

## ORGANIZING TEAM

### Patron and Advisor

Prof. Pramod Kumar Jain, Director, IIT (BHU)

### Chairman

Prof. Rajiv Prakash, Dean (R&D), IIT (BHU)

### Organizing Secretary

Prof. Prasun K. Roy & Prof. Neeraj Sharma  
School of Bio-Medical Engineering  
IIT (BHU) Varanasi

### Organizing Committee

Prof. Vikash Dubey, Dr RK Singh, Dr NS Rajput, Dr Shiru Sharma,  
Prof K Sairam, Dr SK Rai, Dr Marshal, Dr P Paik, Dr S Mahto, Dr Jac Fredo

### Data Analytics & Predictive Technology

### National Mission on Cyber-Physical Systems

The National Mission on Cyber-Physical Systems (NM-ICPS) is a flagship program of Dept. of Science & Technology (DST), Ministry of Science & Technology (MoS&T), Govt. of India. ICPS is identified as a frontier 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 a 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.

The Interdisciplinary Data Analytics and Predictive Technologies (IDAPT) is regarded a most prominent fields for impacting socio-economic issues. At IIT (BHU) these 5 verticals are under IDAPT:

- (1) Health & Family Welfare
- (2) Power
- (3) Defence
- (4) Road Transport & Highways
- (5) Telecommunications,

They will catalyse the creation of skilled young researchers, engineers, and entrepreneurs, and becoming a key contributor to realize a vision of "Digital India", "Innovate in India", and "Make in India" and augment the U.N. Global Goals: "Good Health & Wellbeing" and "Industry, Innovation, Infrastructure".

## A Selection of Speakers

	<b>Prof. Marcus Kaiser,</b> Professor of Neuroinformatics, Sir Peter Mansfield Imaging Centre, University of Nottingham, Nottingham, U. K.
	<b>Prof. Wojtek Goscinski</b> Professor, Monash eResearch Centre; Monash University, Melbourne, Australia
	<b>Prof. Senthil Kumaran</b> Professor, MRI Centre, A.I.I.M.S., New Delhi
	<b>Prof. Madhusudhan KS</b> Professor, Deptt. of Radio-Diagnosis, A.I.I.M.S., New Delhi
	<b>Prof. John P. John</b> Professor, Centre for Brain Mapping, National Institute of Mental Health & Neuroscience (NIMHANS), Bangalore
	<b>Prof. Baljinder Singh,</b> Professor, Deptt. of Nuclear Medicine, Postgraduate Instt. of Medical Education & Research (PGIMER), Chandigarh
	<b>Prof. Ashish Verma,</b> Head, Deptt. of Radiology & Imaging, Institute of Medical Sciences Hospital B.H.U., Varanasi.
	<b>Prof. Ashutosh Mukherji,</b> Head, Deptt. of Radiation Oncology, Tata Cancer Centre Varanasi.
	<b>Dr. Amit Mehndiratta,</b> Associate Professor, Centre of Bio-Medical Engineering, I.I.T., New Delhi
	<b>Dr. Krishna Miyapuram</b> Associate Professor, Centre for Cognitive Science, I.I.T., Gandhinagar

## Advances in Medical Imaging

### Online Short-term Course

March 15-19, 2021

At IIT (BHU), Varanasi



### Supported by

**TECHNOLOGICAL INNOVATION HUB  
ON  
INTER-DISCIPLINARY DATA ANALYTICS  
&  
PREDICTIVE TECHNOLOGY  
(IDAPT)**

**Sponsored by  
Dept. of Science & Technology,  
Ministry of Science & Technology,  
Govt. of India**



## THEME OF SHORT-TERM COURSE

The first interface of the public with healthcare system is diagnosis, in which Medical Imaging, being 3D and non-invasive, is pre-eminent. Moreover, imaging facility (hardware or software) forms the most cost-intensive field of medical devices, and data and imaging analysis is a critical part.

Thus, the urgent need of Indian expertise is to have know-how here so that the national scenario can become self-sufficient broadly. This week-long intensive course will include lectures and lab/demo sessions, including hand-on training.

