

CURRICULUM VITAE

Name: Nishchal K. Verma, PhD

Date of Birth: September 9th, 1973

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Current Position

Associate Professor

Department of Electrical Engineering, Indian Institute of Technology Kanpur, Kanpur
- 208016, India

Academics and Research Qualifications

Ph.D.

Electrical Engineering, Indian Institute of Technology, Delhi, New Delhi, 110016,
India, 2003-2007

Professional / Research Experience

Associate Professor

Department of Electrical Engineering, Indian Institute of Technology Kanpur,
Kanpur-208016, India (June 2014- Present)

Visiting Faculty

Queen's University, Kingston, Canada (May 2018 - June 2018)

Assistant Professor

Department of Electrical Engineering, Indian Institute of Technology Kanpur, Kanpur-208016, India (March 2009 – May 2014)

Visiting Faculty

Center for Integrative and Translational Genomics, University of Tennessee Health Science Center, Memphis, TN 38163 USA (June 2010- July 2010)

Post-Doctoral Research Fellow

Center for Integrative and Translational Genomics, University of Tennessee, Memphis, TN 38163 USA (Sep. 2008 – Mar. 2009)

Post-Doctoral Research Associate

Department of Computer Science, Louisiana Tech University, Ruston, LA 71270 USA (Jan. 2008 – Sep. 2008)

Research Assistant

Department of Electrical Engineering, Indian Institute of Technology Delhi, New Delhi, India (Jul. 2003 – Dec. 2006)

Teaching Assistant

Department of Electrical Engineering, Indian Institute of Technology Roorkee, Roorkee, India (Jul. 2001 – Dec. 2003)

Engineer (Electrical)

Central India Machinery Manufacturing Company (CIMMCO) BIRLA Limited, Bharatpur, Rajasthan, India (May 1996 – June 2000)

Research Interests

- Computational Intelligence
- Fuzzy Systems Modelling & Control
- Machine Learning & Cognitive Science
- Bigdata

- Deep Learning
- Condition Based Monitoring of UAVs, UGVs and Rotating Machines
- Computer Vision
- Cyber Physical Systems
- Industrial Automation

Teaching

Courses Undertaken

- **MECH842** - Deep Learning Approaches for Condition based Health Monitoring of Rotating Machines (Queen's University, Kingston, Canada)
- **EE658** - Fuzzy Sets, Logic & Systems and Applications
- **EE617A** - Industrial Automation & Control
- **EE210/EE203A** - Introduction to Electrical Engineering
- **EE698Y** - Industrial Instrumentation for Process Control
- **EE680** - Intelligent Instrumentation
- **EE698B** - Intelligent Informatics
- **EE671** - Neural Networks
- **ESO210** - Introduction to Electrical Engineering
- **EE455** - Transducers and Instrumentation

New Courses Designed

- **MECH842** - Deep Learning Approaches for Condition based Health Monitoring of Rotating Machines (Queen's University, Kingston, Canada)
- **EE659** - Computational Intelligence for Machine Vision, Automation and Control
- **EE698B** - Intelligent Informatics in Electrical Engineering
- **EE617A** - Industrial Automation and Control

Supervision of Theses

Ph.D. Thesis Supervision

1. Dr. Narendra Kohli (Y4108070)

Professor & Head, Dept. of CSE, HBTU Kanpur, India

Thesis Title: Automated Health Care Systems: Performance Enhancement

Status: Thesis defended, 2011

2. Dr. Ashutosh Dwivedi (Y4104101)

Thesis Title: Soft-computing Based Approaches for Digital Image/Video Processing in E-classroom Learning Environment

Status: Thesis defended, 2012 (Co-Supervised with Prof. P. K. Kalra)

3. Dr. Rajeev Tripathi (Y7104097)

Assistant Professor, NIT Delhi, India

Thesis Title: Base Station Positioning, Nodes' Localization and Clustering Algorithms for Wireless Sensor Networks

