



Dated: December 20th, 2015

2015 IEEE CIS Winter School on Computational Intelligence

Indian Institute of Technology Kanpur, India – 208016

December 14th – 16th, 2015

I. Objective

The main objective of the school is to discuss the state of the art, challenges, applications and unsolved open problems in Computational Intelligence (CI). The school serves as a forum for students, research scholars, young faculty members and research professionals from different disciplines in academia and industry to interact and share their ideas. With the recent development of modern technologies, CI has demonstrated tremendous successful results in real life applications. The lectures will not only bring the theoretical concepts of learning, adaptation and optimization for the engineering students, but also introduce the cutting-edge techniques and applications in CI. It discusses the new directions for open research problems in CI. It helps to build an emerging international research community through exchange of information among various CI disciplines. The emerging trends in CI such as advancements in bioinformatics have potential to serve as a tool for human health monitoring. The ultimate attempt of this school is to create a global perspective from which the interdisciplinary domains can be benefited. The school avails an environment that is encouraging for researchers. We hope that school helps to provide the necessary skills and tools to each individual in the CI and their respective domain.

Venue: Indian Institute of Technology Kanpur, Kanpur, Uttar Pradesh, India - 208016

Date: December 14th -16th, 2015

Website: <http://www.iitk.ac.in/iil/ieeewinterschool/>

I. Highlights

“**2015 IEEE CIS Winter School on Computational Intelligence**” was organized by **Dr. Nishchal K. Verma**, *Associate Professor, Dept. of Electrical Engineering, IIT Kanpur, India* at **Indian Institute of Technology Kanpur, Kanpur, Uttar Pradesh, India** during December 14th – 16th, 2015. Series of keynotes and tutorials were delivered by distinguished professors and researchers on recent research around the central theme of “Computational Intelligence”.

Inaugural ceremony of winter school commenced at Outreach Auditorium, IIT Kanpur, India with traditional ceremony of lightening lamp by **Dr. Indranil Manna**, *Director, IIT Kanpur, India*, **Dr. Sankar K. Pal**, *Distinguished Scientist and Former Director, ISI Kolkata, India*, **Prof. S. P. Das**, *Head, Dept. of Electrical Engineering, IIT Kanpur, India*, **Dr. Nishchal K. Verma**, *Associate Professor, Dept. of Electrical Engineering, IIT Kanpur, India*, **Dr. J. Sarangapani**, *Distinguished Professor, Dept. of Electrical and Computer Engineering, Missouri University of Science and Technology, USA* and **Dr. A. K. Ghosh**, *Professor, Dept. of Aerospace Engineering, IIT Kanpur, India*. **Dr. Nishchal K. Verma**, *Associate Professor, Dept. of Electrical Engineering, IIT Kanpur, India*, welcomed the Chief Guest, keynote & invited speakers, experts and all participants. He introduced the main objective of winter school and urged to take active participation in the school. He invited honorable chief guest, **Dr. Indranil Manna**, *Director, IIT Kanpur, India*, to address the participants. He appreciated the efforts of **Dr. Nishchal K. Verma**, *Associate Professor, Dept. of Electrical Engineering, IIT Kanpur, India*, for organizing excellent school with the theme of today’s significance. He emphasized to adopt the latest technology in such a way that different disciplines can easily integrate together to solve real world problems. Day 1 of the school started from the introductory lecture by **Dr. Sandeep Paul**, *Associate Professor, Department of Physics & Computer Science, Dayalbagh Educational Institute, Agra, India*, on CI. He gave a brief summary to participants about definition, methods and applications of CI to familiarize the new participants willing to work in this area having different research backgrounds. Further, series of lectures on day 1 covered major constituents of CI namely neural networks, evolutionary algorithms, fuzzy systems, and hybrid intelligent systems. These lectures were delivered by **Dr. L. Behera**, *Professor, Dept. of Electrical Engineering, IIT Kanpur, India*, **Dr. Nishchal K. Verma**, *Associate Professor, Dept. of Electrical Engineering, IIT Kanpur, India* and **Dr. Rajneesh Sharma**, *Associate Professor, Dept. of Instrumentation and Control Engineering, NSIT Delhi, India*. For the refreshment of participants, tea breaks were arranged. It also served as an informal discussion session for the

