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**Carleton University – Systems and Computer Engineering  
Online Carleton Wireless Seminars**

**Thursday, June 4, 2020, 3:30 pm ET (Ottawa time)**

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**Non-Terrestrial Networks (NTN): The Next 20 Years**

**Halim Yanikomeroglu**

Professor, Systems and Computer Engineering, Carleton University

The roots of today's wireless access architecture (the terrestrial 4G & 5G cellular networks) go back to 1940s. The access architecture has evolved substantially over the decades. However, rapid developments in a number of domains outside telecommunications, including those in satellite, aerospace, and automotive industries as well as in artificial intelligence, will likely result in a disruptive transformation in wireless access networks in the next 20 years.

In this talk, an ultra-agile, dynamic, distributed, and highly-autonomous vertical heterogeneous network (VHetNet) architecture with very low earth orbit satellites (VLEOs), high altitude platform stations (HAPS), and UAV-BSs, tightly integrated with the ever-evolving terrestrial network, for almost-ubiquitous super-connectivity will be presented. In this disruptive setting, free-space optical (FSO) communications will play an important role in addition to the legacy radio communications.

In the absence of a clear technology roadmap, the talk has, to a certain extent, an exploratory view point to stimulate further thinking and creativity in ICT research and innovation.



Dr. Halim Yanikomeroglu is a Professor in the Department of Systems and Computer Engineering at Carleton University, Ottawa, Canada. He has had extensive collaboration with industry on 4G and 5G wireless technologies which resulted in 36 granted patents. During 2012-2016, he led one of the largest academic-industrial collaborative research programs on pre-standards 5G wireless, sponsored by the Ontario Government and the industry. In Summer 2019, he started a new large-scale project on the 6G wireless network architecture. In Fall 2019, Carleton became a founding member of the Optical Satellite Consortium Canada. Dr. Yanikomeroglu supervised 25 PhDs (all completed with theses); about a dozen of the former members of his research team have become faculty members. His wireless lab at Carleton has hosted around 50 visiting scholars from around the world. He is a Fellow of IEEE, EIC (Engineering Institute of Canada), CAE (Canadian Academy of Engineering), and a Distinguished Speaker for both IEEE Communications Society and IEEE Vehicular Technology Society. He served as the General Chair and Technical Program Chair of several major international IEEE conferences; he also served in the Editorial Boards of several IEEE periodicals. He served as the Chair of IEEE Technical Committee on Personal Communications, and he is currently serving as the Chair of the Steering Committee of IEEE's flagship Wireless Communications and Networking Conference (WCNC). Dr. Yanikomeroglu received several awards for his research, teaching, and service including the IEEE Wireless Communications Technical Committee Recognition Award in 2018.