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EDUCATION

- Ph.D., Electronics Engineering**, Seoul National University, Seoul, Korea 8/1995
Dissertation: Analyses and Applications of Traffic Shaping Techniques in High-Speed Networks
Advisor: Prof. Byeong Gi Lee
- M.S., Electronics Engineering**, Seoul National University, Seoul, Korea 2/1991
Dissertation: A Study on Generic Flow Control (GFC) Protocol in Broadband ISDN Customer Premises Networks
Advisor: Prof. Byeong Gi Lee
- B.S., Electronics Engineering**, Seoul National University, Seoul, Korea 2/1989
With honors (Cum Laude)

EMPLOYMENT

- Associate Professor** 9/2020–Present
Department of Communications and Networking, School of Advanced Technology, Xi'an Jiaotong-Liverpool University, Suzhou, China
- Associate Professor** 7/2014–8/2020
Department of Electrical and Electronic Engineering, Xi'an Jiaotong-Liverpool University, Suzhou, China
- Associate Professor** 8/2013–6/2014
College of Engineering, Swansea University, Swansea, Wales, UK
- Senior Lecturer** 8/2009–7/2013
College of Engineering, Swansea University, Swansea, Wales, UK
- Senior Lecturer** 8/2007–7/2009
Institute of Advanced Telecommunications, Swansea University, Swansea, Wales, UK
- Principal Engineer** 1/2001–7/2007
Advanced System Technology, STMicroelectronics, San Jose, California, US
- STMicroelectronics Researcher-in-Residence** 1/2001–3/2006
Stanford Networking Research Center (SNRC), Stanford University, Stanford, California, US
- Member of Technical Staff** 12/1997–12/2000
Passive Optical Network (PON) Systems R&D Group, Lucent Technologies, Murray Hill, New Jersey, US
- Post-Doctoral Research Associate & Instructor** 2/1996–11/1997
Dept. of Electrical Engineering, Washington University in St. Louis, St. Louis, Missouri, US
- Special Researcher** 8/1995–2/1996
Institute of New Media and Communications, Seoul National University, Seoul, Korea

AWARDS & HONORS

- Best Paper Award**, International Conference on Information, System and Convergence Applications (ICISCA) 2015
For a first-authored paper titled “On Energy-Efficient Time Synchronization based on Source Clock Frequency Recovery in Wireless Sensor Networks,” which was presented at the ICISCA 2015 in Kuala Lumpur, Malaysia, Jun. 2015.
- Best Paper Award**, Fiber Optics in Access Networks (FOAN) Workshop 2011
For a single-authored paper titled “A Research Framework for the Clean-Slate Design of Next-Generation Optical Access,” which was presented at the FOAN 2011, co-located with the ICUMT 2011 in Budapest, Hungary, Oct. 2011.
- Certificate of Recognition**, STMicroelectronics 2002
For pioneering a new presence for STMicroelectronics at Stanford
- Bell Labs President’s Silver Award**, Bell Labs, Lucent Technologies 1999
For the development of world’s first commercial ATM-PON-based Fiber-To-The-Home/Business (FTTH/B) systems
- Post-Doctoral Research Scholarship**, Korea Science and Engineering Foundation 2/1996–2/1997
- Research Fellowship**, Dept. of Electronics Eng., Seoul National University 9/1989–12/1989
- Scholarship of Honor**, Seoul National University 3/1988–12/1988

RESEARCH INTERESTS

Clean-slate design of next-generation access/metro networks; pricing in access networks and smart grids; network architectures and protocols; scheduling and routing algorithms; wireless localization; synchronization in packet networks; application of deep learning in communication and networking systems.

RESEARCH EXPERIENCE

- Scalable and Energy-Efficient Multi-Building and Multi-Floor Indoor Localisation/Navigation based on Deep Neural Networks with a Multivariate Database** 6/2020–5/2023
Associate Professor, Xi’an Jiaotong-Liverpool University, Suzhou, China
 - Xi’an Jiaotong-Liverpool University Postgraduate Research Scholarship (PGRS) under grant reference number PGRS1912001 (approximately 500,000 RMB in tuition and living expenses).
 - Principal Investigator
- Feasibility Study of XJTLU Campus-Wide Indoor Localization System Based on Deep Neural Networks** 1/2019–12/2021
Associate Professor, Xi’an Jiaotong-Liverpool University, Suzhou, China
 - Xi’an Jiaotong-Liverpool University Key Programme Special Fund (KSF) – Exploratory Research Programme under grant reference number KSF-E-25 (200,000 RMB).
 - Principal Investigator
- Building Environmental Informatics and Resource Optimization Roadmap Based on Visual Big Data Analysis** 7/2018–6/2021
Associate Professor, Xi’an Jiaotong-Liverpool University, Suzhou, China
 - Xi’an Jiaotong-Liverpool University Key Programme Special Fund (KSF) – Exploratory Research Programme under grant reference number KSF-E-04 (200,000 RMB).
 - Co-Principal Investigator
- Energy-Efficient Time Synchronisation and Data Bundling Schemes for Wireless Sensor Networks** 6/2018–5/2021
Associate Professor, Xi’an Jiaotong-Liverpool University, Suzhou, China
 - Xi’an Jiaotong-Liverpool University Research Development Fund (RDF) under grant reference number RDF-16-02-39 (482,500 RMB).
 - Principal Investigator

