Who should attend?

Academicians, Scientist, Industry delegates, Research Scholar in different projects, Ph.D Students, M.E/M.Tech and Others from Electronics or allied engineering fields.

How to apply?

Registration will be online/The URL for registration is

https://events.unipune.ac.in/apps/applicant/login.aspx

Address for communication

Dr. Pranoti Bansode, Assistant Professor

Department of Electronic and Instrumentation Sciences, Savitribai Phule Pune University, Ganeshkhind Rd, Pune, Maharashtra-411007

Tel.: 020-25622305

Email : mimoworkshop.sppu@gmail.com

Workshop fee

The registration fees for participation as below and it includes charges for participation, refreshment and lunch.

Students (M. Tech /PhD) - 500/-

Academicians, Scientist, Industry delegates - 1000/-

Last Date of Registration - 31 January, 2024

Certificate of Participation

Certificate of participation will be provided to the participants after successful completion of the workshop.

Venue

Sir C.V. Raman Hall,
Department of Physics,
Savitribai Phule Pune University, Pune

Convener, National Workshop
Dr. Pranoti S. Bansode-Gaikwad, Assistant Prof.
Department of Electronic & Instrumentation Science,
Savitribai Phule Pune University, Pune- 411007

Prof. Vikas L. Mathe
Head, Department of Electronic & Instrumentation Science,
Savitribai Phule Pune University, Pune- 411007

About Department of Electronic and Instrumentation Science, SPPU

The Department of Electronic Science is an integral part of the University started in 1984, whereas Department of Instrumentation Science in 1991. Recently these two departments were merged in view of complementing and strengthening each other. Both the departments have vibrant research and academic environment which is proven based on successfully produced postgraduates and doctoral candidates of excellent caliber, well-informed about the state of art technologies. The Department run Two post graduate program viz M Sc in Electronic Science and M Sc in Instrumentation Science with intake of 30 and 45 respectively. The admission to post graduate courses is done based on National Level Entrance Examination conducted by the University. The Department has 7 core faculty who are competent and gives academic leadership to students as well as teachers working at affiliated colleges.

Department has awarded more than 70 Ph.D degrees. The Core research areas are Intelligent Sensors, Materials and Systems Electronic Materials, Instrumentation and Control Systems, MEMS & Nanotechnology, Modeling and Simulations, SMART City initiatives, Hardware & Software, System Design, Wireless Sensor Networks & IoT, Artificial Intelligence and Machine Learning

Department has research labs like system design Sensors lab, materials and MEMS lab, Communication and rf design lab, Optoelectronic sensors and systems lab, Virtual instrumentation lab, Modelling and simulation lab. Department has several international and national industrial collaborations. Department has sophisticated RF equipment testing facility such as Vector network analyser, Spectrum analyser, RF frequency generator, 3D printer, CNC machine. Department has several simulation software's like HFSS, AWR, Cadence VLSI, National Instruments lab VIEW, MATLAB etc.

सावित्रीबाई फुले पुणे विद्यापीठ

75 Glorious Years of the SAVITRIBAI PHULE PUNE UNIVERSITY

National Workshop on

"MIMO Technology and 5G wireless Communication"

Department of Electronic and Instrumentation Science Savitribai Phule Pune University

13th February 2024
10:00 AM – 5:00 PM

1. Introduction

The new generation (Fifth Generation) 5G wireless communication technology is to bring virtually all types of devices together including machines, objects, and devices under the wireless umbrella. 5G wireless technology is meant to deliver higher multi-Gbps peak data speeds, ultra-low latency, more reliability, massive network capacity, increased availability to more number of users together. Compared to 4G LTE, 5G is designed to not only deliver faster, better mobile broadband services, but can also expand into new service areas such as mission-critical communications and connecting the massive IoT.

5G standards will enable wider bandwidths of operation by expanding the usage of spectrum resources, from sub-3 GHz that is used in 4G LTE to 100 GHz and beyond. 5G wireless standards can operate in both lower bands (e.g., sub-6 GHz) as well as mm Wave (e.g., 24 GHz and up), thus bringing in extreme data capacity, multi-Gbps throughput, and low latency of operation.

5G is based on OFDM (orthogonal frequency-division multiplexing), an FFT based method of modulating digital signals across several different channels to reduce interference. This new generation wireless standard uses 5G NR air interface alongside OFDM principles.

Multiple Input Multiple Output (MIMO) is being used in wireless communications as standard antenna configuration — it is common for both mobile devices and networks to have multiple antennas to enhance connectivity by mitigating multipath fading of signals in wireless channels, and offer better speeds and users' availability. MIMO algorithms come into play to control how data maps into antennas and where to focus energy in space. Both network and mobile devices need to have tight coordination among each other to make MIMO operational in seamless manner. Massive MIMO — that is an extension of existing MIMO technology — expands beyond the legacy systems by adding a much higher number of antennas on the base station. The "massive" number of antennas helps focus energy that brings drastic improvements in throughput and efficiency. Along with the increased number of antennas, both the network and mobile devices implement more complex designs to coordinate MIMO operations.

A daylong "National Workshop" is scheduled on Tuesday, 13 February 2024, at Department of Electronic and Instrumentation Sciences, Savitribai Phule Pune University, Pune. The workshop will provide an overview of advances in MIMO Technology and its application in recent 5G wireless communication areas. The workshop is therefore of special interest for the professionals, researchers and students interested in recent developments in MIMO technology and its applications in 5G mobile communication.

Workshop schedule and Technical Program:

Morning Session : 09:30 am to 01:30 pm

Reception : 9.30 am to 10.00 am

Inauguration of the Workshop

Prof. S. W. Gosavi, Honourable Vice chancellor, SPPU

Honourable Chief Guest

Dr. B. K. Das Distinguished Scientist & Director General Electronics & Communication Systems (ECS)-DRDO

Guest of Honor

Dr. L. C. Mangal, OS & Director DEAL,

"Advances in Software" Defined Radio (SDR) and networks for military communication"

Dr. MH Rahman, Director, JATC-IITD-DRDO, DS, DRDO (Retd.), IIT Delhi, Delhi

"5G and beyond"

Shri Ankathi Raju, OS/Sc 'H', Director ARDE

Walk through Poster and Display Exhibition

Lunch : 01:30 pm to 02:15 pm

Afternoon Session : 02.30 pm to 05.00 pm

Keynote Address

Dr. C. Bhattacharya, Hon. Adj. Professor, SPPU

"MIMO in automobile advance driver assistance systems"

Invited Talk

Prof. Debashish Adhikari (Dean, R & D VIT, Bhopal)

Dr. Prof. K. P. Ray

(Professor and Dean of Technology, DIAT, Pune)

Dr. Manisha Nene,

Director, Computer Engineering & Mathematical Sciences, DIAT-DRDO

Department Presentation- Mr. Swapnil Narke-Research Scholar

Technical presentation

Open House and Closing of workshop

Patron

Prof. S. W. Gosavi

Honorable Vice chancellor, SPPU

Dr. Parag Kalkar

Pro-VC, SPPU

Program Chair

Dr. C. Bhattacharya

Advisor Committee

Padma shri Pramod Kale

Dr. S. Ananthakrishnan

Prof. A. D. Shaligram

Prof. D. C. Gharpure

Organizing Committee

Prof. Vikas Mathe

Dr. Bhagyashree Joshi

Dr. Aditee Joshi

Dr. Pranoti Bansode

Dr. Shweta Jagtap

Mrs. Pallavi Meshram

Dr. Shamal Chinke

Ms. Swati Jadhav

Mrs. Monica Kamtamkar

Dr. Yogesh Waghadkar