

Indian Institute of Technology (BHU) Varanasi



I-DAPT Hub IIT (BHU) Sponsored Five-Day STC on Speeding up AI and Data Analytics with Neuromorphic Computing (18th to 24th December, 2024)

Coordinator:

Dr. Shivam Verma, Assistant Professor,
Department of Electronics Engineering
Indian Institute of Technology (BHU), Varanasi
Email: shivam.ece@itbhu.ac.in

Target Audience:

This short-term course is specifically designed for UG/PG/PhD students, researchers, faculties, and technical staff from the branches of engineering/ science who are interested in the field of neuromorphic computing.

Course Contents:

Since the deep learning explosion in IoT & AI for Data Analytics, strain on the existing computing architectures due to the memory wall problem is increasing. Researchers are looking towards some of the memory centric computing paradigms beyond the Von Neumann architecture. One of the new paradigms is neuromorphic computing to solve the AI's hardware problem. This course focuses on the neuromorphic computing with case Studies demonstrating its power in IoT and AI applications. This course will delve into different aspects of neuromorphic computing towards unlocking endless possibilities and shaping a future where AI and data analytics meets efficiency. Join the journey because, in today's world, going neuromorphic in computing is not just a choice; it's a necessity.

- Mimicking Biological Neural Network, Neuron Structure, Modeling of Artificial Neuron, Neuron and Synapse circuit topology
- Neuromorphic Hardware Architectures, Memristor-Based Neural Network Architectures, Crossbar Architecture and Neuromorphic Core, Memory centric computing with Memristors and FeFET
- Neuromorphic Computing with other Emerging Memory Devices and Function
- Neuromorphic Algorithms (STDP, LSMs, etc.)
- Applications of Neuromorphic Computing
- Learning Paradigms in Neuromorphic Computing

Course Mode: Offline only

For any query please contact:
shivam.ece@itbhu.ac.in
7014681827

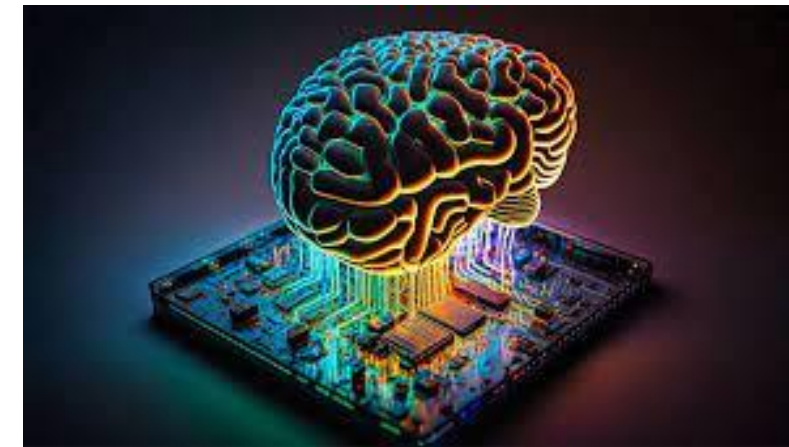
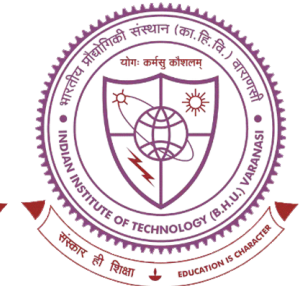
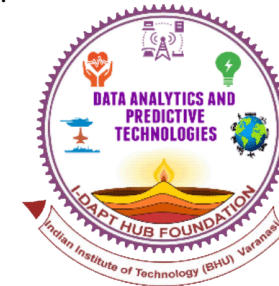
Registration Link:

<https://forms.gle/iGAho9vfNtMnyQrX8>



ABOUT I-DAPT

The Interdisciplinary Data Analytics and Predictive Technologies (I-DAPT) has been regarded as one of the most prominent fields whose progress will add significant impact on various socio-economic issues. At IIT (BHU) five thrust areas i.e. 1) Telecommunications, 2) Power, 3) Road Transport and Highways, 4) Defense Research and Development, and 5) Health and Family Welfare have been identified under I-DAPT. The endeavour shall catalyse the creation of skilled young engineers, researchers, technicians, and entrepreneurs, together with human resource at all levels, besides becoming a key contributor to realizing the vision of "Digital India", "Innovate in India", and "Make in India".



Important Dates:

Course dates: December 18 to 24, 2024

WHO CAN PARTICIPATE

This workshop is specifically designed for UG/PG/PhD students, researchers, faculties and technical staffs from the branches of engineering/ Science who are interested in the area of microelectronics and VLSI, and neuromorphic computing for AI and data analytics.

REGISTRATION

Name: _____

Designation: _____

Institute: _____

Address: _____

Email ID: _____

Contact No: _____

Undertaking:

I shall abide by rules and regulations and shall attend the course. Failing which certificate may not be issued.