Feasibility Assessment and Roadmap for XJTLU Campus Information and Visitor Service System as A Test Bed for Large-Scale Location-Aware Services in SIP

4/2017–8/2017

Associate Professor, Xi'an Jiaotong-Liverpool University, Suzhou, China

- Xi'an Jiaotong-Liverpool University Research Institute for Smart and Green Cities (RISGC) Seed Grant Programme 2016-2017 under grant reference number RISGC-2017-4 (20,000 RMB).
- Principal Investigator

Network Traffic Control Schemes and Service Plans exploiting Excess Bandwidth in Shared Access Networks

1/2015–12/2017

Associate Professor, Xi'an Jiaotong-Liverpool University, Suzhou, China

- Xi'an Jiaotong-Liverpool University Research Development Fund (RDF) under grant reference number RDF-14-01-25 (95,000 RMB).
- Principal Investigator

Molecular Information Carriers for Communications in Nano-Scale Environments

12/2014–12/2016

Associate Professor, Xi'an Jiaotong-Liverpool University, Suzhou, China

- Xi'an Jiaotong-Liverpool University Research Development Fund (RDF) under grant reference number RDF-14-01-29 (100,000 RMB).
- Co-Principal Investigator

Clean-Slate Design of Next-Generation Access (NGA) Research Initiative

8/2007–6/2014

Associate Professor, Swansea University, Swansea, Wales UK

- Proposed new Internet service provider (ISP) traffic control schemes allocating excess bandwidth among active subscribers while not compromising the service contracts specified by the original token bucket algorithm for conformant subscribers in shared access networks.
- Proposed a comprehensive research framework for a comparative analysis of candidate network architectures and protocols in the clean-slate design of next-generation access based on multivariate non-inferiority testing and a notion of equivalent circuit rate taking into account user-perceived performances, and a virtual test bed providing a complete experimental platform for the comparative analysis.
- Awarded twice (Dec. 2010 and Mar. 2011) Amazon Web Services (AWS) in Education Research Grant (credits of 7,500 USD each; 15,000 USD in total) for the use of AWS (i.e., Cloud Computing) for “Virtual Test Bed for Next-Generation Optical Access (NGOA)” (part of the Clean-Slate Design of Next-Generation Access (NGA) research initiative).
- Served as a Principal Investigator of a Swansea Group for Technology Strategy Board (TSB) project “Roadmap For Broadband Optical Internet Access Towards 10 Gbit/s Everywhere”, a joint project initiated by Oclaro (former Bookham) together with four industrial (Ericsson, CIP, BT, and Gooch & Housego) and four academic (Cambridge, Swansea, Essex, and UCL) partners for a feasibility study of candidate solutions to achieve the objective of the *Photonics*²¹ competition, “10 Gigabit/s everywhere”.

Wireless LANs and MANs

3/2005–7/2007

Principal Engineer, STMicroelectronics, San Jose, California, US

- Served as a Master Editor initially for Simple Efficient Extensible Mesh (SEE-Mesh) proposal and later for joint SEE-Mesh/Wireless Mesh (Wi-Mesh) proposal for IEEE 802.11s that was being co-prepared by 38 companies/entities.
- Co-proposed Radio Aware-Optimized Link State Routing (RA-OLSR) protocol and address extension scheme based on 6 addresses for WLAN mesh, which was adopted by IEEE 802.11s and became part of a draft standard.
- Co-proposed scheduling mechanisms for connection-based over-the-air inter base station communications among collaborative self-coexistence IEEE 802.22 Wireless Regional Area Network (WRAN) systems.
- Co-proposed an enhanced adaptive channel selection algorithm for IEEE 802.16h.
- Working on scalable routing algorithms and efficient interworking with multiple portals in WLAN mesh.
- Submitted 5 patent applications and 32 standard contributions.

Next-Generation Access Networks

1/2003–3/2006

STMicroelectronics Researcher-in-Residence, Stanford Networking Research Center, Stanford University, Stanford, California, US

- Initiated “Next-Generation Access Networks” SNRC project with three research groups respectively working on xDSL/MIMO/Optical access.

- Co-proposed *Stanford University aCCESS-Hybrid Passive Optical Network* (SUCCESS-HPON), next-generation hybrid TDM/WDM optical access architecture.
- Designed and analyzed the performance of scheduling algorithms for WDM-PON under the SUCCESS-HPON architecture.
- Studied on next-generation hybrid access network architectures supporting copper, wireless, and optical fiber media.
- *Published 4 journal (1 invited) and 11 conference (5 invited) papers.*

Optical Internet

1/2001–12/2002

STMicroelectronics Researcher-in-Residence, Stanford Networking Research Center, Stanford, California, US

- Designed and analyzed the performance of scheduling and routing algorithms for unslotted optical CSMA/CA MAC protocol in metropolitan WDM ring networks using tunable transmitters.
- Co-designed and -implemented a hitless wavelength add-drop scheme for fast circuit provisioning.
- Prepared a technical roadmap for PON-based FTTH solutions for STMicroelectronics.
- *Published 1 invited journal and 3 conference papers.*

