

## ORGANIZING TEAM

### Patron and Advisor

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

### Chairman

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

### Coordinator

Dr. N. S. Rajput  
Electronics Engg.

### Co-Coordinator

Dr. Ajay Pratap  
Comp. Sc. & Engg.

IIT (BHU) Varanasi

### Organizing Committee

Prof. P.K Roy; Prof. Vikash Dubey;  
Dr. R. K Singh; Dr. Ankit Gupta

## NM-ICPS and IDAPT

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 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. It will have modernization and digitalization of socio-technical systems and services. The Interdisciplinary Data Analytics and Predictive Technologies (IDAPT) 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 namely **Telecommunications**, **Power**, **Road Transport and Highways**, **Defense Research and Development**, and **Health and Family Welfare** have been identified under IDAPT. The endeavor shall catalyze 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".

## KEY SPEAKERS



### Suhas Mansingh

VP (Engineering),  
Cisco Systems



### Prof. Shiho Kim

Director  
Yonsei Institute of Convergence  
technology, South Korea



### Prashant Anand

Distinguished Engineer  
NGN, Cisco Systems



### Laxmi Mukund

Distinguished Engineer  
NGN, Cisco Systems



### Raghu Kulkarni

Technical Leader  
Security, Cisco Systems



### Prof. Dhananay Singh

CTO, Vestella Inc.  
Hankuk University of Foreign  
Studies (HUFS), Seoul, South Korea

6 more distinguished speakers are scheduled.

# Next Generation Networks (NGN) & AI for Data Analytics and Predictive Technology Applications

**(NGN & AI for DAPT)**

One Week  
Online Short-term Course  
With live hands-on  
(March 22-27, 2021)

Hosted by



in support with



**TLC**  
**IIT (BHU)**



and

**A TECHNOLOGICAL INNOVATION HUB ON  
INTERDISCIPLINARY DATA ANALYTICS AND  
PREDICTIVE TECHNOLOGY  
(IDAPT)**

## COURSE THEME

Next Generation Networks (NGN) & AI for Data Analytics and Predictive Technology Applications is a One Week (6-Day) online course that includes invited lectures and tutorials pertaining to a wide range of topics intersecting NGN and AI for Data Analytics and Predictive Technologies. Attendees would be able to better understand the relevant tools and technologies and how they are integrated in a complete end to end solution for industrial and societal applications. The topic would range from Data Science, Optimizations, Communication Engineering and Data Analytics, Modelling, Prediction, Feature Extraction and Estimation, Machine Learning Techniques, Sensors, Actuators for complete cyber physical system design along with variety applications, and Case Studies demonstrating the power of Data Analytics and Prediction using NGN and AI. The course will also include hands-on sessions, tutorials and will be organized in interactive mode.

## CERTIFICATE

E-Certificate will be provided to Attendees

## INDIAN INSTITUTE OF TECHNOLOGY (BHU)

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, it was known as IT, BHU. Founded in 1919 as the Banaras Engineering College, it became the Institute of Technology, Banaras Hindu University in 1968. IIT (BHU) Varanasi has 14 departments And 3 inter-disciplinary schools. IIT(BHU) Varanasi has been able to build up the necessary infrastructure for carrying out advanced research and has been equipped with state-of-the-art engineering and scientific instruments. The city of Varanasi is well connected by road, rail and air with all the important places of India. Regular flights are there from Varanasi to Delhi, Mumbai, Chennai, Bangalore, Kolkata, Khajuraho and Lucknow. The IIT(BHU) campus is only 10 Km from Varanasi railway station, 20 Km from Deen Dayal Updhyay (old name Mughalsarai) railway station and 35 Km from the Varanasi airport.

## ELIGIBILITY

The Short-term Course is open to faculty members, engineers and consultants, scientists, research scholars, and students perusing careers in any discipline requiring the development of cyber physical systems for application control using AI, NGN, Computer Science or Data Analytics.