Status: Thesis defended, 2013 (Co-Supervised with Prof. Y. N. Singh)

4. Dr. Rajeev Shakya (Y8104073)

Assistant Professor, Galgotias University UP, India

Thesis Title: Spatial correlation-based efficient communication protocols for wireless sensor networks

Status: Thesis defended, 2015 (Co-Supervised with Prof. Y. N. Singh)

5. Dr. Bibhu Prasad Padhy (Y9104091)

Assistant Professor, IIT Ropar, India

Thesis Title: Development of Synchrophasor Measurement Based Wide-Area Damping Controllers for Improving Power System Stability

Status: Thesis defended, 2015 (Co-Supervised with Prof. S. C. Srivastava)

6. Dr. Rahul Kumar Sevakula (10104124)

Massachusetts General Hospital, Harvard Medical School, USA

Thesis Title: Intelligent Hybrid Classifiers for Real Time Applications

Status: Thesis defended, 2017

7. Ms. Padmini Singh (13504061)

Status: In Progress

8. Mr. Vibhu Tripathi (13104197)

Status: In Progress

9. Mr. Narendra Kumar Dhar (14104272)

Status: In Progress

10. Ms. Sonal Dixit (14104272)

Status: In Progress

11. Mr. H. L. Maurya (14104284)

Status: In Progress

12. Mr. Vikas Singh (15104279)

Status: In Progress

13. Ms. Teena Sharma (16104286)

Status: In Progress

14. Mr. Pankaj Kumar Mishra (16104276)

Status: In Progress

15. Mr. J. Balaji (16201261)

Status: In Progress

16. Mr. Mayank Pandey (17104274)

Status: In Progress

17. Mr. Arun K. Sharma (17204263)

Status: In Progress

M.Tech. Thesis Supervision

1. Mr. Saurabh Agrawal (Y8104058)

Thesis Title: Image and Video Classification using Histogram based Support Vector Machine

Status: Thesis defended, 2010 (Co-Supervised with Prof. P. Sircar)

2. Ms. Sheela Meena (Y4187408)

Thesis Title: Mining of Hippocampus Data Set Using t-test, Biclustering and Bayesian Approach

Status: Thesis defended, 2010

3. Mr. Prateek Tamrakar (Y8104048)

Thesis Title: Generation of Future Satellite Image Sequence using Artificial Neural Network Model

Status: Thesis defended, 2010 (Co-Supervised with Prof. P. Sircar)

4. Ms. Payal Gupta (External Student)

Thesis Title: Medical Image Segmentation Using Improved Mountain Clustering Approach

Status: Thesis defended, 2010

5. Mr. Neeraj Kumar Soni (Y9104046)

Thesis Title: Future Image Frame Prediction of an Image Sequence Using Artificial Neural Network with Selected Features

Status: Thesis defended, 2011 (Co-Supervised with Prof. P. Sircar)

6. Ms. Isha Kapoor (External Student)

Thesis Title: Generation of Future Image Frames using artificial neural Networks with Feature selection

Status: Thesis defended, 2012

7. Ms. Shimaila Hai (External Student)

Thesis Title: Generation of Future Image Frames using GANFIS Model with Feature selection on Spatiotemporal Framework

Status: Thesis defended, 2012

8. Mr. Bhuwan Mehta (Y5827144)

Thesis Title: Instrument Sound Separation in Monaural Music Signals

Status: Thesis defended, 2012

9. Mr. Sumit Sarkar (Y7027453)

Thesis Title: Intelligent Real-Time Fault Diagnosis of Air Compressors Using Android Smartphone

Status: Thesis defended, 2012

10. Mr. Tarun Maini (External Student)

Thesis Title: Study of Feature Selection Techniques

Status: Thesis defended, 2012

11. Mr. Cherukupally Chakradhar (10104026)

Thesis Title: Prediction of satellite image sequence using ANFIS: adaptive network based fuzzy inference system with feature selection