participants. First keynote speech of the school was delivered by **Dr. Sankar K. Pal**, *Distinguished Scientist and Former Director, ISI Kolkata, India*. He discussed that how area of fuzzy has been evolved over past 50 years. Second keynote speech was delivered by **Dr. J. Sarangapani**, *Distinguished Professor, Dept. of Electrical and Computer Engineering, Missouri University of Science and Technology, USA* on Cyber-physical Systems (CPS) that is built from and depends upon the synergy of computational and physical components. He described the applications of CPS for real world scenarios like smart grid, smart transportation, smart buildings, smart medical technologies, next-generation air traffic management, advanced manufacturing, health management & diagnosis systems and system security & privacy. Next keynote speech was on the most exciting application area of CI i.e. Design of intelligent military systems by **Dr. A. K. Ghosh**, *Professor, Dept. of Aerospace Engineering, IIT Kanpur, India*. He addressed the current challenges in design of defense systems and role of CI based methodologies to handle it. Afternoon sessions were devoted to the applications of CI in control and automation. These lectures were delivered by **Dr. Ramprasad Potluri**, *Associate Professor, Dept. of Electrical Engineering, IIT Kanpur, India*, **Dr. S. R. Sahoo**, *Assistant Professor, Dept. of Electrical Engineering, IIT Kanpur, India* **Dr. Mangal Kothari**, *Assistant Professor, Dept. of Aerospace Engineering, IIT Kanpur, India* and **Dr. Rajneesh Sharma**, *Associate Professor, Dept. of Instrumentation and Control Engineering, NSIT Delhi, India*. At the end of the day, cultural event was organized at outreach auditorium followed by banquet dinner for all the participants and organizing members. Day 3 started with the invited speech of **Dr. Balasubramanian Jayaram**, *Associate Professor, Dept. of Mathematics, IIT Hyderabad, India* on Data analysis: a 3-D perspective. He highlighted the significance of CI in dealing modeling, scaling, and heterogeneous issues of today's real world data. Several lectures on the applications of CI in computer vision and pattern recognition were also delivered by **Dr. Tanaya Guha**, *Visiting Professor, Dept. of Electrical Engineering, IIT Kanpur, India*, **Dr. Gaurav Pandey**, *Visiting Professor, Dept. of Electrical Engineering, IIT Kanpur, India*, and **Dr. A. K. Deb**, *Associate Professor, Dept. of Electrical Engineering, IIT Kharagpur, India*. Afternoon session was started with keynote speech of **Dr. Karmeshu**, *Professor, School of Computer & Systems Sciences, JNU, Delhi, India*. Certificates were also distributed to the participants. In total, 14 tutorials, 4 keynote speeches and one invited speech from renowned experts, scientists and researchers were organized. Approximately 105 participants including research scholars from various engineering colleges had participated. The winter school at IIT Kanpur was a great success, and we look forward to the next Winter School in 2017.