Topics shall cover: **Current Advancements in Higher end Techniques and Analysis, as MRI, fMRI, EEG & PET imaging, with Analytics, Radiomics and Predictive aspects.** The event is an excellent platform to keep up with **State-of-art Techniques of Structural, Functional and Biochemical Imaging.**

We cordially invite you to register for the event.

## Indian Institute of Technology (BHU)

Having celebrated 100 years of Service to the Nation, the Indian Institute of Technology (BHU) Varanasi is an Institute of National Importance, created by an Act of the Parliament, through the Institutes of Technology (Amendment) Act, 2012. Previously, IIT (BHU) was known as IT, BHU, and was founded in 1919.

IIT (BHU) has 14 departments, 3 inter-disciplinary schools, a number of Centres of Excellence, the high-end Central Instrumentation Facility, and the first supercomputer designed and built under National Supercomputing Mission, Govt. of India

## School of Bio-Medical Engineering (SBME)

UGC has established the School in 5th Five Year Plan in 1978. SBME is involved in Teaching, Research, Innovation and Entrepreneurship in cooperation with Instt. of Medical Sciences Hospital (BHU) and with other departments of IIT(BHU).

SBME offers Integrated Dual Degree (BTech+MTech) program, Master of Technology (M.Tech.), PhD, Post-doc & Visiting student opportunity. The School has active research areas in various areas of Bio-Engineering, Biomedical Technology, Medical Device Design, Clinical Computing, and Diagnostic/Therapeutic Imaging.

## ELIGIBILITY

The conference is open mainly to faculty members, scientists, medical/health-care professionals, engineers, computer/data experts, consultants, mathematicians, industry personnel, psychologists, postdoc scholars, or students of Bachelor/Master/PhD or MBBS//PG courses, etc.

## REGISTRATION FEE

**For students:**

**UG / PG students (incl. PhD students):** Rs. 500  
(refunded after the course)

**For faculties, scientists and post docs:**

Rs. 1000/- (non-refundable)  
Industry: 4000/- (non-refundable)

**Payment may be made by one of the following**

**(i)** Demand Draft In favor of I-DAPT-HUB-FOUNDATION  
Payable at SBI, IIT(BHU) Varanasi.

**(ii)** For online payment

Branch: SBI, IIT(BHU) Varanasi  
IFSC Code: SBIN0011445  
Name: I-DAPT-HUB-FOUNDATION  
Account No: 39818711510

**Note:** Mention payment details in the registration form

## IMPORTANT DATES

**Opening of Registration: 22 February, 2021**  
**Last Date of Registration: 10 March 2021**

## Coordination

Prof. Prasun Roy & Prof. Neeraj Sharma  
School of Bio-Medical Engineering,  
Indian Institute of Technology (BHU), Varanasi.  
Email: [pkroy.bme@iitbhu.ac.in](mailto:pkroy.bme@iitbhu.ac.in); [neeraj.bme@iitbhu.ac.in](mailto:neeraj.bme@iitbhu.ac.in)

**Note: e-Certificates will be provided**

## Advances in Medical Imaging

**March 15-19, 2021**

### Registration Form

1. Name (in block letters):
2. Designation/Occupation:
3. Organization:
4. Address for communication with mobile number and e-mail:  
  
Pin: \_\_\_\_\_ Mobile. No: \_\_\_\_\_  
Fax no: \_\_\_\_\_ E-mail: \_\_\_\_\_
5. Academic Qualifications:
6. How this participation is useful for you:
  
7. Payment details (amt., date, payment receipt no. Attach scanned copy of DD/Online payment)

Place:

Date:

Signature of the applicant

**Please Note:** Kindly send the soft copy of the form to [divvanshus.ms@itbhu.ac.in](mailto:divvanshus.ms@itbhu.ac.in) with cc.to [pratikpurohit.rs.bme17@iitbhu.ac.in](mailto:pratikpurohit.rs.bme17@iitbhu.ac.in)

Photocopy of the form may also be used.

The decision about the final selection is by course conveners/organizing committee.

