Brochure/Flyer

Brain-inspired/Neuromorphic Computing for Responsible AI

March 20-26, 2023

Patron:

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

Conveners: Prof. Jawar Singh
Dr. Pramod Kumar Tiwari
Dr. Sudhir Kumar

Contact us

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EE Department
IIT Patna

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About IIT Patna (Institute Details): IIT Patna is an institute of National importance by an Act of the Indian Parliament in 2008. It is ranked 108 among BRICS nations by the QS World University Rankings of 2018. It is ranked 22 among engineering colleges in India by the NIRF 2019.

IIT Patna has ten departments: These are Computer Science & Engineering, Electrical Engineering, Mechanical Engineering, Chemical and Biochemical Engineering, Civil & Environmental Engineering, Materials Science & Engineering, Chemistry, Physics, Mathematics and Humanities & Social Science departments.

About EE 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 research. The department offers B. Tech in Electrical and Electronics Engineering, and M. Tech in Communication System Engineering, and VLSI and Embedded Systems. Ph.D. program in various specialized areas of Electrical Engineering. EE Department is executing research projects sponsored by external funding agencies.

Registration details:

Registration fee: Rs. **8000.0 [Includes Registration Kit, Boarding, Lodging, and Travel support (maximum train-AC-III fare)**]

The amount for the workshop will be accepted only through e-transfer /RTGS/NEFT.

Register Here-
https://forms.gle/LJpcAi5vLePKj3mo9

Boarding, lodging, and travel support (train-AC-III only) will be provided to the FIRST 25 participants. Participation Certificates will be given to the candidates on successful completion.

Details for Online Payments:

Name of the Account: Registrar, IIT Patna
Bank: State Bank of India,
Branch: IIT Patna, Bihta
Bank Account No.: 30957551934
Beneficiary: Indian Institute of Technology Patna
IFSC: SBIN0017164
Account Type: Savings A/c

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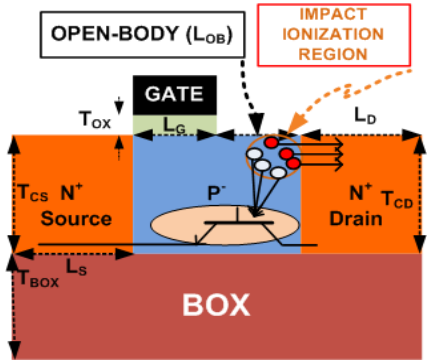
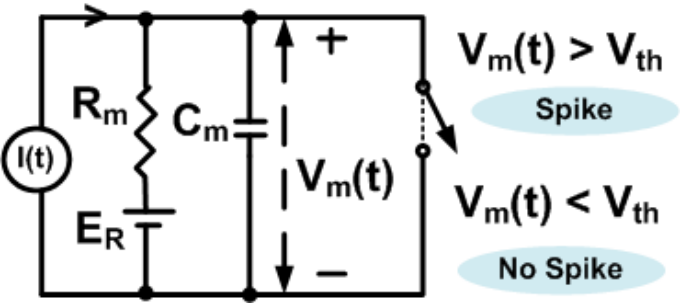
Who Can Attend? The course is intended to future researchers (M.Tech. and Ph.D. students) and faculty members having general introductory background of VLSI, Digital Electronics, Microelectronics, Semiconductor Devices, and circuits.





About Course: This course aims to provide theoretical and computational aspects of neuroscience and how the same can be extended for modern digital computing which can be highly energy efficient. The concept of single Silicon neuron and its theoretical modeling for the development of basic computation building blocks. Transferring aspects of structure and function from biological substrates to electronic circuits. Hands-on training of TACD tools for mimicking the neuronal behavior. Impact of AI on society promoting ethical values such as accountability and exclusiveness.

Course Description:

Neuronal Dynamics: Overview of neuroscience, neurons and synapses. First order resistive-capacitive (RC) models for passive membrane and neuron. Integrate-and-fire and Leakey-integrate fire (LIF) models. Realizing LIF behavior through Silicon neuron.

Neuromorphic Computing: Concepts and over view of brain inspired computing, supervised and unsupervised learning. Artificial neural network (ANN), third generation spiking neural network (SNN).

Hardware implementation and realization of ANN and SNN. Application of neuromorphic computing for recognition and decision making for machine learning (ML).

Speakers

Prof Satyabrata Jit, IIT (BHU) Varanasi
Prof Yogesh S Chauhan, IIT Kanpur
Prof Mayank Srivastava, IISc Bangalore
Mr Preet Yadav, NXP Semiconductor
Dr Arun Kumar Singh, PEC Chandigarh
Dr Shubham Sahay, IIT Kanpur
Dr Avinash Lahgere, IIT Kanpur
Dr K P Pradhan, IIITDM Kancheepuram
Dr Sudhir Kumar, IIT Patna
Dr P K Tiwari, IIT Patna
Prof Jawar Singh, IIT Patna

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Organized by

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