Keynote for ITNAC 2018

Title: Advances in microwave photonic signal processing for 5G and IoT

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Abstract:
Next generation global telecommunication platforms and emerging applications in radar and communications will require entirely new technologies to address the current limitations of electronics for massive capacity and connectivity. Microwave photonics, which merges the worlds of RF and photonics, shows strong potential as a key enabling technology to enable new paradigms in the processing of high speed signals and in sensing that can overcome inherent electronic limitations. Photonic signal processors are intrinsically compatible with optical-wireless systems, and can provide connectivity with in-built signal conditioning, while also providing important advantages of EMI immunity. Moreover, photonic integration on semiconductor material platforms that co-exist with CMOS electronics enables boosting the performance of future systems performing sensing and communications with the potential for implementing high bandwidth, fast and complex functionalities. This integration technology is driven by high bandwidth optical communications and massive deployment of low-cost optical interconnects for datacom. Recent microwave photonic research advances will be presented in the context of 5G and the Internet of Things (IoT). This includes versatile beamforming for phased array antennas, widely tunable passband and interference rejection filters, high-speed frequency converters, dispersion-free microwave-optical links, and a range of high-resolution sensors.

Bio: Professor Minasian is a Chair Professor with the School of Electrical and Information Engineering at the University of Sydney, Australia. He is also the Director of the Fibre-optics and Photonics Laboratory. His research has made key contributions to microwave photonics and photonic signal processing, and he has contributed over 360 research publications in these areas. Professor Minasian is recognized as an author of one of the top 1% most highly cited papers in his field worldwide. He was the recipient of the ATERB Medal for Outstanding Investigator in Telecommunications, awarded by the Australian Telecommunications and Electronics Research Board. Professor Minasian is a Fellow of the IEEE, and a Fellow of the Optical Society of America.