Status: Thesis defended, 2012

12. Mr. Ashish Kaushal (Y8127142)

Thesis Title: Implementation of Vehicle to Grid Concept Using ANN and ANFIS

Status: Thesis defended, 2013

13. Ms. Sreevidya Khatravath (Y8127506)

Thesis Title: Cost Benefit Analysis for Maintenance of Machines

Status: Thesis defended, 2013

14. Ms. Shikha Singh (External Student)

Thesis Title: Future Image Frame Generation

Status: Thesis defended, 2013

15. Ms. Priyanka Sahu (External Student)

Thesis Title: Finding Gene expression level using IMC-2 clustering technique for DNA microarray data

Status: Thesis defended, 2013

16. Mr. Rama Kiran (11104085)

Thesis Title: Soft Computing Approaches for Two Dimensional Beamforming

Status: Thesis defended, 2013 (Co-Supervised with Prof. P. Sircar)

17. Ms. Amrita Tirkey (Y8068)

Thesis Title: Minimization of within class dissimilarities in multi-class CSP for Brain Computer Interfaces

Status: Thesis defended, 2014

18. Mr. Prabhankar Porwal (12104053)

Thesis Title: Measurement Based Recursive Methods for Monitoring of Power System Oscillations

Status: Thesis defended, 2014 (Co-Supervised with Prof. Saikat Chakrabarti)

19. Ms. Sakshi Goel (External Student)

Thesis Title: Study of Transforms and Methods for their Comparison

Status: Thesis defended, 2014

20. Mr. Harshavardhan Annepu (Y9329105)

Thesis Title: Object Matching Based on Speeded Up Robust Features

Status: Thesis defended, 2015

21. Mr. Akhilesh Raj (14104007)

Thesis Title: Computer Vision Aided Automated Guided Vehicle

Status: Thesis defended, 2016

22. Mr. Aquib Mustafa (14104019)

Thesis Title: Vision Based Object Grasping and Optimal Path Routing for Automated Guided Vehicle with Robotic Manipulator

Status: Thesis defended, 2016

23. Ms. Teena Sharma (EXY1514)

Thesis Title: Study of Vision Based Object Recognition Algorithms

Status: Thesis defended, 2016

24. Ms. Ocean Yadav (EXY1513)

Thesis Title: Vision Based Navigation in Indoor Environment

Status: Thesis defended, 2016

25. Mr. Piyush Sahoo (12807481)

Thesis Title: Rotation Invariant Descriptor for Disparate Images using Line Segments

Status: Thesis defended, 2017

26. Mr. Gaurav Saraswat (16104032)

Thesis Title: Residual Life Prognosis of Main Battle Tank Engine using Fuzzy Model with DNN based Feature Selection

Status: Thesis defended, 2018

27. Mr. Bhanu Teja Nalla (16104022)

Thesis Title: Image Dehazing using Convolutional Neural Networks

Status: Thesis defended, 2018

28. Mr. Bharat Gupta (17204009)

Status: In Progress

29. Mr. Akash Banerjee (17204003)

Status: In Progress

30. Mr. Ashish Kumar (17104012)

Status: In Progress

31. Mr. Harshit Mishra (17204012)

Status: In Progress

32. Ms. Sejal Samaiya (EXY18007)

Status: In Progress

33. Ms. Astha Jain (EXY18008)

Status: In Progress

MS by Research Thesis Supervision

1. Mr. Dhan Jeet Singh (15204403)

Sr. Manager (Design), Aircraft Upgrade Research and Design Center, Hindustan Aeronautics Ltd., India

Thesis Title: Nonlinear Aerodynamic System Modeling Using Takagi-Sugeno Fuzzy Inference System