**Participants selected will be informed by 12 March 2021**

<b>Monday, 15.3.21</b>	
10:00 am – 10:30 am	<b>Inaugural Function</b>
10:30 am – 11:30 am	<b>Inaugural Lecture:</b> High Performance Computing: Accessibility and Applicability in Neuroimaging and Life Science ( <i>Wojtek Goscinski, Monash University, Melbourne, Australia</i> )
11:30 am-11:45 am	<b>Break</b>
11:45 am-12:45 pm	Data Analytics of Medical Imaging: Glimpses of an Evolving Discipline ( <i>Neeraj Sharma, I.I.T. (B.H.U.), Varanasi</i> ).
12:45 pm-2:30 pm	<b>Lunch</b>
2:30 pm-4:30 pm	► Hands-on Training session (Online Laboratory). <i>Basics of Medical Imaging Platforms</i>
<b>Tuesday, 16.3.21</b>	
10:00 am- 11:00 am	Electrical Field Imaging: EEG-Acquisition, Analysis, Modelling ( <i>KPMiyapuram, IIT, Gandhinagar</i> )
11:00 am-12:00 noon	Interventional Therapy using Multi-modal Imaging ( <i>Madhusudhan KS, A.I.I.M.S., New Delhi</i> )
12:00 noon-12:15 pm	<b>Break</b>
12:15 am-1:15 pm	Blood Flow Imaging: Progress and Prospects of Quantitative Analysis and Predictive Prognosis. ( <i>Amit Mehndiratta, I.I.T., New Delhi</i> ).
1:15 pm-2:30 pm	<b>Lunch</b>
2:30 pm-4:30 pm	► Hands-on Training session (Online Lab.). <i>Flow Imaging: Blood vessel, Capillary, Tissue</i>
<b>Wednesday, 17.3.21</b>	
10:00 am- 11:00 am	Radiomics: Tensor Imaging for Personalized Medicine ( <i>Prasun K. Roy, I.I.T. (B.H.U.), Varanasi</i> )
11:00 am-12:00 noon	Interaction of Imaging in Radiation Oncology with Personalized Cancer Treatment ( <i>Ashutosh. Mukerji, Tata Cancer Institute, Varanasi</i> )
12:00 noon-12:15 pm	<b>Break</b>
12:15 am-1:15 pm	Positron Emission Tomographic Imaging: Acquisition, Analysis, Modelling ( <i>Baljinder Singh, Post-Graduate Intitiute of Medical Education &amp; Research (PGIMER), Chandigarh</i> )
1:15 pm-2:30 pm	<b>Lunch</b>
2:30 pm-4:30 pm	► Hands-on Training session (Online Lab.): <i>PET Tomography: Biochemical Image Analysis</i>
<b>Thursday, 18.3.21</b>	
10:00 am- 11:00 am	Functional MRI: Resting and Task-based Studies in Brain Disorders ( <i>John P. John, National Institute of Mental Health &amp; Neurosciences (NIMHANS), Bangalore</i> )
11:00 am-12:00 noon	Application of Machine Learning in Medical Imaging ( <i>A R Jack Fredo, I.I.T. (B.H.U.), Varanasi</i> )
12:00 noon-12:15 pm	<b>Break</b>
12:15 am-1:15 pm	Clinical Applications of Functional Imaging ( <i>Senthil Kumaran, A.I.I.M.S., New Delhi</i> )
1:15 pm-2:30 pm	<b>Lunch</b>
2:30 pm-4:30 pm	► Hands-on Training session (Online Lab.). <i>fMRI: Experimental Paradigm Design/Analysis</i>
<b>Friday, 19.3.21</b>	
10:00 am-11:15 am	Ten questions unsolved or evolving in multimodal imaging : Food for thought for engineers. ( <i>Ashish Verma, Institute of Medical Sciences (B.H.U.), Varanasi</i> )
11:15 am-11:30 am	<b>Break</b>
11:30 am-12:45 pm	► Hands-on Training session (Online Laboratory). <i>Diffusion Tensor Imaging analysis.</i>
12:45 pm-2:45 pm	<b>Lunch</b>
2:45 pm-4:00 pm	► Hands-on Training (Online Lab.). <i>Fibre Tractography: Deterministic Vs. Probabilistic</i>
4:00 pm – 5.00 pm	<b>Concluding Lecture:</b> Planning Invasive & Non-invasive Brain Network Disorder Treatment using Computational Methods ( <i>Marcus Kaiser, University of Nottingham, Nottingham, U. K. )</i>
5:00 pm – 5:30 pm	<b>Valedictory.</b>