## REGISTRATION FEE

- **For faculty, scientist and post doctoral fellow:** Rs. 1000/- (non-refundable)
- **Industry:** 4000/- (non-refundable)
- **For UG, PG, PhD students :** No Registration Charge

Payment may be made by one of the following methods:

- 1) Demand draft In favor of I-DAPT-HUB-FOUNDATION Payable at SBI, IIT(BHU), Varanasi.
- 2) Online payment to:  
Branch: SBI, IIT(BHU) Varanasi  
IFSC Code: **SBIN0011445**  
Name: I-DAPT-HUB-FOUNDATION  
Account No: **39818711510**

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

## IMPORTANT DATES

Opening of Registration: **March 01, 2021 (Monday)**  
Last Date of Registration: **March 21, 2021 (Sunday)**

## CONTACT

Dr. N. S. Rajput  
Department of Electronics Engineering  
Indian Institute of Technology (BHU)  
Varanasi, UP-221005  
[nsrajput.ece@iitbhu.ac.in](mailto:nsrajput.ece@iitbhu.ac.in)

## Next Generation Networks (NGN) & AI for Data Analytics and Predictive Technology Applications

**March 22-27, 2021**

## REGISTRATION FORM

[\(Online Link\)](#)

1. Name (in block letters):

Pin:

Mobile. No:

Fax no:

E-mail:

5. Academic Qualifications:

6. What is the relevance of this course in your academic/professional life?

7. Payment details (DD Number/Online payment reference with amount and date):

Place:

Date:

Signature of the applicant

## NOTE

- Please send the soft copy of the completed form to [nsrajput.ece@iitbhu.ac.in](mailto:nsrajput.ece@iitbhu.ac.in) and CC [idapt.telecom@gmail.com](mailto:idapt.telecom@gmail.com), mentioning "NGN & AI for DAPT" in the subject line by **March 21, 2021**
- Photocopy of the form may also be used.
- The decision about the final selection is by course convener/organizing committee. Program schedule and other details will be sent on your registered mail itself. We encourage large scale participation, so please feel free to share the information further.
- E-Certificate will be provided to Attendees

**Suhas Mansingh**



Suhas Mansingh is the Vice President of Software development in the Service Provider Networking Group. Suhas has completed 22 years with Cisco and leads a team of around 1000 Software Engineers in India and Italy. His team in India and Italy is responsible for the software development of Routing Platforms (CRS, ASR9k, Access Platforms) and Optical Platforms (NCS2k,1k,4k). Suhas joined Cisco in 1999 through the acquisition of Cerent networks in Petaluma, CA. While in Cisco, USA he was responsible for the Control Plane and Network Automation team of the Optical Business Unit. Suhas moved to India in 2006 on an assignment tasked with the responsibility of setting up the optical team in India, post setting up the optical Software & Hardware team in India he took additional responsibility for Core Routing (CRS) team in India driving the development and FCS of CRS-X completely from his team in India. Post CRS-X FCS he picked up responsibilities for ASR9k and the access (903,920) teams along with his responsibilities for Optical and the Core Routing portfolio. Suhas has driven complete end to end Product development for Optical NCS2k, Rosco software along with products like CRS-X, NCS4k, NCS5k (Skywarp) and the Verizon Metro Optical Project. Prior to working at Cisco he worked at Nortel Networks in Ottawa, Canada and Wipro Systems in India. Suhas holds a B.Tech Degree from IIT Varanasi and Masters for University of Toronto, Canada in Networking and Communications, he holds two patents relating to automation of network provisioning and orchestration in Optical Networks.

## **DISTINGUISHED SPEAKERS**

**Prof. Shiho Kim**



Prof. Shiho Kim is directing Seamless Transportation Lab(<http://sites.google.com/site/shihoyonse/home>) and VR Lab ([vr.yonsei.ac.kr](http://vr.yonsei.ac.kr)) in Yonsei Institute of Convergence Technology. He found Cooperative Autonomous Vehicle research Center, a research center for development of autonomous vehicle and Intelligent Transportation System(ITS) supported SKT in 2017. His main research interest includes intelligent vehicles, Reinforcement learning, and virtual reality. Shiho Kim found RAVERS (Research center for Advanced Hybrid Electric Vehicle Energy Recovery System), which is a government-supported IT research center(ITRC) in 2009. He is also serving as the technical adviser of Grew Creative Lab, a company developing and providing technologies for mitigating simulator sickness of VR Headset and VR contents. Prior to this he had been working for LG research institute and he was a key contributor to System on Chip design. Shiho Kim is experienced in the patent process and invention development, He has published extensively in referred conferences and journals, and he has organized many major conferences as general chair or program chair. He got more than 50 patents and published more than 100 conference and journal papers. He was a chair of IEEE SSCS Seoul Chapter from 2013 to 2015, and a Chair of Vehicular Electronics technical Group in IEIE from 2013 to 2015.

**Prof. Dhananjay Singh**



Dhananjay Singh is a Full Professor/Director of ReSENSE Labs in the Department of Electronics Engineering and also served as Chair/ Head in the Division of Global Information Technology at Hankuk University of Foreign Studies (HUFS), Seoul, South Korea. He is the co-founder/CTO of Vestellalab.Inc. and MtoV.Inc., that are providing innovative solutions based on AI, Blockchain, IoT for Smart City. Before joining HUFS. He is the recipient of 2019 U.P. NRI award (Apravasi Bharatiya Ratna Puraskar) for the outstanding work in the field of Technology space.

