

About IIT Patna:

Indian Institute of Technology Patna is an autonomous institute of education and research in science, engineering and technology located in Bihta, 35 km from Patna. Presently, IIT Patna has 10 academic departments that offer B.Tech., M.Tech., and Ph.D. programs. The faculty members of this institute come with academic and research training from various institutes of excellence within the country and abroad. The recent publication records of the faculty with several practical constraints appear to be outstanding. It includes many national and international journals of repute. Recently, IIT Patna has been ranked as the 26th best engineering college in recent NIRF released by the Education Ministry, Govt. of India.

About Electrical Engineering Department:

The Department of Electrical Engineering (EE) has been evolving since the inception of IIT Patna in the year 2008. The major objective of the department is to impart high quality education and to encourage the students, comprising B.Tech, M.Tech and PhD, in pursuing research. The department offers B. Tech in Electrical and Electronics Engineering, two M. Tech programs (1. Communication System Engineering, 2. VLSI and Embedded Systems) and Ph.D. program in various specialized areas of Electrical Engineering. The major research areas of the department include

Communications, Optoelectronics, Signal Processing, Image and Video Processing, VLSI and Embedded System, RF and Microwave, Electric Drives, Solid state Devices, Power Systems and Power Electronics, Control Systems and Instrumentation. EE Department is executing research projects sponsored by external funding agencies. The department is committed to engage in high quality research and pursuit of excellence in teaching. The faculty members of the department are actively involved in research and development in challenging areas of both theory and experiment.

About ATAL:

AICTE Training and Learning (ATAL) Academy is an initiative by AICTE aiming at empowering faculty to achieve goals of Higher Education such as access, equity and quality. This academy is designed to fulfil the need to train the young generation in skill sector and having faculty and technicians to be trained in their respective disciplines. It was felt that Training with latest tools and technologies is vital to keep an institute competitive and more productive. Training is required for increasing the knowledge and skills of students to make them more employable to acquire global competencies. It also transforms them to harmonize with society and most importantly to make them a good citizen of the country.



Indian Institute
of Technology Patna
भारतीय प्रौद्योगिकी संस्थान पटना

**AICTE Training and Learning (ATAL) Academy
Faculty Development Programme (FDP) on**



**Signal Processing and
Machine Learning for AI-
Driven Healthcare Systems**

(23.06.2021-27.06.2021)

Venue: IIT Patna

Organized by:

**Department of Electrical Engineering,
Indian Institute of Technology Patna.
Bihta, Patna, Bihar- 801106, India.**

Objective of ATAL FDPs:

To plan and help in imparting quality technical education in the country and to support technical institutions in fostering research, innovation and entrepreneurship through training in various emerging areas.

Theme and Objectives of the Course:

Artificial intelligence (AI) has gained significant attention due to its widespread applications in various domains including designing of different healthcare systems. This course will give an opportunity to gain exposure in recent advances in signal processing and machine learning techniques which are used in designing various AI –driven healthcare systems. This course aims to impart knowledge and train on fundamentals of engineering aspects of physiology and insights in recent signal processing and machine learning techniques which can help participants in developing smart healthcare systems.

Organizing Committee:

Patron:

Prof. Pramod Kumar Jain,
Director, IIT Patna.

Coordinator:

Dr. Udit Satija,
Assistant Professor, EED, IIT Patna.

Topics to be covered:

- Introduction to engineering aspects of different physiological signals
- Advanced time-frequency techniques for biomedical signal and image analysis
- Statistical analysis for time-series health data
- Machine learning for bio-signals and medical image
- Biomedical signal quality assessment for wearable medical systems
- Deep learning and AI based healthcare systems
- Internet of medical things (IoMT): current trends and challenges
- Wireless communication for body area networks
- Climate-Aware healthcare prediction systems
- Brain source localization and BCI applications
- Hardware design aspects of AI-based health systems: an industry perspective
- Recent industry trends in healthcare R&D
- Yogic concept of health and disease

Registration:

Interested participants are required to register through the AICTE ATAL portal and select this FDP. All aspects such as participants' registration, attendance, feedback, assessment and certificate will be managed only through AICTE ATAL portal.

<https://atalacademy.aicte-india.org/login>

Key Speakers:

- Prof. Samarendra Dandapat, IIT Guwahati
- Prof. Ram Bilas Pachori, IIT Indore.
- Dr. Shyam Vasudev Rao, Director, Rx Digi Health Platform Pvt. Ltd. & Renalyx Health System Pvt. Ltd.
- Dr. M. Sabarimalai Manikandan, IIT Bhubaneswar.
- Dr. Lalan Kumar, IIT Delhi.
- Dr. Barathram Ramkumar, IIT Bhubaneswar.
- Dr. Jimson Mathew, IIT Patna.
- Dr. Udit Satija, IIT Patna.
- Dr. Sudhir Kumar, IIT Patna.
- Dr. Deepeshwar Singh, S-VYASA
- Dr. Sunil Jaiswal, Head R&D, K|Lens GmbH, Germany

Intended Audience:

The faculty members of the AICTE/UGC approved institutions, research scholars, PG Scholars, participants from the Government organizations, Industry (Bureaucrats / Technicians / Participants from Industry etc.) and staff of host institutions.

Contact details:

Dr. Udit Satija

Assistant professor, Electrical Engineering,
Indian Institute of Technology Patna,
Bihta, Patna, Bihar-801106, India.

Email Id: udit@iitp.ac.in, Phone: 06115-233-815

AICTE Training And Learning (ATAL) Academy

Schedule of Online Faculty Development Program on Signal Processing and Machine Learning for AI-Driven Healthcare Systems, June 23-27, 2021, at IIT Patna

Date/Session	8.45-9.00AM	Session 1 (9:00-11.00AM)	Session 2 (11:30 AM-1.30PM)	Session 3 (2:30 PM-4.30PM)
23/06/2021	Inaugural Session	1. Recent industry trends in healthcare R&D (SVR)	2. Introduction to engineering aspects of different physiological signals (US)	3. Advanced time-frequency techniques for biomedical signal and image analysis (RBP)
24/06/2021		4. Statistical analysis for time-series health data (JM)	5. Machine and deep learning for bio-signals (US)	6. ML/DL based anomaly detection in healthcare systems (SK)
25/06/2021		7. Deep learning and AI-based healthcare systems (SD)	8. Wireless communication for body area networks (BR)	9. Internet of medical things (IoMT): current trends and challenges (MSM)
26/06/2021		10. Signal Processing and ML for automated diagnosis of medical images (RBP)	11. Climate-Aware healthcare prediction systems (MSM)	12. Analysis of signal processing and deep-learning-based algorithms in medical imaging (SJ)
27/06/2021		13. Brain source localization and BCI applications (LK)	14. Yogic concept of health and disease: an evidence based integrate approach (DS)	Valedictory session (15 Minutes)

Speakers: SD: Prof. Samarendra Dandapat, SVR: Dr. Shyam Vasudev Rao, RBP: Prof. Ram Bilas Pachori, JM: Dr. Jimson Mathew, MSM: Dr. M. Sabarimalai Manikandan, BR: Dr. Barathram Ramkumar, LK: Dr. Lalan Kumar, DS: Dr. Deepeshwar Singh, SK: Dr. Sudhir Kumar, US: Dr. Udit Satija, SJ: Dr. Sunil Jaiswal