

Short Term Course/FDP
on
**"Artificial Intelligence: Devices
to Circuits"**

Under the aegis of

SPARC Scheme

Coordinated by

**Electronics & ICT Academy,
IEEE EDS Student Chapter
IIT Roorkee**



Jan 9, 2020 – Jan 13, 2020

Experts from Academia/Industry

Prof. M.M De Souza and
Prof. Eleni Vasilaki, University of Sheffield, UK
Prof. Debanjan Bhowmik, IIT Delhi
Prof. Kaushik Roy, Purdue University
Dr. Vivek De, Intel Corporation

Ministry of Electronics & Information Technology
Government of India, SPARC MHRD Govt of India

Venue
IIT Roorkee

Why Artificial Intelligence?

Artificial Intelligence (AI) builds smart machines that imitate the human behavior. This course aims to discuss neuromorphic computing based on promising spin electronics technologies for AI applications. Recently, neuromorphic computing has demonstrated huge potential for information processing at low power that leads to highly energy efficient systems. This course will help participant gain knowledge about design of AI systems from device to system level. Implementation of such systems with emerging devices will also be dealt.

Focus Areas

- Introduction to Artificially Intelligent Systems
- Neural Network and Neuromorphic Systems
- Energy Efficient Computing in Nanoscale CMOS
- Role of Non-Volatile Memories
- Spintronic Devices for Neuromorphic computing
- Beyond traditional ionic memristors
- Sparse Reservoir Computing
- Learning in Brain Circuits

Benefits and Outcomes of the Course

- Participants will understand state-of-the-art AI systems, neural network and hardware implementation of neuromorphic systems
- The participants will learn in-memory computation and usage of emerging devices for computation
- The participants will learn computational models aiming to advance our understanding of the brain learning mechanisms

Objective of the Course

- ✓ To provide an overview of key concepts and technologies required for implementation of neuromorphic computing.
- ✓ To present the usage of emerging devices for neuromorphic computing systems
- ✓ To understand various applications of neuromorphic computing for AI
- ✓ To understand the principles governing the learning and memory of the neuronal connections

Program Features

- ✓ The program is split into lectures and tutorials.
- ✓ Interaction & learning with experts from academia and industry.
- ✓ Hands-on experience on implementation of neuromorphic computing.
- ✓ Certificates to the participants by E&ICT Academy IITR.

Coordinators

Dr. Sanjeev Manhas (PI, SPARC E&ICT Acad., ECE Dept.)
Dr. Brajesh Kumar Kaushik (PI, SPARC, ECE Dept.)
Dr. Sudeb Dasgupta (Co-PI, SPARC, ECE Dept.)



Who Can Attend ?

Program is open to faculty members/research scholars/PG students from colleges/universities, and industry personnel working in the concerned/allied discipline.

Registration Fee

Faculty members: Rs. 1500/-
Research scholars: Rs. 2,000/-
Persons from Industry: Rs. 2,500/-

How to make Payment

Offline: DD in favor of "Dean SRIC IIT Roorkee" payable at Roorkee "OR"

Online: (

<https://www.onlinesbi.com/prelogin/icollecthome.htm?corpID=365641>) Read the instruction for payment before filling the online registration form.

How to Apply

Step 1: Make Payment

Step 2: Participants may fill registration form through Academy website (<http://eict.iitr.ac.in>).

OR

Step 2: Send a duly filled-in registration form along with Demand Draft to Academy address.

Mr. Prateek Sharma, EICT Academy, ECE Department, IIT Roorkee-247667

Important Dates

Last Date For Registration:

Jan 3, 2020

EICT Academy IITR

Electronics and ICT Academy (E&ICT) at IIT Roorkee (funded by Ministry of Electronics and Information Technology) aims to enrich and upgrade teaching and research competences of engineering faculties of institutes/colleges by conducting courses and workshops in fundamentals as well as emerging areas of E&ICT and enabled areas. The programs are conducted by well-known industry partners, resource persons from leading academia and experts from renowned R&D organizations.



Activities of the Academy

- Specialized training on basic and advanced level topics with hands-on experience in the emerging areas of Electronics & ICT.
- Setup the activity centers to conduct FDPs locally at institutes/colleges.
- Curriculum development for the industry. Continuing Education Programme for students/working professionals.
- Design, develop and delivery of specialized modules for specific research areas in industry.

One Week Short Course/FDP

on

" Artificial Intelligence: Devices to Circuits"

Jan 9, 2020 – Jan 13, 2020

REGISTRATION FORM

Applicant Name _____

Gender: _____

Category (GEN/OBC/SC/ST): _____

Designation: _____

Name and Address of the

Organizatio/Institute: _____

City/Town: _____

Email: _____

Phone Number: _____

Do you need Accommodation?

(Yes/No): _____

DD Number: _____

Date: _____

Issuing Bank: _____

Payable at: _____

Signature of the Applicant

Contact us

Electronics and ICT Academy, IIT Roorkee

Roorkee - 247667, (Uttarakhand) INDIA

Ph. +91-1332-28 6457, +91-7078627392

Email: eict@iitr.ac.in, eictiitr@gmail.com

Website: <http://eict.iitr.ac.in>



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