**Sudhir Kayamkulangara**



Sudhir has over 24 years of experience in Telecommunications industry working with Tier-1 Equipment vendors and semiconductor companies. Prior to his current role, he worked at Intel Corp. focusing on developing technologies for LTE networks. His past experience includes the architecture of several carrier class switching and routing solutions in Motorola Inc and Alcatel Lucent. His current area of interest includes “Edge Computing”, “Segment Routing”, “xHaul Network” and “Network Modernisation”. He holds multiple patents in areas related to RAN technologies.



**Prashanth Anand**



Prashanth Anand is a Distinguished Engineer working in MIG group, Cisco Systems. He started his career with - Bhabha Atomic Research Centre (BARC) around 27 years back. He has worked in many Start-ups and Tier-1/2 Equipment vendors and semiconductor companies like Motorola, Intel, Juniper, Ericsson and Cisco. His significant contributions are in Carrier class ethernet switching(L2/L3), Data center fabric design, SDN/NFV, Mobile Service Chaining, Cloud SDN, Virtual Home Gateway, Cloud CPE & Enterprise Gateway, Multilayer Packet Optics TNC, SDN, Openflow, Cloud LB, Smart Services Router including Security services as well as L4-L7 session control Services. He is currently driving Cisco's leadership in 5G.

**Laxmi Mukund**



Laxmi's journey of about 20 years at Cisco includes developing microcontroller based networking platform and leading the routing and forwarding group with development of features like Netflow, BFD, ISSU, BGP PIC, LISP and Software Defined Access. Of late her focus has been on SDA design and deployments and the next generation enterprise platforms with features like Network Secure Access, BGP eVPN, VxLAN and SDA, Secure policy access, secure fabric, mac randomization has been her area of focus in the recent years.

**Prof. Madhusudan Singh**



Madhusudan Singh is an Assistant Professor/Director of ReBlockchain Group at ECIS, Woosong University, South Korea. He is actively involved in entrepreneurial endeavours in Blockchain Technologies with Artificial Intelligence, Information Security, and Autonomous vehicles. And in his career, he has worked as a senior engineer in the R&D division at Samsung Display, Korea, and Research Professor in YICT, Yonsei University, Korea. He serves as a series editor of the Blockchain Technologies in Springer Nature, IEEE Computer Society and ACM Distinguished speaker, a senior member of IEEE societies.

**Raghu**



Technical Leader - Customer Delivery and Engineering (Security) - at Cisco Bangalore. Closely involved in solving some of the most complex security challenges Cisco's customer face. Also part of the Cisco Team which develops security training content for our employees as part of Ninja Program. Co-Architect of the Security Experience Center (which is first of its kind in Cisco). His topics include Network Security, IoT Security, Container Security, Zero Trust Architecture and Blockchain.

**Nitin:**



Nitin is an intrapreneur with over 11 years of experience in Network Security. He currently works as a Technical Leader with Cisco Customer Experience Team. He is passionate about learning and creating new things, customer transformation and engagement, leading transition of technologies, architecting customer solutions, driving automation and innovation and spearheading product serviceability to deliver high quality customer centric services, solutions and products. His focus areas include cryptography and enterprise security.

**Bhavik:**



Bhavik Shah currently works in Cisco Security TAC and assists in Security Deployments in large Enterprise Networks. He has delivered training on IOT Hacking in Null Bangalore and also OWASP Seaside. His interests lie in IOT, and Digital Forensics and also delivered a talk on Network Forensics in Null. He has also conducted the first CTF for Cisco by contributing challenges on reversing and Binary Exploitation. He has been a Speaker for different Universities like SSN, Thapar, CUSAT by delivering talks on IOT and Application Security. He has keen Interest on Cyber Security and tries to explore new avenues by doing self-learning and Research.



**Vijay K. Shah**



Vijay K. Shah is a Research Assistant Professor in the Bradley Department of Electrical and Computer Engineering at Virginia Tech, and affiliated with Wireless@Virginia Tech. He is also a faculty member of Commonwealth Cybersecurity Initiative (CCI), a state-wide initiative to foster 5G wireless, autonomous systems, and cybersecurity research. He received his Ph.D. degree in Computer Science from University of Kentucky in 2019. His research interests include artificial intelligence (AI) for wireless networks, 5G and beyond networks, dynamic spectrum sharing (DSS), UAV communications and networking, mmWave communications, internet of things (IoT), age of information (AoI), vehicle-to-everything (V2X) networks, and networked music collaboration. He leads the development of Open Radio Access Network (O-RAN) enabled wireless network testbed at Virginia Tech. His research has been supported by several federal, state and industry grants, including NSF, DoD, ARL, CCI, Google, and AT&T Labs.