II. Coordinator



Dr. Nishchal K. Verma

Associate Professor, Dept. of Electrical Engineering

Indian Institute of Technology Kanpur, India

III. Keynote Speakers



Prof. Sankar K. Pal

Distinguished Scientist and Former Director,

Indian Statistical Institute, Kolkata, India

Title: 50 Years of Fuzzy Sets: Data to Knowledge



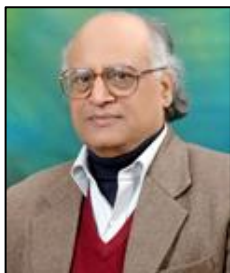
Prof. Jagannathan Sarangapani

Rutledge Emerson Distinguished Professor,

Dept. of Electrical and Computer Engineering,

Missouri University of Science and Technology, USA

Title: Cyber-physical Systems: Event Triggered Control and Security



Prof. Karmeshu

Professor and Former Dean,

School of Computer & Systems Sciences, JNU, Delhi, India

Title: Computational Neuroscience



Prof. A. K. Ghosh

Professor, Dept. of Aerospace Engineering,

Indian Institute of Technology Kanpur, India

Title: Making Military Defense More Intelligent

IV. Speakers



*Prof. L. Behera
IIT Kanpur, India*



*Dr. Nishchal K. Verma
IIT Kanpur, India*



*Dr. A. K. Deb
IIT Kharagpur, India*



*Dr. S. R. Sahoo
IIT Kanpur, India*



*Dr. Ramprasad Potluri
IIT Kanpur, India*



*Dr. Sandeep Paul
DEI, Agra, India*



*Dr. Rajneesh Sharma
NSIT Delhi, India*



*Dr. Tanaya Guha
IIT Kanpur, India*



*Dr. Mangal Kothari
IIT Kanpur, India*



*Dr. Gaurav Pandey
IIT Kanpur, India*



*Dr. Balasubramanian Jayaram
IIT Hyderabad, India*

V. List of Participants in Winter School

Sl. No	Name of participant	Designation	Organization	Email ID
1	Subhra Sarkar	Research Scholar	IIT Delhi, India	subhra.iitd@gmail.com
2	Arnapurna Panda	Research Scholar	IIT Bhubaneswar, India	arnapurna.math@gmail.com
3	Rahul K. Vijay	Research Scholar	MNIT Jaipur, India	2014rec9004@mnit.ac.in
4	Urvashi Shukla	Research Scholar	MNIT Jaipur, India	2014REC9001@mnit.ac.in
5	Bodhibrata Mukhopadhyay	Research Scholar	IIT Delhi, India	bodhibrata@gmail.com
6	Brajesh Varshney	Professor	Kanpur Institute of Technology, India	bv@kit.ac.in
7	Vishal Kumar Jaiswal	Research Scholar	IEST Shibpur, India	vjvishal66@gmail.com
8	Tarun Kumar	Research Scholar	IIT Indore, India	phd1501201002@iiti.ac.in
9	Ganesh Babu C	Assistant Professor	Manipal Institute of Technology, India	ganeshbabu.c@manipal.edu
10	Sanjeev Kumar Yadav	Assistant Professor	HBTI Kanpur, India	sanjeevyadav10@rediffmail.com
11	Neeraj Kohli	Research Scholar	NSIT Delhi, India	nks1977@gmail.com
12	Vishal	Research Scholar	NIT Jalandhar, India	vishalvishnoi07@gmail.com
13	Saiyma Fatima Raza	Research Scholar	VNIT, Nagpur, India	saiyma.fatima.raza@gmail.com
14	Lalit Mohan Joshi	Research Scholar	BTKIT Dwarahat, India	lalitm.joshi09@gmail.com
15	Abeg Kumar Jaiswal	Research Scholar	ISM Dhanbad, India	abegjaiswal2014@gmail.com
16	Abhishek Chandra	Research Scholar	ISM Dhanbad, India	abhishekchandra.it@gmail.com
17	Jayraj Singh	Research Scholar	ISM Dhanbad, India	jayrajsinghagra@gmail.com
18	Waseem Ahmad	Research Scholar	Aligarh Muslim University, India	waseemahmad.ahmad@gmail.com
19	Nadeem Akhtar	Assistant Professor	Aligarh Muslim University, India	nadeemakhtar@zhcet.ac.in
20	S. Balaji	Research Scholar	ANNA University, India	skbalaji28@gmail.com
21	Azmath Mohamad	Manager	Groupon, India	amohamad@groupon.com
22	Saji Mathew	Associate Professor	IIT Madras, India	saji@iitm.ac.in
23	Surya Kameswari Uduga	Research Scholar	Acharya Nagarjuna University, India	u.suryakameswari@gmail.com,
24	Ashish Chandiok	Research Scholar	Dayalbagh Educational Institute, Agra, India	achandiok@gmail.com
25	Sukeeratpal Syan	Research Scholar	Thapar University, Patiala, India	sukeerats@gmail.com

