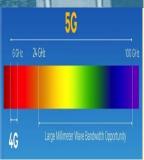**Organized by Prof. Aditya K. Jagannatham, EE Department, IIT Kanpur**
IITK PYTHON + MATLAB + SIMULINK Advanced Training School on 4G/ 5G Technologies

(15ᵗʰ to 28ᵗʰ April, 2023)

IITK PYTHON + MATLAB + SIMULINK Advanced Training School on 4G/ 5G Technologies

Important Dates

Course Dates

15ᵗʰ to 28ᵗʰ April, 2023

Last Date for Registration

10ᵗʰ April, 2023

Venue

To be conducted online via Zoom

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Introduction

Welcome to the **IITK PYTHON + MATLAB + SIMULINK Advanced Training School on 4G/ 5G Technologies.** Orthogonal Frequency Division Multiplexing (OFDM) and Multiple-Input Multiple-Output (MIMO) are the latest wireless physical layer technologies which are employed in 4G wireless cellular standards such as 3GPP Long Term Evolution (**LTE/LTE-A**), 5G New Radio (**NR**) and high speed WLAN standards such as **802.11 ac, 802.11ax**. 4G/ 5G MIMO OFDM is envisaged to support data rates in excess of 100 Mbps through and thus enable high rate applications in wireless systems such as broadcast/multicast video, HDTV on demand, high speed internet access, interactive gaming amongst others. This is driving wireless semiconductor companies, engineers and researchers to focus heavily on the R&D of MIMO/ OFDM systems, which have proven to be the top technologies for Next Generation wireless networks

This course is especially intended to provide Professionals, Faculty members, PhD Scholars, Post-Graduate (M.Tech) and Under-graduate (B.Tech) students with an in depth technical exposure to the latest MIMO-OFDM wireless technologies. The modular approach will provide the participants with a comprehensive treatment of the theory behind these systems such as Fading wireless channels, Multiple-antenna systems, Bit-Error Rate (BER) performance, Beamforming, MIMO Receivers, OFDM Transmit/ Receive processing, Space-Time coding, MIMO-OFDM Technology and others. The school also features extensive supervised **PYTHON/ MATLAB/ SIMULINK projects** for participants to gain direct hands-on experience in MIMO-OFDM technology implementation. The extensive projects and introduction to **PYTHON MATLAB and SIMULINK** programming for 4G/ 5G wireless technologies are focused towards participants of all backgrounds.

How does this program benefit YOU?

UG/ PG students: Learn the latest programming techniques in PYTHON, MATLAB and SIMULINK together with practical 4G/ 5G wireless knowledge for projects/ thesis and also gain an edge in placements!

PhD Scholars/ Faculty members: Use PYTHON, MATLAB and SIMULINK for research and also to establish virtual labs or for project guidance in 4G/ 5G Wireless Technologies!

Industry Professionals: Take your skills to the next level by learning practical PYTHON/ MATLAB/ SIMULINK programming for 4G/ 5G Wireless System Modeling, Design and Analysis .

About the Trainer

Prof. Aditya K. Jagannatham is a Professor in the Electrical Engineering department at IIT Kanpur, where he holds the Arun Kumar Chair Professorship, and is a well known expert and trainer on 5G, Optimization and Machine Learning. He received his Bachelors degree from the Indian Institute of Technology, Bombay and M.S. and Ph.D. degrees from the University of California, San Diego, U.S.A. From April '07 to May '09 he was employed as a senior wireless systems engineer at Qualcomm Inc., San Diego, California, where he was a part of the Qualcomm CDMA technologies (QCT) division. His research interests are in the area of next-generation wireless networks, with special emphasis on various 5G technologies such as massive MIMO, mmWave MIMO, FBMC, NOMA, Full Duplex and others. He has published extensively in leading international journals and conferences. He has been recognized with several awards including the CAL(IT)2 fellowship at the University of California San Diego, Upendra Patel Achievement Award at Qualcomm, P.K. Kelkar Young Faculty Research Fellowship, Qualcomm Innovation Fellowship (QInF), Arun Kumar Chair and the IITK Excellence in Teaching Award.

Target Audience

- Ph.D. scholars pursuing research in DS/ ML/ DL technologies
- M.Tech/ B.Tech students undertaking thesis/ projects in DS/ ML/ DL technologies
- Faculty members of Engineering Institutions/ Universities
- Engineers from Wireless Industry and R&D Organizations

For more details and registration information, visit the website
http://www.iitk.ac.in/mwn/ATS/