**Navin Singh Rajput**



Navin Singh Rajput is an Associate Professor in the Department of Electronics Engineering at Indian Institute of Technology (BHU), Varanasi, India. He has established the R&D and Technology Extension Laboratory for Networked Communication and Computation (NCC LAB) to support advanced systems for IoT, CPS and Robotics apart from many other key central facilities. He is the recipient of Ministry of Human Resource Development (MHRD), Govt. of India's prestigious national award "Teaching Innovator Award". He is the recipient of the IBM Faculty Award for \$10,000 and the NVIDIA Hardware Grant worth \$5,000 for the development of India's first Swachh Bharat (Clean India) Android App. He is also member of National Supercomputing Mission (NSM), Govt. of India, an Indian Grid Certification Authority for access to National and International supercomputing grid and Nodal Officer, National Knowledge Network (NKN).

His research interests include the design and development of smart sensors and systems in the IoT and CPS paradigm for smart city solutions especially gas sensing systems, advanced precision agriculture systems and robotics. He has authored the book "Blockchain for Smart City Applications (2020)" published by Springer Nature.

**Ajay Pratap**



Ajay Pratap is an Assistant Professor with the Department of Computer Science and Engineering, Indian Institute of Technology (BHU) Varanasi, India. Before joining IIT (BHU), he was associated with the Department of CSE, NITK Surathkal, India, as an Assistant Professor from December 2019 to May 2020. He worked as a Postdoctoral Researcher in the Department of Computer Science at Missouri University of Science and Technology, USA, from August 2018 to December 2019. He also has industrial experience working with Innovation Group, Dubai. His research interests include Cyber-Physical Systems, IoT-enabled Smart Environments, Statistical Learning, 5G, and beyond.

## [Online Registration Link](#)



### Short Term Course (with live Hands-on) on Next Generation Networks (NGN) & AI for Data Analytics and Predictive Technology Applications (A National Mission of Interdisciplinary Cyber Physical Systems (NM-ICPS) Initiative) (March 22 – 27, 2021)

Organized by

**Dr. N. S. Rajput (Coordinator), Associate Professor  
Department of Electronics Engineering, IIT(BHU)**

and

**Dr. Ajay Pratap (Co-Coordinator), Assistant Professor  
Department of Computer Science & Engineering, IIT (BHU)**



Day/Time	9:00 – 10:30 Hrs	10:30 – 12:00 Hrs		14:00 – 15:30 Hrs	15:30 – 17:00 Hrs
<b>Monday 22.03.2021</b>	Short Inauguration and Keynote Address By Prof. Shiho Kim	Keynote Address Mr. Suhas, VP (Engineering), Cisco & IITBHU Alumni		Cryptography for Networked Communication (Raghu and Nitin, Cisco)	
<b>Tuesday 23.03.2021</b>	Quantum Resistant Cryptography (Nitin, Cisco)			IoT Protocol Stack – Bluetooth Security and Sensor Networks (Bhavik, Cisco)	
<b>Wednesday 24.03.2021</b>	Data Analytics & Predictive Technology (Dr. NS Rajput)	Time Sensitive Networking (Prashant, Cisco)		Future Internet Architecture: Perspective, Challenges and Possible Solutions (Prof. DS, Korea)	
<b>Thursday 25.03.2021</b>	AI-Driven 5G and Beyond RAN (Prof. Vijay S, Virginia Tech )	IoT-enabled 5G networks: Graph Theory based Model (Dr. Ajay Pratap)		Smart IoT: Healthcare and Vehicle Data Monitoring and Analysis (Prof. DS, Korea)	
<b>Friday 26.03.2021</b>	Blockchain for Connected Vehicles (Prof. MS, Korea)	Industrial Management 4.0 and Hands-on (Prof. MS, Korea)		Mac Address Randomization for IoT Nodes (Laxmi, Cisco)	Computing Paradigms in NGN - Edge, Fog, Mist and Cloud (Sudhir, Cisco)
<b>Saturday 27.03.2021</b>	AI for Autonomous Vehicles (Prof. Shiho Kim, Korea)	* **		*Panel Discussion	**Valedictory