26	Manash Hazarika	Research Scholar	Jadavpur University, India	memhazarika12@rediffmail.com
27	Yogesh Gupta	Research Scholar	Dayalbagh Educational Institute, Agra, India	er.yogeshgupta@gmail.com
28	Varun Krishna	Scientist	DRDO, India	varunkrishna007@gmail.com
29	Sandeep Paul	Associate Professor	Dayalbagh Educational Institute, Agra, India	spaul.dei@ieee.org
30	Sapna Katiyar	Research Scholar	Jamia Millia Islamiya, New Delhi, India	sapna_katiyar@yahoo.com
31	Rohit Babu	Research Scholar	ISM Dhanbad, India	rohit.babu_2014@ee.ism.ac.in
32	Arivudainambi	Associate Professor	ANNA University, India	arivu@annauniv.edu
33	Ritu Raj	Research Scholar	IIT Kharagpur, India	riturajsam@gmail.com
34	Rakesh Ranjan	Research Scholar	IIT Guwahati, India	rrakesh0605@gmail.com
35	Jagu Sinivasa Rao	Lecturer	RGUKT Nuzvid, Nuzvid, India	jagusrao@rgukt.in
36	Reshma Khemchandani	Assistant Professor	South Asian University, India	reshma.khemchandani@sau.ac.in
37	Santosh K. Verma	Research Scholar	IIT BHU, Varanasi, India	santosh.rs.eee13@iitbhu.ac.in
38	Sundara Kantham	Assistant Professor	Thiagarajar College of Engineering, India	kskcse@tce.edu
39	Vasundhara Mahajan	Assistant Professor	SVNIT Surat, India	vasu.daygood@gmail.com
40	Anand Darji	Assistant Professor	SVNIT Surat, India	add@eced.svnit.ac.in
41	Apurva Kumari	Research Scholar	BITS PILANI, Hyderabad Campus, India	kumari.apurva198@gmail.com
42	Lokendra Singh Umrao	Research Scholar	IIT BHU, Varanasi, India	lokendra.rs.cse12@iitbhu.ac.in
43	S. Kayalvizhi	Research Scholar	NIT Warangal, India	kayaleee89@gmail.com
44	Kandi Haribabu	Research Scholar	IISST, India	hari.friends.4u@gmail.com
45	Sunanda P Ghanegaonkar	Assistant Professor	College of Engineering, Pune, India	spg.elec@coep.ac.in
46	Ch Naveen	Research Scholar	VNIT Nagpur, India	naninaveen.ch@gmail.com
47	Banu Rekha B	Research Scholar	PSG College of Technology, India	bbr@bme.psgtech.ac.in
48	Soumya Sen Gupta	Research Scholar	IIT Delhi, India	soumyasengupta1986@gmail.com
49	Vani Rajasekar	Research Scholar	Kongu Engineering College, India	vanikecit@gmail.com
50	Sathya K	Research Scholar	Kongu Engineering College, India	pearlhoods@gmail.com
51	Abhishek Kumar	Research Scholar	IIT BHU, Varanasi, India	abhishek.kumar.eee13@iitbhu.ac.in
52	Pratik Chaturvedi	Research Scholar	DTRL, DRDO, India	prateek@dtrl.drdo.in

53	Premalatha J	Assistant Professor	Kongu Engineering College, India	jpremalatha1969@gmail.com
54	Remya Kommadath	Research Scholar	IIT Guwahati, India	remya@iitg.ernet.in
55	Tarun Maini	Research Scholar	IIT BHU, Varanasi, India	tmaini.rs.eee13@iitbhu.ac.in
56	Mangal Kothari	Associate Professor	IIT Kanpur, India	mangal@iitk.ac.in
57	Nishchal K. Verma	Associate Professor	IIT Kanpur, India	Nishchal@iitk.ac.in
58	Rajesh Purkait	Research Scholar	ISM Dhanbad, India	rajesh.purkait86@gmail.com
59	Shahab Saquib	Student	Aligarh Muslim University, India	saquib.zhcet@gmail.com
60	Venkataresh babu Kuppili	Assistant Professor	NIT Goa, India	vnareshiitd@gmail.com
61	Aditi Sharan	Assistant Professor	Jawaharlal Nehru University, India	aditisharan@gmail.com
62	Swati Aggarwal	Assistant Professor	NSIT Delhi, India	swati1178@gmail.com
63	Jamuna Kanta Sing	Professor	Jadavpur University, India	jkking@ieee.org
64	Reshma Khemchandani	Assistant Professor	South Asian University, India	reshma.khemchandani@sau.ac.in
65	Indranil Manna	Director	IIT Kanpur, India	director@iitk.ac.in
66	S. P. Das	Head EE	IIT Kanpur, India	spdass@iitk.ac.in
67	Sankar K. Pal	Professor	ISI Kolkata, India	Sankar@isical.ac.in
68	Jagnathan Sarangapani	Professor	Missouri University Of Science And Technology, USA	sarangap@mst.edu
69	A. K. Ghosh	Professor	IIT Kanpur, India	akg@iitk.ac.in
70	Balasubramanian Jayaram	Associate Professor	IIT Hyderabad, India	jbala@iith.ac.in
71	Karmeshu	Professor	Jawaharlal Nehru University, India	karmeshu@mail.jnu.ac.in
72	L. Behera	Professor	IIT Kanpur, India	lbehera@iitk.ac.in
73	Animesh Biswas	Professor	IIT Kanpur, India	abiswas@iitk.ac.in
74	Rajneesh Sharma	Associate Professor	NSIT Delhi, India	raj_mgopal@rediffmail.com
75	Mangal Kothari	Assistant Professor	IIT Kanpur, India	mangal@iitk.ac.in
76	Gaurav Pandey	Visiting Professor	IIT Kanpur, India	gpandey@iitk.ac.in
77	Tanaya Guha	Visiting Professor	IIT Kanpur, India	tanaya@iitk.ac.in
78	A. K. Deb	Associate Professor	IIT Kanpur, India	alokkanti@ee.iitkgnp.ernet.in
79	K. S. Venkatesh	Professor	IIT Kanpur, India	venkats@iitk.ac.in

