# Webinar on Next Generation IoT

## The Third Edition

### IEEE Communication Society
### Technical Committee Communications Software: Special Interest Group on "NFV and SDN Technologies"


Prof. **Lajos Hanzo**
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**Title:** Space, Air, Ground Integrated Networking: From Single- To Multi-Component Pareto Optimization


**Abstract:** Thanks to the spectacular advances in signal processing and nano-technology, five wireless generations have been conceived over the past five decades. Indeed, near-capacity operation at an infinitesimally low error-rate has become feasible and flawless multimedia communications is supported in areas of high traffic-density, but how do we fill the huge coverage holes existing across the globe?
As a promising system-architecture, an integrated terrestrial, UAV-aided, airplane-assisted as well as satellite-based global coverage-solution will be highlighted to pave the way for seamless next-generation service provision. However, these links exhibit strongly heterogeneous properties, hence requiring different enabling techniques.
The joint optimization of the associated conflicting performance metrics of throughput, transmit power, latency, error probability, hand-over probability and link-lifetime poses an extremely challenging problem. Explicitly, sophisticated multi-component system optimization is required for finding the Pareto-front of all optimal solutions, where none of the above-mentioned metric can be improved without degrading at least one of the others...



Prof. **Mehdi Bennis**
HEAD of ICON, IEEE Fellow
Centre for Wireless Communications
University of Oulu, Finland


**Title:** Connected Edge Intelligence for B5G/6G


**Abstract:** The current premise in classical ML is based on a single node in a centralized and remote data center with full access to a global dataset and a massive amount of storage and computing. Nevertheless, the advent of a new breed of intelligent devices ranging from drones to self-driving vehicles, makes cloud-based ML inadequate. This talk will present the vision of distributed edge intelligence for and over wireless networks, featuring key enablers, architectures, algorithms and some recent results in this exciting and rapidly advancing area.



Prof. **Shiwen Mao**
Earle C. Williams Eminent Scholar, IEEE Fellow
Director of WEREC
Auburn University, Auburn, AL, USA


**Title:** Intelligent Reflecting Surface Assisted Wireless Communications


**Abstract:** The recent advances in reconfigurable wireless technology provide a new cost-effective means to enhance the performance of wireless communications systems. Intelligent reflecting surface (IRS) allows to reconfigure the propagation environment to maximize the resource utilization. In the first part of this talk, we consider the energy consumption minimization problem in an IRS-assisted federated learning system subject to training time constraint. In the second part, we consider an IRS-assisted rate splitting (RS) network to maximize the minimum user rate by jointly optimizing the active beamforming at the base station as well as the passive beamforming at the IRS. Both systems are analyzed and evaluated with simulations.


Principal Host: **Prof. Sudip Misra, IIT Kharagpur, India**
Co-Host: **Dr. Arijit Roy, University of Luxembourg, Luxembourg**
Co-Host: **Dr. Ayan Mondal, IIT Indore, India**

More details can be found **here**
Date: **January 21, 2022**
Time: **8:30 PM – 10:00 PM, Indian Time (IST)**

All participants need to pre-register by 5 PM (IST), January 20, 2022 by filling-up the following form: **Registration Link**
Zoom sign-in details will be shared with the registered participants using the email address provided in the registration form.