Status: Thesis defended, 2018

2. Mr. ShreedharKumar D. Rajurkar (15104413)

Design Engineer, Intel Technology Pvt Ltd., Bangalore, India

Thesis Title: Development of Fuzzy Inference Networks

Status: Thesis defended, 2018

3. Mr. Aniket Kar (15104410)

Edison Engineer, @GE Transportation, JFWTC, Bangalore, India

Thesis Title: Navigation and Control of an Automated Guided Vehicle in a Cyber- Physical Environment

Status: Thesis defended, 2018

4. Mr. Raghav Dev (15204408)

Status: Thesis Submitted, 2018

5. Mr. Seetaram Maurya (16104405)

Status: In Progress

6. Mr. Ashish Gupta (16104402)

Status: In Progress

U.G.P./B.T.P. Thesis Supervision

1. Sumanik Singh
2. Anadi Chaman
3. Varun Sood (Y9642), 2012
4. Himanshu
5. Swati Singh
6. Sonu Aditya
7. Aniruddh
8. Raghuveer Thirukovalluru, 2016
9. Kamlesh Bharodiya (11346)
10. Sudeep
11. Vipul Goyal
12. Harshwardhan, 2017
13. Lucien Barrett, 2017
14. Rituj Beniwal (150589), 2018 (In Progress)
15. Ankur Singh, 2018 (In Progress)

Knowledge Dissemination

Patent

1. **Nishchal K. Verma**, R. K. Sevakula and R. Thirukovalluru, “Condition monitoring setup for long term reliability in fault recognition,” no. 201611029228, dated-March 2nd, 2018.

Books Edited

1. **Nishchal K. Verma**, A. K. Ghosh, “Computational Intelligence: Theories, Applications and Future Directions-Volume I (ICCI-2017)” *Springer*, 2019, ISBN 978-981-13-1131-4.
(<https://link.springer.com/book/10.1007%2F978-981-13-1132-1>)
2. **Nishchal K. Verma**, A. K. Ghosh, “Computational Intelligence: Theories, Applications and Future Directions-Volume II (ICCI-2017)” *Springer*, 2019, ISBN 978-981-13-1134-5.
(<https://link.springer.com/book/10.1007%2F978-981-13-1135-2>)

Book Chapters

1. Mayank Pandey, Vikas Singh and **Nishchal K. Verma**, “Fuzzy based investment portfolio management,” *Applying Fuzzy Logic for the Digital Economy and Society, Fuzzy Management Methods - Book Series by Springer*, 2018. (Accepted)
2. Vikas Singh and **Nishchal K. Verma**, “Deep learning architecture for high-level feature generation using stacked auto encoder for business intelligence,” *Complex systems: solutions and challenges in economics, management and engineering, Springer International Publishing*, 2017. (Accepted)
3. R. Kiran, P. Sircar and **Nishchal K. Verma**, “Soft computing approaches for two-dimensional beamforming,” *Recent Developments and New Direction in*

Development

New Technology Developed

- **Automatic Guided Vehicle:** Developed automated guided vehicle which can perform multiple operations namely object recognition, optimal path tracking, vision based path following and obstacle avoidance. It is mainly used in manufacturing industries for raw material handling, pallet handling, finished product handling, trailer loading and roll handling.
- **Inventory Management:** Inventory Management facility has been set up under the project BOEING/EE/ 20100220. It provides a user friendly environment for managing the inventory/stock by counting the available number of objects by automatic notification through email.
- **Intelligent CBM using Windows Phone, Tablets and Smartphones:** Smartphone based Intelligent Condition Based Monitoring System is developed at IIT Kanpur under the project BOEING/EE/20100220. It can be used for detection of various faults in industrial reciprocating air compressors. This technology has been presented at Seattle USA and successfully demonstrated to BOEING team at IIT Kanpur.
- **Sensitive Position finder for Data Acquisition System:** Sensitive position finder is developed at IIT Kanpur under the project BOEING/EE/20100220. It is a ranking based system that detects the most sensitive position around the machine for positioning a sensor.
- **Future Image Frame Generator:** Future image frame generator is developed at IIT Kanpur under the project DST/EE/20100272. It is a predictor based system that generates the future images based on past image sequence as input to the system.