80	Y. N. Singh	Professor	IIT Kanpur, India	ynsingh@iitk.ac.in
81	S. Chakrabarti	Associate Professor	IIT Kanpur, India	saikate@iitk.ac.in
82	Deepu Philip	Associate Professor	IIT Kanpur, India	dphilip@iitk.ac.in
83	M.K. Agrawal	DRM	Indian Railways, India	drmsee13@gmail.com
84	Sujeet Mishra	Director	RDSO, Ministry of Railways, India	mishrasujeet@gmail.com
85	Sandeep Anand	Assistant Professor	IIT Kanpur, India	asandeep@iitk.ac.in
86	Neeru Chhabra	Research Engineer	IIT Kanpur, India	neeru@iitk.ac.in
87	Rahul K. Sevakula	Research Scholar	IIT Kanpur, India	srahulk@iitk.ac.in
88	Narendra Kumar Dhar	Research Scholar	IIT Kanpur, India	nardhar@iitk.ac.in
89	Sonal Dixit	Research Scholar	IIT Kanpur, India	dsonal@iitk.ac.in
90	Aquib Mustafa	M. Tech. Student	IIT Kanpur, India	aquibm@iitk.ac.in
91	Ocean Yadav	M. Tech. Student	Banasthali University, India	ocean@iitk.ac.in
92	Teena Sharma	M. Tech. Student	Banasthali University, India	teenas@iitk.ac.in
93	Akhilesh Raj	M. Tech. Student	IIT Kanpur, India	akhilraj@iitk.ac.in
94	Padmini Singh	Research Scholar	IIT Kanpur, India	padminis@iitk.ac.in
95	Anuj Nandanwar	Research Scholar	IIT Kanpur, India	anujnand@iitk.ac.in
96	Chinmay	M. Tech. Student	IIT Kanpur, India	shinde.chinmay04@gmail.com
97	Shreedharkumar D. Rajurkar	M. S. (R) Student	IIT Kanpur, India	shreedr@iitk.ac.in
98	Vikas Singh	Research Scholar	IIT Kanpur, India	vikkyk@iitk.ac.in
99	Vibhu Tripathi	Research Scholar	IIT Kanpur, India	vibhukt@iitk.ac.in
100	Soumya Thomas	M. Tech. Student	IIT Kanpur, India	soumyat@iitk.ac.in
101	Rekha Raja	Research Scholar	IIT Kanpur, India	rekhar@iitk.ac.in
102	Ajay Srivastava	Project Staff	IIT Kanpur, India	ajajks@iitk.ac.in

VI. Schedule of Winter School

Day 1: 14/12/2015 (Monday)	
09:30 Onwards	Registration (Outreach Foyer)
09:30 - 10:10	High Tea (Outreach Foyer)
10:10 - 11:00	Tutorial 1 (Outreach Auditorium) (Speaker: Dr. Sandeep Paul) (Chair: Dr. L. Behera)
11:00 - 11:50	Tutorial 2 (Outreach Auditorium) (Speaker: Dr. Sandeep Paul) (Chair: Prof. L. Behera)
11:50 - 12:10	Tea / Coffee break (Outreach Foyer)
12:10 - 13:00	Tutorial 3 (Outreach Auditorium) (Speaker: Prof. L. Behera) (Chair: Dr. Sandeep Paul)
13:00 - 14:30	Lunch Break (Outreach Lawn)
14:30 - 15:20	Tutorial 4 (Outreach Auditorium) (Speaker: Prof. L. Behera) (Chair: Dr. Sandeep Paul)
15:20 - 16:10	Tutorial 5 (Outreach Auditorium) (Speaker: Dr. Nishchal K. Verma) (Chair: Dr. Rajneesh Sharma)
16:10 - 17:00	Tutorial 6 (Outreach Auditorium) (Speaker: Dr. Rajneesh Sharma) (Chair: Dr. S. R. Sahoo)
17:00 - 19:00	Welcome Reception (Outreach Foyer)