Passive Optical Network

12/1997–12/2000

Member of Technical Staff, Lucent Technologies, Murray Hill, New Jersey, US

- Participated in system engineering (including level 2 and 3 requirement specifications), system integration/testing, and Lab evaluation at customers' sites of ATM-PON-based FTTH/B systems based on Full Service Access Network (FSAN) specifications.
- Co-proposed algorithms and implementation schemes for protection switching and resource management for ATM-PON systems, including
 - Health-checking algorithms for protection Optical Subscriber Unit (OSU).
 - Fast protection switching schemes for Optical Line Termination (OLT).
 - Partial back pressure scheme for fairness guarantee among Ethernet User Network Interfaces (UNIs) in the same ONT.
 - A multi-table-based grant generator at OLT for improved granularity in bandwidth allocation.
- Implemented a platform-independent Tcl/Tk-based test automation framework to test ONUs with the OSU emulator with scripting capability.
- Standard contributions to FSAN OAN-WG on Dynamic Bandwidth Allocation (DBA) and protection switching.
- *Submitted 5 patent applications (all issued) and 5 standard contributions.*

High-Speed, Shared-Buffered, Multi-Channel ATM Switching

2/1996–11/1997

Researcher and Project Leader, Washington University in St. Louis, St. Louis, Missouri, US

- Analyzed the performance of Multi-Channel Deflection Crossbar (MCDL) and Multi-Channel Multicasting Crossbar (MMCC) systems.
- Developed high-level behavioral VHDL models and test bench for MMCC chips for functional verification.
- Co-proposed schemes to detect and identify defected switching elements in MCDL ATM switch.
- Managed a project, sponsored by LG-IC Ltd., Korea, for development of new high-speed, multi-channel ATM switching systems.
- *Published 1 conference paper and 2 technical reports.*

Broadband ISDN/ATM Technology

7/1989–2/1996

Researcher, Seoul National University, Seoul, Korea

- Proposed and analyzed the performances of two source clock frequency recovery schemes in packet networks – for CBR services, an adaptive clock method based on the Kalman filter with lowpass prefiltering, and for real-time VBR services, a modified Synchronous Residual Time Stamp (SRTS) scheme based on a three-level traffic shaper.
- Co-designed a S/W environment for performance evaluation of VBR video signal transmission in ATM networks using simulation.
- Co-designed ATM Adaptation Layer (AAL) boards – initially for AAL type 1 (CBR services only) and later for integrated types 1 & 2 (CBR and real-time VBR services) – for transmission of video and audio signals through ATM interface cards.
- Designed UNI Physical Layer of the first B-ISDN testbed in Korea, demonstrating the feasibility of ATM technology for integrated multimedia transmission.
- *Published 5 journal and 5 conference papers.*

ACADEMIC SUPERVISION

PhD

- Xintao Huan, “Energy-efficient time synchronization in wireless sensor networks”, *(to be graduated)* Jun. 2021.
- Jaehoon Cha (*Co-supervisor*), “Research on information analysis of multi-channel data with machine learning”, Sep. 2020.
- Kenneth Nwizege, “Adaptive data transfer for DSRC based vehicle networks”, May 2014.

MPhil

- Ghislain Maurice Norbert (Maurice) Isabwe, “Scalable and extensible architecture for IEEE 802.11s wireless mesh networks”, Jul. 2010.

MRes

- Mithileysh Sathiyarayanan, “Multi-channel deficit round robin scheduling for hybrid TDM/WDM optical networks”, Oct. 2012.

MSc

- Fang Yuxuan, “The comparison and combination of Azure load balancer and application gateway”, *(to be graduated)*, Jun. 2021.
- Elesawi Abdalla Elmokhtar Ahmed, “Hierarchical multi-building and multi-floor indoor localization based on deep neural networks”, *(to be graduated)*, Jun. 2021.
- Liu Jiaqi, “DNN based indoor trajectory prediction based on simulated indoor trajectory data”, *(to be graduated)*, Jun. 2021.
- Li Sihao, “Validation of optimization message bundling with delay and synchronization constraints in wireless sensor networks”, *(to be graduated)*, Jun. 2021.
- Linlin Zhang, “Optimal message bundling with delay and synchronization constraints in WSN,” Jun. 2020.
- Yilin Sun, “On the scalability of energy-efficient time synchronization schemes for wireless sensor network,” Jun. 2020.
- Pengfei Jiang, “Position estimation of mobile users/devices based on Wi-Fi received signal strengths with convolutional neural networks,” Jun. 2020.
- Jia Kan, “MTFS: Merkle tree based file system,” Jun. 2019.
- Yangyu Wang, “Multi-hop extension of wireless sensor network time synchronization”, Jun. 2017.
- Qimeng Liao, “Energy-efficient time synchronization scheme simulation based on asynchronous source clock frequency recovery in asymmetric wireless sensor network”, Jun., 2016.
- Ramya Sasidharan Pillai, “Wi-Fi robot localization using Kalman filters”, Oct. 2010.
- Trinath Koukuntla, “GMPLS extensions for hybrid optical switching”, Jun. 2009.