- **MTBA:** MATLAB Toolbox for Biclustering Analysis: MATLAB toolbox designed to perform a variety of biclustering algorithms under a common user interface. Biclustering is a popular approach to analyze patterns in a dataset, especially those of biological origin such as gene expression data. Toolbox includes functionalities of data handling, preprocessing, biclustering and visualization.
- **BIDEAL:** MATLAB Toolbox for Bi-clustering Pattern Analysis

Software Developed

- MATLAB Toolbox on Biclustering (<http://iitk.ac.in/iil/mtba/>)
- BIDEAL Toolbox on Biclustering
- Desktop Application for Sensitive Position Finding
- Condition Based Monitoring using Smartphones/Windows Phone
- Desktop Application for Inventory Management

Sponsored and Consultancy Projects

List of Sponsored and Consultancy Projects as PI

S. No.	Title	Sponsor	Amount (in INR)	From Date (Month-Year)	To Date (Month-Year)	Name of Co-PI	Outcome
1.	Complex defence object recognition and autonomous handling in unstructured and noisy outdoor environment	DRDO, Ministry of Defense, Govt. of India	4,93,00,500.00	Approved and to be started	--	Prof. A. K. Ghosh, Prof. L. Behera, Prof. M. J. Akhtar	To be started
2.	CBM of Air Compressors and Motors	The BOEING	2,37,58,222.00	2009	2017	Prof. A. R. Harish	Successfully Completed

		Compan y, USA					
3.	Development of Fuzzy Rule based Gaussian Regression Model for Generating Future Images	DST, Govt. of India	25,80,000.00	2010	2014	Prof. L. Behera	Success fully Completed
4.	Prediction for Visual Surveillance using static camera	DRDO, Ministry of Defense, Govt. of India	24,77,740.00	2011	2015	Prof. Y. N. Singh	Success fully Completed
5.	Instruments for monitoring of the Health Monitoring of Automotive	DST, Govt. of India	6,97,576.00	2009	2010	--	Success fully Completed
6.	Spatiotemporal Data Based Fuzzy Video Model for Future Image Frame Generation	IIT Kanpur, India	10,00,000.00	2009	2010	--	Success fully Completed
7.	Transducers and Instrumentation Virtual Laboratory	Ministry of HRD, Govt. of India	40,00,000.00	2010	2016	--	Success fully Completed
8.	Computational Intelligence: Theories, Applications and Future Directions	SERB, DST, Govt. of India	1,50,000.00	2013	2013	--	Success fully Completed
9.	Computational Intelligence: Theories, Applications and Future Directions	SERB, DST, Govt. of India	1,50,000.00	2015	2015	--	Success fully Completed

10.	Computational Intelligence: Theories, Applications and Future Directions	SERB, DST, Govt. of India	2,00,000.00	2017	2017	--	Successfully Completed
11.	Computational Intelligence: Theories, Applications and Future Directions	CSIR, Govt. of India	1,00,000.00	2017	2017	--	Successfully Completed
12.	Deep learning approach for Condition based Monitoring	Shastri Indo Canadian Institute	3,02,400.00	2018	2018	--	Successfully Completed

List of Sponsored and Consultancy Projects as Co-PI

S. No.	Title	Sponsor	Amount (in INR)	From Date (Month-Year)	To Date (Month-Year)	Name of PI	Outcome
1.	Development of Solar Air Taxi	IIT Kanpur and Others	15,00,000.00	2018	--	Prof. A. K. Ghosh	In Progress
2.	Passive and Active RFID and Location Technology Research	The BOEING Company, USA	3,00,00,000.00 (approx.)	2009	2017	Prof. A. R. Harish	Successfully Completed
3.	Intelligent Visual Control of Redundant Manipulator Systems for Grasping 3-D Objects	DST, Govt. of India	40,00,000.00	2010	2013	Prof. L. Behera	Successfully Completed
4.	Setting up Real Time Simulation Facility for	DST, Govt. of India	7,00,00,000.00	2010	2015	Prof. S. C.	Successfully

