAC parameter optimization scheme for IEEE 802.11e-based multimedia home networks", *IEEE Computer Communications & Networking Conference (CCNC)*, Las Vegas, Jan. 2006.
- M. Sung, et al., "Performance Evaluation of Flash Memory-Based File Storages: NAND vs. NOR," *Symp. on Performance Evaluation of Computer and Telecommunication Systems (SPECTS)*, San Jose, 2004.
- M. Sung and G.-Y. Lee, "A QoS-enabled Service Discovery and Delivery Scheme for Home Networks," *IEEE Conf. on Local Computer Networks (LCN)*, Bonn, Oct. 2003

Patents

- "Communication method operated by software and apparatus thereof", US 7630726, Dec. 8, 2009.
- "Network device to support services according to quality of service, network system and method using the same", US 7693161, Apr. 6, 2010.

Research Projects	"Modeling of logic circuit software to verify timing requirements in railway train control", Korea Railway Research Institute <ul style="list-style-type: none">• Modeling and verification of PLC logics using formal and stochastic methods for railway train control	2016.7 ~ 2018.2
	"Embedded PLC control system for precision synchronized measurement and data integration", Small & Medium Business Administration <ul style="list-style-type: none">• Development of an embedded PLC for OPC UA - DA gateway and precision distributed measurement using EtherCAT	2015.6 ~ 2016.7
	"Development of general-purpose motion controller based on standardized KOSMOS (Korea Open Source MOTion System) for automated manufacturing", Ministry of Trade, Industry and Energy <ul style="list-style-type: none">• Development of PLCopen OPC Unified Architecture	2014.6 ~ 2017.5
	"A Study of Multi-Core & I/O Virtualization and Real-Time Performance Guarantee Technique for Multi-Domain Motion Controllers", National Research Foundation of Korea <ul style="list-style-type: none">• Research on system software for virtualization of motion controller	2012.5 ~ 2015.4
	"The synchronous control drive for the multi axial drive and the high power servo-motor", Ministry of Knowledge Economy <ul style="list-style-type: none">• Software-based precision motor drive	2010.6 ~ 2013.5
Professional Service	• IEEE member (ID: 415594)	2005 ~
	• Member of the Computer System Society, Korea Institute of Information Scientists and Engineers	2010 ~
	• Member of the Korean Society of Mechanical Engineers (in IT-integration division)	2012 ~