TEACHING EXPERIENCE

Associate Professor, Xi'an Jiaotong-Liverpool University, Suzhou, China

7/2014–Present

- *Analogue and Digital Communications II (EEE301)*
 - Comprehensive coverage and in-depth discussions of the theory and design of digital communication systems at a level appropriate for the fourth year undergraduate students.
 - *Module Leader*
- *Multimedia Communications (EEE415/CAN406)*
 - Introduction to multimedia communications, where insight into the problems encountered while transmitting multimedia data in error prone environment and the ways to provide error resiliency at a source and conceal errored or lost data at a receiver are discussed
 - *Module Leader*
 - *Postgraduate taught*
- *Data Communication and Communication Networks (EEE413/CAN405)*

- Introduction to data communication and communication networks, covering protocol layers from data link to transport layers and advanced architectures and protocols for optical, wireless, and their hybrid networks
- *Module Leader*
- *Postgraduate taught*

Associate Professor/Senior Lecturer, Swansea University, Swansea, Wales, UK

8/2007–6/2014

- *Teaching Head of IAT and Programme Director of Communications Systems*
 - Creation and maintenance of new MSc/MRes programmes in photonics and wireless communications, and networking
 - Rationalisation of multiple communications/networking MSc/MRes programmes into one during the merger between IAT and the college of engineering
- *Software for Smartphone (EG-M42)*
 - Introduction to smartphone programming on Android platform with focus on wireless communications & networking technologies and interfacing with various sensors
 - Case study: Mobile healthcare, indoor wireless localisation
 - *Module Co-ordinator*
 - *Postgraduate taught*
- *Advanced Network Architectures (AT-M81)*
 - Review of traditional optical and wireless network architectures and communications modes
 - Study on next-generation network architectures and protocols including PONs, wireless mesh networks (WMNs), and hybrid optical and wireless networks
 - *Module Co-ordinator*
 - *Postgraduate taught*
- *Network Protocols and Architectures (AT-M40)*
 - Introduction to computer networks and overview of protocol layers from data link to transport layers and wired and wireless network architectures
 - *Module Co-ordinator*
 - *Postgraduate taught*
- *Practical Internet Technology II (EG-253)*
 - Practical experience of website administration and development, and Internet networking technologies and protocols covering Layers 3 (IP) and 4 (TCP/UDP)
 - *Module Instructor*
- *Group Design Exercise: Micro-mouse Project (EG-252)*
 - Open-ended group exercise for building a micro-mouse to develop knowledge and experience in embedded programming, sensor design and interfacing, calibration and test experiments, and web site hosting documents and enabling team collaborations
 - Lectures and Lab experiments with Freescale AW60 microcontroller for interfacing, interrupts and interrupt handling, timer/counter operations, and DAC/ADC
 - *Module Instructor*
- *Analog Design (EG-152)*
 - Lab-based module for design and analysis of analog circuits using both simulation (Multisim) and experiments with real circuit components.
 - Sequence of practical lab exercises leading to design, construction and testing of a waveform generator for EEE students and ECG circuit for medical engineering students at the end
 - *Module Instructor*

Instructor, Washington University in St. Louis, St. Louis, Missouri, US

7/1997–12/1997

- *Transmission Systems and Multiplexing (EE 591)*
 - Overview of modern transmission and networking systems from copper/cable, fiber, radio, and satellite communications to digital multiplexing hierarchies; with emphasis on emerging technologies like SONET & ATM/B-ISDN
 - *Graduate Course*

- *Signal Analysis for Electronic Systems and Circuits (EE 379)*
 - Introductory signals and systems analysis for DSP applications

Adjunct Professor, University of Missouri–St. Louis, St. Louis, Missouri, US

7/1997–8/1997

- *Signal Analysis for Electronic Systems and Circuits (JEE 279)*
 - Extension course for professionals in the field (combined with EE379)

Co-Instructor, Washington University in St. Louis, St. Louis, Missouri, US

1/1997–6/1997

- *Data Networks (EE 593A)*
 - Advanced topics in data networking including queueing theory, MAC and routing protocol analyses, and adaptive flow control
 - Lectures and personal discussion sessions; with Prof. Paul S. Min
 - *Graduate Course*

Help Session Instructor, Washington University in St. Louis, St. Louis, Missouri, US

9/1996–12/1996

- *Digital Logic (CS/EE 260M)*
 - Group help and personal discussion sessions

PUBLICATIONS

Book and Book Chapters

- Kyeong Soo Kim, Simulation Reproducibility with Python and Pweave, In Antonio Virdis and Michael Kirsche (Eds.), Recent Advances in Network Simulation: The OMNeT++ Environment and its Ecosystem, Chapter 8, Springer/EAI 2019.

