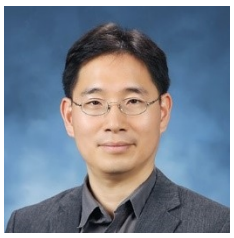

Prof. Byung-Seo Kim

Hongik University, Korea

Prof. Byung-Seo Kim received his B.S. degree in Electrical Engineering from In-Ha University, Korea in 1998 and his M.S. and Ph.D. degrees in Electrical and Computer Engineering from University of Florida in 2001 and 2004, respectively. His Ph.D. study was supervised by Dr. Yuguang Fang. Between 1997 and 1999, he worked for Motorola Korea Ltd., Korea as a Computer Integrated Manufacturing Engineer in Advanced Technology Research and Development. From January 2005 to August 2007, he worked for HQ of Motorola Inc., Schaumburg Illinois, as a Senior Software Engineer in Networks and Enterprises. He involved a design of network and protocol for Nationwide Public Safety & Mission Critical Networks. From 2023, he is a Chairman of the Dept. of Software and Communications Engineering, Hongik University, Korea, where he is currently a professor since 2007. He has been serving as an adjunct professor of TDTU, Vietnam from 2023. He is IEEE Senior Member and is serving as Associate Editors of IEEE Access, Telecommunication Networks, IEIE SPC, and Journal of the Institute of Electrics and Information Engineers. He also served as Guest Editors of special issues of IEEE IoT, IEEE OJCS, IEEE Access, International Journal of Distributed Sensor Networks, Sensors, Applied Science, and Electronics. He is serving as an organizing chair for ICGHIT international conference. His works have appeared in around 300 publications and 36 patents. His research interests include the design and development of efficient future wireless/wired networks and distributed microservice computing.

Title: Information & Microservice-Centric Networking as a Future Computing

Abstract:

As system configurations based on Microservice architecture become more common and the use of Microservice deployment functions through containers such as Docker increases, demand for Microservice-based dynamic services increases. Furthermore, due to the advantages of microservices such as flexibility/modularity/scalability/system lightweighting, not only Amazon, MS, and Google, but also NVIDA's Omniverse, Netflix's core system, and Uber emphasize system implementation using microservices.

Meantime, with the emergence of a large variety of high-performance terminals such as Edge/Fog/Smart-IoT, there is a need for a change from the current Centralized-based Microservice distribution/migration/management to a decentralized-distributed Microservice operation method from the centralized one.

Because of the popularity of Microservice architecture and smart & high computing capability devices massively scattered within the networks, the new computing paradigms to use the whole network as a large computing device has been emerged such as Osmotic Computing, Internet Computer, Computing in the Networks, In-Network Computation, Microservice-Net, etc.

Therefore, in this talk, “Decentralized Microservice-Centric Network (DMCN)” is introduced. This talk addresses the main obstacles to achieve DMCN over current communication/network mechanisms such as address & TCP/IP-based, Connection-Oriented, rigid end-to-end communications, and discuss how to make massively distributed heterogenous devices organically and efficiently work for given computing. Finally the talk introduce a decentralized In-Network Computing over information-centric networking (ICN)-based Microservice and the various research outcomes for implementing DMCN that Prof. Kim’s Lab. has made in past 12 years.