



High-End Workshop on: Deep Learning Based Biomedical Systems: Design Challenges and Future Directions

(Under the KARYASHALA Scheme - A SERB initiative)

12st December – 18th December 2022



Organized by
Department of Electrical Engineering
Indian Institute Of Technology Patna
Bihta, Bihar:- 801106

About IIT Patna

Indian Institute of Technology Patna, established in August 2008, is an autonomous institute of education and research in science, engineering, and technology located in Bihta, 35 km from Patna. The new campus is spread over 500 acres of green land. IIT Patna has ten academic departments that offer B.Tech, M.Tech, MSc, 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 members is commendable.



It includes many reputed national and international journals. Research activity in IIT Patna has been published in high-quality and peer-reviewed national and international journals. Faculty members of IIT Patna have been also participating in national and international conferences of repute.

Objective

1. To provide a rich knowledge of recent deep learning algorithms explored for different biomedical systems
2. Design steps overview of the development of different biomedical systems including data acquisition, algorithms development, evaluation and validation, implementation in real-time hardware
3. Hands on sessions to enhance the coding and implementation skills of the participants to develop such systems
4. Knowledge distribution for the developed biomedical systems to optimize several constraints including computation and communication power, low latency output, and generation of critical alarms based on significant events.

Contents

- Recent Trends in Deep Learning Based Biomedical Systems
- Introduction to Different Physiological Signals
- Basics of Machine and Deep Learning and Different Deep Learning Algorithms
- Deep learning for Medical Image Analysis and Python Implementation in Google Colab
- EEG Signal Analysis and Lab Implementation
- Brain Source Localization
- Real-Time Biomedical Systems Development
- Lab Implementation of Real-Time Deep Learning Biomedical System on Various Embedded Platforms

Patron: Prof. T.N. Singh, Director, IIT Patna

Convener: Dr. Udit Satija

Local Committee Members:

Prof. Preetam Kumar

Dr. Saurabh Kumar Pandey

Dr. Rajib Kumar Jha

Dr. Sudhir Kumar

Dr. Mahesh H. Kolekar

Events

- ❖ Experts Talks
- ❖ Lab Based Implementation
- ❖ Real-time System Demonstration

Who can attend: Karyashala is open to graduate/postgraduate students/research scholars and faculty from all Institutes, Colleges and Universities. Preference will be given to the students having interest towards Deep learning and biomedical systems.

Outcomes

1. Participants will get broad knowledge of biomedical signals and their applications.
2. Participants will learn different deep learning algorithms and signal processing techniques related to different biomedical signals and their implementation on various software platforms (google colab)

Event Organizer

Dr. Udit Satija

Assistant Professor

EE Department

IIT Patna



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Speaker Details

Prof. Ram Bilas Pachori, IIT Indore
Prof. Jimson Mathew, IIT Patna
Prof. M. K. Bhuyan, IIT Guwahati
Dr. Tapan Gandhi, IIT Delhi
Dr. M. Sabarimalai Manikandan, IIT Palakkad
Dr. Prasanta Ghosh, IISc Bangalore
Dr. Badri Subudhi, IIT Jammu
Dr. Rajib Kumar Jha, IIT Patna
Dr. Sriparna Saha, IIT Patna
Dr. Udit Satija, IIT Patna

Registration details:

Registration fee – INR 3000/-

The participation fees Rs. 3000/- for the workshop will be accepted only through e-transfer /RTGS/NEFT.

To register apply on the below google link-

<https://forms.gle/DbNXsNCaYoMukUXAA>

The Workshop will be in Hybrid Mode. Participants can attend online too if they are interested.

Total number of participants is limited to 25.

Boarding, lodging, and travel support (train-AC-III only) will be provided to all the 25 selected participants. Participation Certificates will be given to the candidates who will attend the workshop.

Details for Online Payments:

Name of the Account: Registrar, IIT Patna

Bank: State Bank of India,

Branch: IIT Patna, Bihta

Bank Account No.: 30957551934

MICR Code: 801002005

Swift code: SBININBB156

Beneficiary: Indian Institute of Technology Patna

Bank Telephone: 0612-3028062

IFSC: SBIN0017164

Account Type: Savings A/c