Journals

- Xintao Huan, Kyeong Soo Kim, and Junqing Zhang, “Improvement and defense of clock-skew-based node identification in WSNs against spoofing attacks based on radio information and a single-input multiple-output convolutional neural network,” *accepted for publication in IEEE Transactions on Communications*, Mar. 29, 2021.
- Xintao Huan and Kyeong Soo Kim, “Per-hop delay compensation in time synchronization for multi-hop wireless sensor networks based on packet-relaying gateways,” *IEEE Communications Letters*, vol. 24, no. 10, pp. 2300–2304, Oct., 2020.
- Jaehoon Cha, Kyeong Soo Kim, and Sanghyuk Lee, “Hierarchical auxiliary learning,” *Machine Learning: Science and Technology*, vol. 1, no. 4, pp. 1–11, Sep. 11, 2020.
- Xintao Huan, Kyeong Soo Kim, Sanghyuk Lee, Eng Gee Lim, and Alan Marshall, “A beaconless asymmetric energy-efficient time synchronization scheme for resource-constrained multi-hop wireless sensor networks,” *IEEE Transactions on Communications*, vol. 68, no. 3, pp. 1716–1730, Mar. 2020.
- Xintao Huan and Kyeong Soo Kim, “On the practical implementation of propagation delay and clock skew compensated high-precision time synchronization schemes with resource-constrained sensor nodes in multi-hop wireless sensor networks,” *Computer Networks*, vol. 166, Jan. 2020.
- Eunmi Lee, Jinbae Sul, Kyeong Soo Kim, Van Huy Pham, and Sanghyuk Lee, “What does big data tell us? Analysis of urban civil complaints,” *Sustainability*, vol. 11, no. 21:6140, Nov. 4, 2019.
- Sanghyuk Lee, Jaehoon Cha, Moon Keun Kim, Kyeong Soo Kim, Van Huy Pham, and Mark Leach, “Neural network-based building energy consumption prediction with training data generation and sensitivity analysis,” *Processes*, vol. vol. 7, no. 10:731, Oct. 12, 2019.
- Kyeong Soo Kim, Sanghyuk Lee, Tiew On Ting, and Xin-She Yang, “Atomic scheduling of appliance energy consumption in residential smart grids,” *Energies*, vol. 12, no. 19:3666, Sep. 25, 2019.
- Xintao Huan, Kyeong Soo Kim, Sanghyuk Lee, and Moon Keun Kim, “Optimal message bundling with delay and synchronization constraints in wireless sensor networks,” *Sensors*, vol. 19, no. 18:4027, Sep. 18, 2019.

- Kyeong Soo Kim, Ruihao Wang, Zhenghang Zhong, Zikun Tan, Haowei Song, Jaehoon Cha, and Sanghyuk Lee, “Large-scale location-aware services in access: Hierarchical building/floor classification and location estimation using Wi-Fi fingerprinting based on deep neural networks,” (*Extended version of the FOAN 2017 paper*), *Fiber and Integrated Optics*, pp. 1–13, Apr. 27, 2018.
- Kyeong Soo Kim, Sanghyuk Lee, and Kaizhu Huang, “A scalable deep neural network architecture for multi-building and multi-floor indoor localization based on Wi-Fi fingerprinting,” *Big Data Analytics*, vol. 3, no. 4, pp. 1–17, Apr. 19, 2018.
- Sanghyuk Lee, Jaehoon Cha, Nipon Theera-Umpon, and Kyeong Soo Kim, “Analysis on similarity measure for non-overlapped data,” *Symmetry*, vol. 9, no. 5, pp. 1–11, May, 2017.
- Kyeong Soo Kim, Sanghyuk Lee, and Eng Gee Lim, “Energy-efficient time synchronization based on asynchronous source clock frequency recovery and reverse two-way message exchanges in wireless sensor networks,” *IEEE Transactions on Communications*, vol. 65, no. 1, pp. 347–359, Jan. 2017.
- Tiew On Ting, Jieming Ma, Kyeong Soo Kim, and Kaizhu Huang, “Multicores and GPU utilization in parallel swarm algorithm for parameter estimation of photovoltaic model,” *Applied Soft Computing*, vol. 40, pp. 58–63, Mar. 2016.
- Kyeong Soo Kim, “The effect of ISP traffic shaping on user-perceived performances in broadband shared access networks,” *Computer Networks*, vol. 70, pp. 192–209, Sep, 2014.
- Kyeong Soo Kim, “Comments on “IEEE 1588 clock synchronization using dual slave clocks in a slave”,” *IEEE Communications Letters*, vol. 18, no. 6, pp. 981–982, Jun. 2014.
- Kyeong Soo Kim, “On the excess bandwidth allocation in ISP traffic control for shared access networks,” *IEEE Communications Letters*, vol. 18, no. 4, pp. 692–695, Apr. 2014.
- Kyeong Soo Kim, “Asynchronous source clock frequency recovery through aperiodic packet streams,” *IEEE Communications Letters*, vol. 17, no. 7, pp. 1455–1458, Jul. 2013.
- Kyeong Soo Kim, “A research framework for the clean-slate design of next-generation optical access,” (*Extended version of the FOAN 2011 Best Paper*) *Fiber and Integrated Optics – Special Issue on Second Fiber Optics in Access Networks (FOAN)*, vol. 31, issue 2, pp. 90–110, Apr. 2012.
- Farsheed Farjady, Kyeong Soo (Joseph) Kim, Nayla El Dahdah, and Nick J. Doran, “Cost-effective upgrade of WDM all-optical networks using overlay fibers and hop reduction links,” *European Transactions on Telecommunications*, vol. 21, issue 6, pp. 563–566, Oct. 2010.
- Kyeong Soo Kim, David Gutierrez, Fu-Tai An, and Leonid G. Kazovsky, “Design and performance analysis of scheduling algorithms for WDM-PON under SUCCESS-HPON architecture,” *IEEE/OSA Journal of Lightwave Technology*, vol. 23, no. 11, pp. 3716–3731, Nov. 2005.
- Fu-Tai An, David Gutierrez, Kyeong Soo Kim, Jung Woo Lee, and Leonid G. Kazovsky, “SUCCESS-HPON: A next-generation optical access architecture for smooth migration from TDM-PON to WDM-PON,” *IEEE Communications Magazine – Optical Communications Supplement Special Issue on Optical Networking Testbeds (Part 2)*, vol. 43, no. 11, pp. S40–47, Nov. 2005.
- Fu-Tai An, Kyeong Soo Kim, David Gutierrez, Scott Yam, Eric Hu, Kapil Shrikhande, and Leonid G. Kazovsky, “SUCCESS: A next-generation hybrid WDM/TDM optical access network architecture,” *IEEE/OSA Journal of Lightwave Technology*, vol. 22, no. 11, pp. 2557–2569, Nov. 2004.
- Kyeong Soo Kim and Leonid G. Kazovsky, “Design and performance evaluation of scheduling algorithms for unslotted CSMA/CA with backoff MAC protocol in multiple-access WDM ring networks,” *Information Sciences*, vol. 149/1-2, pp. 135–148, Jan. 2003. (*Invited Paper*)
- Kyeong Soo Kim, “On the evolution of PON-based FTTH solutions,” *Information Sciences*, vol. 149/1-2, pp. 21–30, Jan. 2003. (*Invited Paper*)
- Kyeong Soo Kim and Byeong Gi Lee, “KALP: A Kalman filter-based adaptive clock method with lowpass prefiltering for packet networks use,” *IEEE Trans. Commun.*, vol. 48, no. 7, pp. 1217–1225, Jul. 2000.
- Kyeong Soo Kim and Byeong Gi Lee, “Three-level traffic shaper and its application to source clock frequency recovery for VBR video services in ATM networks,” *IEEE/ACM Trans. Networking*, vol. 3, no. 4, pp. 450–458, Aug. 1995.

