INDIAN INSTITUTE OF TECHNOLOGY BANARAS HINDU UNIVERSITY

भारतीय

संस्थान

प्रौद्योगिकी



Information Brochure (2019-2020)

M.Tech. Programme in Communication Engineering



About Us:

Current focus of this research group is on Millimeter wave communications for 5G wireless, waveforms for 5G and anti-jamming techniques for LTE-A cellular wireless networks. "Learning for Wireless Networks" is another exciting research topic that the research group started working on in the recent past. Regression and/or classification framework developed in the machine learning community might help designing more efficient wireless receivers.



Dr. Amritanshu Pandey (Ph. D IIT BHU)

Worked as Associate Design Engineer in Central Research and development section of ST microelectronics Ltd. Subjects Taught – Wireless Communication,Optical Comunication IIT BHU VARANSI 221005

Dr. Manoj Kumar Singh

Subjects Taught – Digital Communication , Information Theory and Coding,Signal Processing. IIT BHU VARANASI 221005

CURRICULUM:

The Learning Curve

The main objective of Communication Engineering is to educate young engineers & to conduct research in the wider field of organisation. Our Communication engineering branch is mainly active in following disciplines:

- 1. Wireless Networks
- 2. Information Theory
- 3. Digital Signal Processing
- 4. Digital Design with VHDL/Verilog HDL
- 5. VLSI/LSI Design
- 6. Neural Networks
- 7. IC Technology
- 8. Computer Networks
- 9. Optical Communication
- 10. Solid State Devices
- 11. Hetrojunction







Lab Facilities: Being Practical

1. Digital Signal Processing Lab:

The digital signal processing lab is used primarily used by the UG and PG students for the project and dissertation works related to the signal processing and digital communications. This lab is equipped with 15 experimental set ups each of which consists of the following:

- Desktop Computer
- DSP Kits from the Texas Instruments
- Digital Oscilloscope (RIGOL DS1102E)
- Function/Arbitrary Waveform Generator

2. Analog and Digital Communication Lab:

This lab is used by both UG and PG students for their regular practical parts of the related courses as well as for carrying out UG projects and PG dissertation works. Under regular practical parts of analog and digital communication courses, students are asked to design and implement practical circuits for various modulation and demodulation circuits and systems using discrete electronic components. Analog and digital communication labs are conducted in alternate semesters. This lab consists of total 15 set ups. Each of the sets consists of the following:

- Component Development Systems
- CRO (Scientec)
- Function Generator (Scientec)
- Power Supply (Scientec)
- Digital Multimeter

Analog and Digital Communication Lab



Digital Signal Processing Lab



3. Optical Communication Lab

Optical Communication lab is used by both the UG and PG students for their respective projects and dissertation works in optoelectronics and optical communication related areas. The lab is equipped with the following facilities:

OFT kit	Benchmark Ltd.	For various measurements on fiber.
Light Emitting Diode Module	Benchmark Ltd.	IR LED - standalone and capable of coupled through fiber
Laser diode module: LD unit, LD driver	Benchmark Ltd.	Laser diodes for coupling power via optical fiber and free space
Photodetectors (pin, APD)	Benchmark Ltd.	Characteristics of silicon pin and APD PDs.
EDFA Amplifiers	Benchmark Ltd.	EDFA amplifier, coupler, source , modulator, pump source
Systems	Benchmark Ltd.	OTDR,MUX, BER, LOS
Optical links	Benchmark Ltd.	Different types of optical links
Power Meter	Benchmark Ltd.	Handheld Si/Ge power meter for visible and NIR
Power Source	Benchmark Ltd.	Handheld LD sources for CW/pulse mode operartion, TTL and PRBS/fixed data word
Fiber spool	Benchmark Ltd.	MM/SM fibers
Transmitter & Receiver	Benchmark Ltd.	Digital and analog transmitter and receiver
Function generator	Benchmark Ltd.	For different types of analog signals
Digital CRO	Benchmark Ltd.	Display
6 ½ digit multimeter	Benchmark Ltd.	Measurements



Major Achievements

- Amulya Nemoori, Himanshu Mishra, Vijay Kumar Singh, P. K. Shukla, Anchal Srivastava, and Amritanshu Pandey.
 "A curious observation of Pauli-Blocking in MoS₂-quantum dots/graphene hybrid system." *Journal of Applied Physics*, vol. 124, no. 12, p. 124501, 2018.
- R. Pal, K. V. Srinivas and A. K. Chaitanya, "A Beam Selection Algorithm for Millimeter-Wave Multi-User MIMO Systems," *IEEE Communications Letters*, vol. 22, no. 4, pp. 852-855, 2018. Amritanshu Pandey and Aditya Bansod, "Pd/ZnO Schottky Ultraviolet Photodiode Fabricated on ITO.
- Amritanshu Pandey, Archana Tripathi, Raghavi, S.K. Srivastava and S. Jit, "Analysis of Ternary Layer Photonic Band Gap Tunable Filters for WDM Applications," *J. Nanoelectron. Optoelectron*. Volume 12, Number 4, pp. 331-336(6), April 2017.
- Sanjeev Mani Yadav, and Amritanshu Pandey. "Highly Efficient and Broadband Hybrid Photodetector Based on 2D Layered Graphene / CTS Quantum Dots." accepted for publication in *IEEE Trans Electron Device*.
- Dr. Kishor Sarawadekar has been awarded Visvesvaraya Young Faculty Fellowship by the Ministry of Electronics and Information Technology, Government of India.
- Mr. Gourav Modanwal (Ph.D student of Dr. K. P. Sarawadekar) has won the Gold Medal and Navkriti Medal on Institute day 2016.
- Mr. Gourav Modanwal (Ph.D student of Dr. K. P. Sarawadekar) has received First Prize in Innovative Model Presentation in the Dept. of Electronics Engineering, IIT(BHU), Varanasi on Institute day 2016.
- A. Sikri, A. Mathur and **K. V. Srinivas**, "Performance analysis of coordinate interleaved PLC system with Rayleigh channel gain under Nakagami-m additive noise," *IET Communications*, vol.13, no.7, pp.857-862, 2019.

Message from Prof. Incharge:

It gives me immense pleasure to extend you a most cordial invitation to participate in the Campus Recruitment Programme of the Indian Institute of Technology (BHU), Varanasi. With an increasing thrust being placed on Institute-Industry Interaction, it is my sincere belief that your esteemed organization and IIT (BHU) Varanasi will stand to gain immensely from this symbiotic relationship.

Our Institute holds the pride of place being pioneer in the field of engineering and technical education in this country and has a glorious heritage. We have been continuously ranked amongst the elite by all peers and stakeholders. Our constant pursuit of excellence has made our institute a focal point in technical education for students and faculty members alike. Admissions to the institute take place through the reputed Joint Entrance Examination (JEE) and Graduate Aptitude Test in Engineering (GATE).

At this institute, we take utmost care to groom our students according to the needs of the industry. We seek to open frontiers of knowledge and reveal new horizons of change to broaden mindset and to create positive attitude in our students. Our students receive industrial exposure by their frequent industrial visits. Besides, our undergraduate students undergo an eight-week training during summer vacation in reputed industries/institutions/organizations (in India as well as abroad) as part of their academic requirements.



We would be most delighted to host you for campus recruitment and beyond. I am looking forward to a mutually beneficial relationship,

Professor **Anil Kumar Agrawal**

Training & Placement Officer, IIT (BHU) Varanasi

Past Recruiters:



Placement Team:

Dr. Anil Kumar Agrawal

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