

5G

Winter School on 5G Communications at DAIICT, Gandhinagar, Gujarat

on 7th and 8th December 2018

Organized by:



Co-Sponsors:



DAIICT is pleased to announce a winter school on 5G Communications. This will be held at DAIICT campus on the 7th and 8th December 2018.

5G is the emerging wireless communication technology billed as a replacement for the current 4G systems. By providing significant improvement in the energy and spectral efficiencies of communication links, 5G systems are targeted to provide broadband wireless access in dense urban areas as well as sparsely-populated rural areas, and to serve as backbone of massive machine-to-machine communications and Internet of Things (IoT). 5G systems are expected to bring in many societal benefits by enabling revolutionary changes to technologies such as autonomous vehicles, industrial automation, augmented reality, mission-critical applications, remotely controlled surgery, tactile internet, disaster management, etc.

This two-day long summit on 5G will be a capacity-building event. It will bring the leaders, innovators and researchers from the industry and academic communities together, where they will obtain first-hand information about the current 5G state-of-the-art (SoTA) from the leading experts on 5G technologies, and where they will be able to exchange and debate ideas about how to advance the SoTA.

Speakers: Reputed professors from IITs and a leading expert on 5G from telecom industry abroad (see overleaf for a full list)

List of Topics: the topics of this Winter School will include, but not limited to, novel waveforms for 5G, new Air Interface techniques, Massive MIMO systems, interference management techniques, millimeter wave communications, etc.

Who Should Participate: This Winter School will be of immense relevance and interest to researchers, students, telecom and IT industry professionals, policy makers and administrators. Tutorial sessions on 5G, technical talks on the current SoTA on various 5G technologies, information about current status of 5G standardization activities, deliberation on mathematical, implementation-related and regulatory topics on 5G, etc. will be relevant and of interest to teachers and researchers, students and professionals in communications, signal processing and IT domains.

About DAIICT: DAIICT (www.daiict.ac.in) was founded by Shri Dhirubhai Ambani in 2001. An act of the Gujarat Legislature conferred on it the status of a university in 2003. It was subsequently included in the list of universities maintained by the University Grants Commission under Section 2(f) and became a member of the Association of Indian Universities (AIU) in 2009.

Outline of Talks

5G in a Nutshell, by Dr. Nishith Tripathi 5G will revolutionize the world around us and enable futuristic services such as holograms, 4k/8k videos, AR/VR Apps, automated factories, remote-assisted surgery, etc. This talk gives an overview of 5G.

Dr. Nishith Tripathi is a 5G Subject Matter Expert at Award Solutions, Texas, USA.

Evolution of Air Interface Towards 5G, by Dr. Surva Das The talk will span Air Interface Technology for 5G, specifically radio access technology, 5G new radio (NR) waveform, its genesis and variants, non-orthogonal multiple access scheme, aspects of mmwave communication technology, Massive MIMO, etc.

Dr. Suvra Sekhar Das is an Associate Professor in G. S. Sanyal School of Telecommunications at IIT Kharagpur.

Beam Selection in Millimeter-wave Multi-user MIMO Communications, by Prof. K. Srinivas A major bottleneck in realizing Millimeter Wave (mmWave) systems being proposed for 5G is the requirement of a large number of RF chains. This talk describes a solution to this problem by employing beamspace (i.e., angular) domain.

Dr. K. V. Srinivas is currently an Assistant Professor at IIT (BHU), Varanasi.

Performance of Massive MIMO systems under CSI impairments, by Prof. Ribhu We discuss the dependence of the Massive MIMO technology proposed for 5G on the availability of accurate channel state information at the base station. We discuss the physical conditions under which CSI imperfections might arise, and their effect on achievable rates.

Prof. Ribhu is currently an Assistant Professor at IIT-Guwahati.

Massive MIMO and NOMA in 5G, by Prof. V. Chakka The talk presents, Massive MIMO antenna technology and Non Orthogonal multiple access (NOMA) technologies to achieve the higher system capacity requirements of 5G.

Prof. Chakka is a Professor at Shiv Nadar University, Greater Noida.

Challenges for 5G transmitter-receivers front end and their software-defined-solutions, by Prof. Meenakshi Rawat The talk presents the digital/RF predistortion techniques employed at 5G transceivers for improved spectral and energy efficiencies.

Prof. Rawat is an Assistant Professor at IIT Roorkee.

Index Modulation for 5G, by Dr. Y. Vasavada The talk will focus on the IM techniques; specifically spatial modulation and OFDM with IM.

Dr. Yash Vasavada is an Associate Professor at DAIICT.

Tentative Schedule

	8:30 - 10:15	B r e a k	10:30 - 12:15	L u n c h	13:15 - 15:00	B r e a k	15:15 - 17:00
Day 1 (7th Dec)	Dr. Tripathi		Dr. S. Das		Dr. Chakka		Dr. Vasavada
Day 2 (8th Dec)	Dr. Srinivas		Dr. Ribhu		Dr. Rawat		ISRO

See the website of the winter school: cspmi.daiict.ac.in/5gWinterSchool/index.html for updates to the above schedule.

Registration

	IEEE Member	IEEE Non-Member
Student	Rs. 800	Rs. 1000
Professional	Rs. 2700	Rs. 3300

Preferred mode of registration is online at the website of 5G Winter School (cspmi.daiict.ac.in/5gWinterSchool/index.html).

For manual (offline) registration, contact us at 079-30510571 or at cspmi.events@gmail.com.

Registration fee includes a kit, lunch, tea/snacks on two days.

Organizing Team

Chair

- Prof. K. S. Dasgupta, Director, DAIICT

Committee

- Prof. Sanjeev Gupta, Dean R&D, DAIICT
- Prof. Suman Mitra, Dean AP, DAIICT
- Dr. Sumitesh Sarkar, Group Director, SAC ISRO
- Prof. Yash Vasavada, DAIICT
- Prof. Nagendra Gajjar, Nirma University