- Kyeong Soo Kim and Byeong Gi Lee, “GA-based optimal dimensioning of three-level traffic shaper for statistical multiplexing in ATM networks,” *Annals of Telecommunications*, vol. 50, no. 7-8, pp. 624–631, Jul./Aug. 1995.
- Kyeong Soo Kim and Byeong Gi Lee, “Analysis of output-controlled queueing systems in ATM Networks,” *Journal of KICS (in Korean)*, vol. 20, no. 8, pp. 2246–2257, Aug. 1995.
- Kyeong Soo Kim and Byeong Gi Lee, “Source clock frequency recovery for VBR video services using three-level traffic shaper,” *Journal of KICS (in Korean)*, vol. 20, no. 8, pp. 2173–2182, Aug. 1995.

Conferences and Workshops

- Jaehoon Cha, Kyeong Soo Kim, Haolan Zhang, and Sanghyuk Lee, “Analysis on EEG signal with machine learning,” *Proc. SPIE 11321, 2019 International Conference on Image and Video Processing, and Artificial Intelligence (IVPAI2019)*, 113212E, Shanghai, China, Nov. 27, 2019.
- Sanghyuk Lee, Jaehoon Cha and Kyeong Soo Kim, “Data gathering and application to building energy optimization with sensitivity analysis for IoT applications,” *Proc. of 2019 International SoC Design Conference (ISOC 2019)*, Jeju, Korea, Oct. 6-9, 2019.
- Sanghyuk Lee and Kyeong Soo Kim, “Building energy consumption prediction based on sensitivity analysis and ROC,” *accepted for presentation at ISFT2019*, May 10, 2019
- Jia Kan and Kyeong Soo Kim, “MTFS: Merkle tree based file system,” *Proc. of International Conference on Blockchain and Cryptocurrency (ICBC) 2019*, Seoul, Korea, May 2019.
- Xintao Huan and Kyeong Soo Kim, “High-precision time synchronization for wireless sensor networks: Lessons from the experiments on a real testbed,” *Proc. of Smart Grid Technology and Data Processing (SGTDP) 2019*, Xi’an Jiaotong-Liverpool University, Suzhou, China, Mar. 2019.
- Zhenghang Zhong, Zhe Tang, Xiangxing Li, Tiancheng Yuan, Yang Yang, Wei Meng, Yuanyuan Zhang, Renzhi Sheng, Naomi Grant, Chongfeng Ling, Xintao Huan, Kyeong Soo Kim and Sanghyuk Lee, “XJTLUIndoorLoc: A new fingerprinting database for indoor localization and trajectory estimation based on Wi-Fi RSS and geomagnetic field,” *Proc. of the Sixth International Symposium on Computing and Networking (CANDAR’18)/the 3rd International Workshop on GPU Computing and AI (GCA’18)*, Hida Takayama, Japan, November 27-30, 2018.
- Kyeong Soo Kim, “Hybrid building/floor classification and location coordinates regression using a single-input and multi-output deep neural network for large-scale indoor localization based on Wi-Fi fingerprinting,” *Proc. of the Sixth International Symposium on Computing and Networking (CANDAR’18)/the 3rd International Workshop on GPU Computing and AI (GCA’18)*, Hida Takayama, Japan, November 27-30, 2018.
- Jaehoon Cha, Sanghyuk Lee, and Kyeong Soo Kim, “Automatic building and floor classification using two consecutive multi-layer perceptron,” *Proc. of the 18th International Conference on Control, Automation and Systems (ICCAS 2018)*, Pyeongchang, Korea, Oct. 17-20, 2018.
- Kyeong Soo Kim, Ruihao Wang, Zhenghang Zhong, Zikun Tan, Haowei Song, Jaehoon Cha, and Sanghyuk Lee, “Large-scale location-aware services in access: Hierarchical building/floor classification and location estimation using Wi-Fi fingerprinting based on deep neural networks,” *Proc. of 7th International Work Shop on Fiber Optics in Access Networks (FOAN 2017)*, Munich, Germany Nov. 7, 2017.
- JaeHoon Cha, Sanghyuk Lee, Kyeong Soo Kim, and Witold Pedrycz, “On the design of similarity measures based on fuzzy integral,” *Proc. of Joint 17th World Congress of International Fuzzy Systems Association and 9th International Conference on Soft Computing and Intelligent Systems (IFSA-SCIA 2017)*, Otsu, Japan, pp. 514–519, Jun. 2017.
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- “Energy-efficient time synchronization in wireless sensor networks,” *Invited talk*, 2019 Distinguished Lecture and International Interdisciplinary Workshop, Chungnam National University (CNU), Daejeon, Korea, August 5-9, 2019.
- “Reproducible research for OMNeT++ based on Python and Pweave,” *Tutorial*, OMNeT++ Community Summit 2017, University of Bremen, Bremen, Germany, Sep. 7-8, 2017.
- “Energy-efficient time synchronization achieving nanosecond accuracy in wireless networks,” *Invited talk*, 2016 International Conference on Internet of Things and 5G Mobile Technologies (2016 ICIOT-5GMT), Guangzhou University, Guangzhou, Nov. 27–28, 2016.

