ONE-DAY WORKSHOP ON 5G & BEYOND 5G WIRELESS TECHNOLOGIES:

DA-IICT GANDHINAGAR & GIGAYASA WIRELESS, IIT MADRAS RESEARCH PARK

DATE: OCTOBER 30, 2023

TIME: 10AM- 5PM

VENUE: DA-IICT Gandhinagar

GOOGLE FORM LINK: https://forms.gle/umY2bbutHbcBeDKd7 (Registration Deadline: October 29, 2023 2PM, open to candidates working in the area of wireless communication: B. Tech. (4th year), M. Tech. and Ph.D. students are especially encouraged to apply)

WORKSHOP CONVENOR	WORKSHOP CO-CONVENOR
Dr. Manish Kumar	Dr. Abhishek Jindal
Assistant Professor	Assistant Professor
DA-IICT Gandhinagar	DA-IICT Gandhinagar
Email: manish_kumar@daiict.ac.in	**Email:** abhishek_jindal@daiict.ac.in
Phone: +91 7968261 678	**Phone:** +91 7968261 654

Topic-1: Air Interface of 5G Networks

This session will introduce the audience to elements of the 5G Physical layer. We will discuss the importance of each element such as beamforming, channel coding, OFDM, MIMO etc. in detail. The session will conclude with a quick simulation demonstrating the importance of each of these elements.

Topic-2: MIMO and Beamforming in 5G Networks

Multiple inputs and multiple output systems are the enablers of high data rates communication in 5G Networks. MIMO technology can leverage spatial multiplexing and spatial diversity to improve the data-rate or reliability of the communication based of the channel propagation conditions respectively. This session will demonstrate the improvement in the network performance using MIMO in 5G networks. The session will support the claims using appropriate simulations.

Topic-3: Wireless Channel models for simulating 5G Networks

The key to effective research and development lies in our ability to conduct realistic and accurate simulation. The realistic and accurate simulation demands precision modelling of physical phenomena and system impairments. These physical phenomena in wireless communication are wireless channel models which captures the characteristics of signal propagation through wireless channels. In this session, we will discuss some of the state of the art wireless channel models and how they mimic a practical wireless channel.

Topic-4: AI-ML in 5G Networks

Artificial intelligence and machine learning are being used to improve the spectral efficiency, energy efficiency, latency and reliability of the networks. Furthermore, it can simplify many complex functions of the networks such as scheduling, link adaptation, beam-management and mobility in 5G networks. This session will demonstrate the utility of AI-ML in 5G networks using an end-to-end simulation and emulation.

SPEAKERS:

Vikram Singh
Chief Technologist
Gigayasa Wireless
IIT Madras Research Park

Dr. Manish Kumar
Assistant Professor
DA-IICT Gandhinagar