Day 2: 15/12/2015 (Tuesday)	
08:30 Onwards	Registration (Outreach Foyer)
09:00 - 09:30	Inaugural Ceremony (Outreach Auditorium) Chief Guest: Prof. Indranil Manna, <i>Director, IIT Kanpur</i>
09:30 - 10:00	High Tea (Outreach Foyer)

10:00 - 11:00	<p align="center">Keynote Speech 1 (Outreach Auditorium) (Keynote Speaker: Prof. Sankar K. Pal) (Chair: Prof. A. K. Ghosh) <i>Title: 50 Years of Fuzzy Sets: Data to Knowledge</i></p>
11:00 - 12:00	<p align="center">Keynote Speech 2 (Outreach Auditorium) (Keynote Speaker: Prof. Jagannathan Sarangapani) (Chair: Prof. A. K. Ghosh) <i>Title: Cyber-physical Systems: Event Triggered Control and Security</i></p>
12:00 - 12:15	<p align="center">Tea / Coffee Break (Outreach Foyer)</p>
12:15 - 13:15	<p align="center">Keynote Speech 3 (Outreach Auditorium) (Keynote Speaker: Prof. A. K. Ghosh) (Chair: Dr. S. R. Sahoo) <i>Title: Making Military Defense More Intelligent</i></p>
13:15 - 14:30	<p align="center">Lunch Break (Outreach Lawn)</p>
14:30 - 15:20	<p align="center">Lecture 7 (Outreach Auditorium) (Speaker: Dr. Rajneesh Sharma) (Chair: Dr. Ramprasad Potluri)</p>
15:20 - 16:10	<p align="center">Lecture 8 (Outreach Auditorium) (Speaker: Dr. Ramprasad Potluri) (Chair: Dr. Rajneesh Sharma)</p>
16:10 - 16:20	<p align="center">Tea / Coffee Break (Lecture Hall Foyer)</p>
16:20 - 17:10	<p align="center">Lecture 9 (Outreach Auditorium) (Speaker: Dr. S. R. Sahoo) (Chair: Dr. Ramprasad Potluri)</p>
17:10 - 18:00	<p align="center">Lecture 10 (Outreach Auditorium) (Speaker: Dr. Mangal Kothari) (Chair: Dr. S. R. Sahoo)</p>
18:15 - 19:45	<p align="center">Cultural Programme (Outreach Auditorium)</p>
19:45	<p align="center">Banquet (Outreach Lawn)</p>

<p>Day 3: 16/12/2015 (Wednesday) Computational Intelligence in Computer Vision and Pattern Recognition</p>	
09:30 Onwards	<p align="center">Registration (Lecture Hall Foyer)</p>
10:00 - 11:00	<p align="center">Invited Speech (Lecture Hall-16) (Invited Speaker: Dr. Balasubramanian Jayaram) (Chair: Dr. Gaurav Pandey) <i>Title: Data Analysis : A 3-D Perspective</i></p>

11:00 - 11:20	Tea / Coffee Break (Lecture Hall Foyer)
11:20 - 12:10	Lecture 11 (Lecture Hall-16) (Speaker: Dr. Gaurav Pandey) (Chair: Dr. Balasubramanian Jayaram)
12:10 - 13:00	Lecture 12 (Lecture Hall-16) (Speaker: Dr. A. K. Deb) (Chair: Dr. Gaurav Pandey)
13:00 - 14:30	Lunch Break (Lecture Hall Foyer)
14:30 - 15:30	Keynote Speech 4 (Lecture Hall-17) (Keynote Speaker: Prof. Karmeshu) (Chair: Dr. Tanaya Guha) <i>Title: Computational Neuroscience</i>
15:30 - 16:20	Lecture 13 (Lecture Hall-16) (Speaker: Dr. Tanaya Guha) (Chair: Dr. Gaurav Pandey)
16:20 - 17:10	Lecture 14 (Lecture Hall-16) (Speaker: Dr. Gaurav Pandey) (Chair: Dr. Tanaya Guha)
17:10 - 17:20	Tea/Coffee Break (Lecture Hall Foyer)
19:30	Dinner (Lecture Hall Foyer)