Signature of Participant

CONTACT

Dr. Shivam Verma

Assistant Professor

Department of Electronics Engineering
Indian Institute of Technology (BHU), Varanasi

Email: shivam.ece@itbhu.ac.in

ABOUT NM-ICPS

The National Mission on Cyber-Physical Systems (NM-ICPS) is identified as one such emerging field to have a significant impact on health care, urban transportation, water distribution, energy, urban air quality, manufacturing and governance. The activities envisioned under this Mission will give an impetus to Indian manufacturing via the invention of new products, services and the creation of skilled young human resource from technicians to, researchers and entrepreneurs. It will have modernisation and digitalisation of socio-technical systems and services.

ABOUT IDAPT

The Interdisciplinary Data Analytics and Predictive Technologies (I-DAPT) has been regarded as one of the most prominent fields whose progress will add significant impact on various socio-economic issues. At IIT (BHU) five verticals 1) Telecommunications, 2) Power, 3) Road Transport and Highways, 4) Defense Research and Development, and 5) Health and Family Welfare have been identified under I-DAPT. The endeavour shall catalyse the creation of skilled young engineers, researchers, technicians, and entrepreneurs, together with human resource at all levels, besides becoming a key contributor to realizing the vision of "Digital India", "Innovate in India", and "Make in India".

Telecommunications Research & Development in I-DAPT

Telecommunications Research & Development in IDAPT aims at providing technology development support in the area of communication systems such as a) physical layer design for future communication system, b) Internet of things, c) quantum communication, d) machine-based communication system design, e) THz communication system design, f) Molecular communication, etc. To achieve these goals, this program will give participants with a platform to learn about the next generation communication technologies.

Short Term Course on

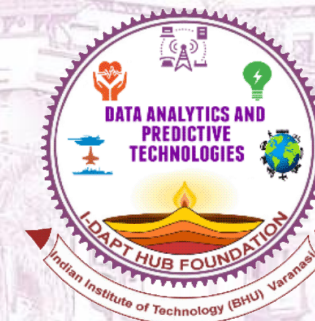
Speeding up AI and Data
Analytics with Neuromorphic
Computing

**A TECHNOLOGY INNOVATION HUB
ON**

**INTERDISCIPLINARY DATA ANALYTICS
AND PREDICTIVE TECHNOLOGY
(IDAPT)**

Under

**NATIONAL MISSION ON INTERDISCIPLINARY
CYBER PHYSICAL SYSTEM (NM-ICPS)**



December 18-24, 2024

Coordinator

Dr. Shivam Verma

ABOUT INSTITUTE



The Indian Institute of Technology (Banaras Hindu University) owes its existence to Mahamana Pandit Madan Mohan Malviya, Bharat Ratna-the founder of

the first residential university of modern India, the Banaras Hindu University. The three of the erstwhile engineering colleges of BHU, namely BENCO, MINMET and TECHNO, were merged to form the Institute of Technology (IT-BHU) in 1968 to provide an integrated educational base. The IT-BHU has been admitting students through the JEE conducted by the IIT's since 1972, and has been consistently ranked amongst the top few engineering institutions of the country. IT-BHU became IIT (BHU) in June 29, 2012 by an Act of Parliament. The Institute has maintained high academic standard since its inception. It has turned out luminary engineers and administrators who served the nation with great distinction.

ABOUT ECE

Department of Electronics Engineering (ECE) at Indian Institute of Technology (IIT BHU), where experienced faculty and highly motivated students supported by a dedicated staff experience a unique engineering education. The Department offers Bachelor, Master, and Doctoral programs in Electronics Engineering with the major thrust areas of Microelectronics, Microwave Engineering, Digital Techniques and Instrumentation and Communication Systems. In addition, continuing education programmers in specialized areas are offered on a regular basis for industry professionals and academic staff.

COURSE CONTENTS (Tentative)

Since the deep learning explosion in IoT & AI for Data Analytics, strain on the existing computing architectures due to the memory wall problem is increasing. Researchers are looking towards some of the memory centric computing paradigms beyond the Von Neumann architecture. One of the new paradigms is neuromorphic computing to solve the AI's hardware problem. This course focuses on the neuromorphic computing with case Studies demonstrating its power in IoT and AI applications. This course will delve into different aspects of neuromorphic computing towards unlocking endless possibilities and shaping a future where AI and data analytics meets efficiency. Join the journey because, in today's world, going neuromorphic in computing is not just a choice; it's a necessity.

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REGISTRATION DETAILS

Registration Link:

<https://forms.gle/iGAho9vfNtMnyQrX8>

Last Date of Registration: October 31st, 2024

Registration Fees

For faculties, scientists and post-doctoral

Fellow: Rs. 2000/- (non-refundable)

Industry: 4000/- (non-refundable)

For UG and PG students: Rs. 500 (non-refundable)

NOTE: A GST of 18 % should be paid additional in each registration fee

Payment may be made by one of the following methods:

1. Demand draft in favour of I-DAPT-HUB FOUNDATION
Payable at SBI, IIT(BHU) Varanasi.
2. For online payment

Branch: SBI, IT(BHU), Varanasi

IFSC: SBIN0011445

Name: I-DAPT-HUB-FOUNDATION

Account No: 40298890505

Course Mode:

Offline only

In case of any difficulty, you can contact us at

shivam.ece@iitbhu.ac.in,