- “Atomic scheduling of appliance energy consumption in residential smart grid,” *Invited talk*, CNU International Workshop on Industrial Mathematics, Chungnam National University (CNU), Daejeon, Korea, Oct. 7, 2016.
- “Atomic scheduling of appliance energy consumption in residential smart grid,” *Keynote Speech*, CeSGIC 2nd International Workshop on Smart Grid Technology and Data Processing, Xi’an Jiaotong-Liverpool University (XJTLU), Suzhou, China, Mar. 18, 2016.
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- “A Research Framework for the Clean-Slate Design of Next-Generation Optical Access,” *Seminar*, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea, Aug. 22, 2011.
- “Data Networks: Next-generation optical access toward 10 Gb/s everywhere,” *Academic Weeks Videoconference Session with Pakistan COMSATS Institute of Information Technology (CIIT)*, Swansea University, Swansea, Wales UK, Dec. 14, 2010.
- “Photonics21 – Next generation optical Internet access: Roadmap for broadband optical Internet access towards 10 Gb/s everywhere,” *Seminar*, Gwangju Institute of Science and Technology (GIST), Gwangju, Korea, Aug. 17, 2008.
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- “Next-Generation Optical Access Architecture,” *Seminar*, Dept. of Electrical and Computer Eng., University of California, Davis, CA, USA, May. 14, 2004 (with Fu-Tai An, Stanford University).
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- “Past, Present, And Future of Fiber-To-The-Home Solutions,” *EE201A Seminar*, Stanford University, Stanford, CA, USA, Dec. 3, 2001.
- “On Resource Management for ATM-PON Systems,” *Expert Seminar*, ETRI, Daejeon, Korea, June 1999.

PROFESSIONAL SOCIETY MEMBERSHIP

| | |
|-----------------------------|--------------|
| <i>Senior Member</i> , IEEE | 2019–Present |
| <i>Member</i> , IEEE | 1997–2019 |
| <i>Member</i> , IET | 2014–Present |