VII. Acknowledgement

We are sincerely grateful for the generous financial support of IEEE Computational Intelligent Society. We are indebted to the keynote & invited speakers, experts and organizing committee members for lending their support and time. We extend our sincere thanks to all IDEA lab members for their active participation. Their benevolent assistance helped us to provide a productive environment for the participants.

VIII. Photographs



2015 IEEE CIS Winter School on Computational Intelligence at Indian Institute of Technology Kanpur, India held during *December 14th – 16th, 2015*



Outreach Auditorium of Indian Institute of Technology Kanpur, India during inaugural ceremony of winter school

INAUGURAL SESSION



Lightening of lamp in inaugural ceremony by Chief Guest, **Prof. Indranil Manna**, *Director, IIT Kanpur, India*



Lightening of lamp in inaugural ceremony by **Prof. Sankar K. Pal**, *Former Director, Indian Statistical Institute, Kolkata, India*



Inaugural ceremony dais (left to right): **Prof. A. K. Ghosh**, *IIT Kanpur, India*, **Prof. J. Sarangapani**, *Missouri University of Science and Technology, USA*, **Prof. Sankar K. Pal**, *ISI, Kolkata, India*, **Prof. Indranil Manna**, *IIT Kanpur, India*, **Prof. S. P. Das**, *IIT Kanpur, India*



Welcome address in inaugural ceremony by **Dr. Nishchal K. Verma**, Winter School Coordinator, *IIT Kanpur, India*



Address in inaugural ceremony by Chief Guest **Prof. Indranil Manna**, *Director, IIT Kanpur, India*



Keynote speech by **Prof. Sankar K. Pal**, *Former Director, Indian Statistical Institute, Kolkata, India*



Keynote speech by **Prof. J. Sarangapani**, *Rutledge Emerson Distinguished Professor, Missouri University of Science and Technology, USA*



Keynote speech by **Prof. Karmeshu**, *Former Dean, JNU, Delhi, India*



Invited speech by **Dr. Balasubramanian Jayaram**, *Associate professor, IIT Hyderabad, India*



Keynote speech by **Prof. A. K. Ghosh**, *Professor, IIT Kanpur, India*



Address by **Prof. S. P. Das**, *Head, Dept. of Electrical engineering, IIT Kanpur, India*



Dr. Nishchal K. Verma, *IIT Kanpur, India*, greets **Prof. Sankar K. Pal**, *ISI Kolkata, India* during inaugural ceremony



Dr. S. R. Sahoo, IIT Kanpur, India greets Dr. Ramprasad Potluri, IIT Kanpur, India during inaugural ceremony



Dr. L. Behera, IIT Kanpur, India, greets Prof. Sandeep Paul, DEI Agra, India during inaugural ceremony



Winter school participants at inaugural ceremony, **Outreach Auditorium, IIT Kanpur, India**

TUTORIAL SESSION



Dr. Gaurav Pandey, IIT Kanpur, India delivering tutorial lecture



Dr. Tanaya Guha, IIT Kanpur, India delivering tutorial lecture



Dr. A. K. Deb, IIT Kharagpur, India delivering tutorial lecture



Dr. Balasubramanian Jayaram, IIT Hyderabad, India delivering tutorial lecture

CIS MEMBERSHIP DRIVE



Participants of winter school at **IEEE CIS Membership Drive** stall

CULTURAL EVENT



Musical performance by artists at **Outreach Auditorium, IIT Kanpur, India** during winter school



Dance performance by artists at **Outreach Auditorium, IIT Kanpur, India** during winter school



2015 IEEE CIS WINTER SCHOOL ON COMPUTATIONAL INTELLIGENCE

December 14th – 16th, 2015

Indian Institute of Technology Kanpur, India – 208016



IEEE
**Computational
Intelligence**
Society

Group photo of all the participants at **2015 IEEE CIS Winter School on Computational Intelligence** at *Indian Institute of Technology Kanpur, India*