해외석학 특별강연

일시 2023년 6월 22일(목) 13:40~16:10 **장소** 라마다프라자 제주호텔 2층 볼룸1

후원 해동과학문화재단 haedong foundation

시간	발표주제	발표자(소속)
13:40~14:40	Frontiers in Networking	Prof. Vincent Chan (Massachusetts Institute of Technology)
14:40~14:50	Break	
14:50~15:30	Open 6G: Toward Programmable and AIDriven NextG Open RAN Systems	Prof. Tommaso Melodia (Northeastern University)
15:30~16:10	VisionX: Semantic communication meets System2 ML	Prof. Mehdi Bennis (University of Oulu)

강연 소개

Frontiers in Networking

Prof. Vincent Chan
Joan and Irwin Jacobs Chair Professor
Department of Electrical Engineering and Computer Science
Claude E. Shannon Communication and Network Group, Research Laboratory of Electronics
Steve Schwarzman College of Computing, AI and Decision Systems Sector
Massachusetts Institute of Technology

Vincent Chan received his BS/MS/EE/PhD from MIT (1971-1974.) He was the Head of the Communications and Information Technology Division of the MIT Lincoln Laboratory (now Cyber and Communications Divisions), and Director of the Laboratory for Information and Decision Systems. He initiated the US's Laser Intersatellite Transmission Experiment Program and the follow-on GeoLITE Program in 1980-1989. He was the first to use "Dual-Use Technology Investment" by the Clinton Administration to form and chaired: the All-Optical-Network Consortium among MIT/AT&T/DEC, the Next Generation Internet Consortium, ONRAMP among MIT/AT&T/Cabletron/Nortel/JDS, and a Satellite Networking Consortium formed among MIT/Motorola/Teledesic/Globalstar. His research focus is on communications and network architectures, intelligent network management and control and security. He chaired many advisory committees including the Defense Science Board Taskforce on Communications and Networks and DHS's Science and Technology Advisory Board, and has been active with start-ups, a Board Member of a Fortune-500 network company, and a Member of the Corporation of Draper Laboratory. He is a Life Fellow of IEEE and a Fellow of the Optical Society of America.
(https://www.rle.mit.edu/networks/)

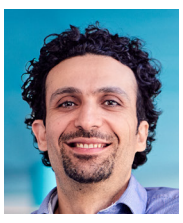
Future networks with orders of magnitude increase in traffic need architectures with high efficiencies and also adapt dynamically to fluctuating offered loads and rapidly changing networks states. In addition, applications and computing will impose new requirements on the network infrastructure such as time deadlines. The current network management and control systems only adapt quasi-statically (from minutes to days). We will explore efficient and agile cognitive network management and control network architectures that adapt quickly to changing network conditions, sense and infer network states, decide and implement fast scheduling of flows, predict intention of users/applications and take appropriate actions, perform rapid congestion control and handle resiliency via reconfiguration, restoration and reconstitution of failed network assets.

Open 6G: Toward Programmable and AIDriven NextG Open RAN Systems

Prof. Tommaso Melodia
William Lincoln Smith Professor, Northeastern University

Tommaso Melodia is the William Lincoln Smith Professor with the Department of Electrical and Computer Engineering at Northeastern University in Boston. He is also the Founding Director of the Institute for the Wireless Internet of Things and the Director of Research for the PAWR Project Office. He received his Laurea (integrated BS and MS) from the University of Rome – La Sapienza and his Ph.D. in Electrical and Computer Engineering from the Georgia Institute of Technology in 2007. He is an IEEE Fellow and recipient of the National Science Foundation CAREER award, and of several best paper awards, including at IEEE Infocom 2022. Prof. Melodia the Editor in Chief for Computer Networks and was a co-founder of the 6G Symposium, the Technical Program Committee Chair for IEEE Infocom, and General Chair for ACM MobiHoc, among others. Prof. Melodia's research on modeling, optimization, and experimental evaluation of wireless networked systems has been funded by many US government and industry entities.

This talk will present an overview of our work laying the basic architectural and algorithmic principles for new approaches to design open, programmable, AI-driven, and virtualized next-generation cellular networks. We will cover in detail challenges and opportunities associated with the evolution of cellular system into cloud-native softwarized architectures enabling fine grained control of end-to-end functionalities. We will discuss architectural aspects, automation principles, and algorithmic frameworks enabling fine-grained endto-end control of wireless system from low-level RAN functionalities to orchestration and management. We will also explore a number of enabling technologies including network slicing, spectrum sharing, security, and energy efficiency, and discuss the way forward.



VisionX: Semantic communication meets System2 ML

Prof. Mehdi Bennis
Head of ICON, IEEE Fellow, University of Oulu

Dr Mehdi Bennis is a full (tenured) Professor at the Centre for Wireless Communications, University of Oulu, Finland and head of the intelligent connectivity and networks/systems group (ICON). His main research interests are in radio resource management, game theory and distributed AI in 5G/6G networks. He has published more than 200 research papers in international conferences, journals and book chapters. He has been the recipient of several prestigious awards including the 2015 Fred W. Ellersick Prize from the IEEE Communications Society, the 2016 Best Tutorial Prize from the IEEE Communications Society, the 2017 EURASIP Best paper Award for the Journal of Wireless Communications and Networks, the all-University of Oulu award for research, the 2019 IEEE ComSoc Radio Communications Committee Early Achievement Award and the 2020 Clarviate Highly Cited Researcher by the Web of Science. Dr Bennis is an editor of IEEE TCOM and Specialty Chief Editor for Data Science for Communications in the Frontiers in Communications and Networks journal. Dr Bennis is an IEEE Fellow.

This talk will first provide a brief introduction of VisionX sitting at the intersection of machine learning and communication in terms of enablers and mathematical tools, while contrasting it with current efforts in the area. Then, recent results in semantics-native communication and learning communication protocols from data will be presented.