PROFESSIONAL ACTIVITIES

| | |
|---|--------------|
| <i>Reviewer for major journals and conferences including IEEE Transactions on Communications, IEEE/ACM Transactions on Networking, IEEE/OSA Journal of Lightwave Technology, IEEE Journal on Selected Areas on Communications, IEEE Transactions on Circuits & Systems I, IEEE Transactions on Neural Networks and Learning Systems, IEEE Transactions on Instrumentation and Measurement, IEEE Communications Magazine, IEEE Communications Letters, IEEE Photonics Technology Letters, IEEE Sensors, IET Electronics Letters, IET Networks, IET Communications, IEICE Transactions on Communications, Computer Networks, Computer Standards & Interfaces, Information Sciences, ETRI Journal, International Journal of Computers and Applications, Wiley Transactions on Emerging Telecommunications Technologies, and Optics</i> | 1995–Present |
| <i>Panels Chair, EAI CollaborateCom 2021 - 17th EAI International Conference on Collaborative Computing: Networking, Applications and Worksharing</i> | 2021 |
| <i>Technical Programme Committee Member, WS08 IEEE ICC 2021 Workshop on Emerging Topics in 6G Communications</i> | 2021 |
| <i>Program Committee Member, GLOBECOM 2021: Communication QoS, Reliability and Modeling Symposium</i> | 2021 |
| <i>Program Committee Member, GLOBECOM 2021: Next-Generation Networking and Internet Symposium</i> | 2021 |
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| <i>Publicity Chair, 6th OMNeT++ Community Summit</i> | 2019 |
| <i>Program Committee Member, The 4th International Workshop on GPU Computing and AI (GCA'19)</i> | 2019 |
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| <i>Program Committee Member, SGTDP 2019</i> | 2019 |
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| <i>Technical Program Committee Member, Fiber Optics in Access Networks (FOAN) 2018</i> | 2018 |
| <i>Publicity Chair, 5th OMNeT++ Community Summit</i> | 2018 |
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| <i>Technical Program Committee Member, GLOBECOM 2018: Next-Generation Networking and Internet Symposium</i> | 2018 |
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| <i>Technical Program Committee Member</i> , ICC 2018: Communications QoS, Reliability, and Modeling Symposium | 2018 |
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| <i>Technical Program Committee Member</i> , GLOBECOM 2017: Next-Generation Networking and Internet Symposium | 2017 |
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| <i>Technical Program Committee Member</i> , ICC 2017: Communications QoS, Reliability, and Modeling Symposium | 2017 |
| <i>Publicity Chair</i> , 3rd OMNeT++ Community Summit | 2016 |
| <i>Steering Committee Member</i> , Fiber Optics in Access Networks (FOAN) 2016 | 2016 |
| <i>Program Committee Member</i> , CIBCB2016 | 2016 |
| <i>Technical Program Committee Member</i> , GLOBECOM 2016: Communication QoS, Reliability and Modeling Symposium | 2016 |
| <i>Technical Program Committee Member</i> , ICC 2016: Communications QoS, Reliability, and Modeling Symposium | 2016 |
| <i>Publicity Chair</i> , 2nd OMNeT++ Community Summit | 2015 |
| <i>Program Committee Member</i> , Fiber Optics in Access Networks (FOAN) 2015 | 2015 |
| <i>Technical Program Committee Member</i> , GLOBECOM 2015: Communication QoS, Reliability and Modeling Symposium | 2015 |
| <i>Program Committee Member</i> , ICCP-2015 | 2015 |
| <i>Session Chair</i> , ICICTS 2015 | 2015 |
| <i>Publicity Chair</i> , 1st OMNeT++ Community Summit | 2014 |
| <i>Program Committee Member & Session Chair</i> , Fiber Optics in Access Networks (FOAN) 2013 | 2013 |
| <i>Program Committee Member</i> , Fiber Optics in Access Networks (FOAN) 2012 | 2012 |
| <i>Program Committee Member & Session Chair</i> , Fiber Optics in Access Networks (FOAN) 2011 | 2011 |
| <i>Program Committee Member</i> , 5th IEEE Workshop on Enabling Technologies and Standards for Wireless Mesh Networking (MeshTech'11) | 2011 |
| <i>Program Committee Member</i> , Fiber Optics in Access Networks (FOAN) 2010 | 2010 |
| <i>Program Committee Member</i> , 4th IEEE Workshop on Enabling Technologies and Standards for Wireless Mesh Networking (MeshTech'10) | 2010 |
| <i>Program Committee Member</i> , 4th International Universal Communication Symposium | 2010 |
| <i>Program Committee Member</i> , 3rd IEEE Workshop on Enabling Technologies and Standards for Wireless Mesh Networking (MeshTech'09) | 2009 |
| <i>Program Committee Member</i> , 3rd International Universal Communication Symposium | 2009 |
| <i>Program Committee Member</i> , 2nd IEEE Workshop on Enabling Technologies and Standards for Wireless Mesh Networking (MeshTech'08) | 2008 |
| <i>Program Committee Member</i> , 2nd International Symposium on Universal Communication | 2008 |
| <i>Program Committee Member</i> , VTC 2008-Spring | 2008 |
| <i>Program Committee Member</i> , PNC 2006 | 2006 |
| <i>Program Committee Member</i> , ICC 2005, PNC 2005, & STFOC 2005 | 2005 |
| <i>Program Committee Member & Session Chair</i> , GLOBECOM 2004 | 2004 |
| <i>Program Committee Member & Session Chair</i> , PNC 2003 | 2003 |
| <i>Project Selection Committee Member</i> , Stanford Networking Research Center | 2002 |
| <i>Program Committee Member & Session Chair</i> , PNC 2002 | |
| <i>Session Chair</i> , ICT'99 | 1999 |

PUBLIC SERVICES AND LEADERSHIP ACTIVITIES

| | |
|---|----------------|
| <i>English Bible Instructor</i> , Suzhou Korean United Church | 6/2016–Present |
| <i>Missionary and Part-Time Preacher</i> , Swansea Korean United Church | 12/2012–6/2014 |
| <i>Bible Instructor</i> , Stanford Campus Korean Bible Study Group | 5/2004–5/2005 |
| <i>Christian Campus Leader</i> , Seoul National University HanSaRang Ministry | 1/1993–12/1993 |
| <i>Second Lieutenant</i> , Korean Army (Military Service) | 8/1991–2/1992 |

REFERENCES

Available upon request.