	Advanced Research in Power and Control		(approx.)			Srivastava	Completed
5.	Path Tracking Control of Four Wheel Drive Four Wheel Steer Electric Vehicle	DST, Govt. of India	19,60,800.00	2012	2016	Prof. R. Potluri	Successfully Completed
6.	Development of Personalized and performance based e-learning tool for existing e-resources	MCIT, Govt. of India	30,00,000.00	2013	2017	Prof. Y. N. Singh	Successfully Completed
7.	Development of Small Sized Fixed Wing Unmanned Aerial System	IIT Kanpur, India	1,74,00,000.00	2014	2016	Prof. A. K. Ghosh	Successfully Completed
8.	Design and Development of Visually Guided Autonomous Quadrotors: Application in Surveillance and Disaster Management	IIT Kanpur, India	30,00,000.00	2014	2015	Prof. L. Behera	Successfully Completed

Peer Recognition

Awards/Appreciations

- Award of US\$7750 for conducting IEEE CIS Summer School from IEEE Computational Intelligence Society (2018)

- SFTIG Award of CAD\$6000 for Shastri Faculty Training and Internationalization Program (2017-18)
- Nominated by IIT Kanpur, India for electrical works and services to quality assurance of civil, electrical and mechanical works/services at AIIMS Bhopal (July 2018)
- Teaching Performance Excellence rated by Students for EE658A: Fuzzy Set, Logic & System & Applications from Academic Senate, IIT Kanpur, India (2017-18 Sem II)
- Teaching Performance Excellence rated by Students for EE658A: Fuzzy Set, Logic & System & Applications from Academic Senate, IIT Kanpur, India (2016-17 Sem II)
- Achiever award from Institution of Engineers (India) at Jodhpur on Engineers day (Sept. 15th, 2017)
- Best Paper Presentation Award from IEEE International Conference on Control and Robotics Engineering (ICCRE), Thailand (2017)
- Distinguished Researcher in the Area of Computational Intelligence Award from IEEE UP Section CIS Chapter (2016)
- Award of US\$5000 for conducting IEEE CIS Winter School from IEEE Computational Intelligence Society (2015)
- Best Poster Award from IEEE Bombay Section Symposium (2015)
- “Devendra Shukla Young Faculty Research Fellowship” from IIT Kanpur (2013-16)
- DST Travel Award for attending FUZZ-IEEE at USA (2005)
- IEEE CIS travel award US\$ 700 for attending and presenting paper in FUZZ-IEEE 2005 at Reno USA (2005)

- Secured highest rank in M. Tech. (Measurement and Instrumentation) at IIT Roorkee (2003)
- National Merit Scholarship (1989-1996)

Contributions to the institute

Administrative Responsibilities

- **Coordination-and-Development**, Electronics Equipment Maintenance (WLE 211), IIT Kanpur (2018-2019)
- **Member**, Institute level anti-ragging committee, IIT Kanpur (2018-19)
- **Member**, Budget Committee, IDP of Cognitive Science, IIT Kanpur (2018-19)
- **Warden-in-Charge**, Hall-VI (GH Tower A, B, C and D Blocks), IIT Kanpur (Since Sept. 2017)
- **Member**, Aesthetic Committee, Dept. of Electrical Engineering, IIT Kanpur (2017-18)
- **Member**, Department Post Graduate Committee (DPGC), Dept. of Electrical Engineering, IIT Kanpur (2017-18)
- **Member**, EEA Advisory Committee, Dept. of Electrical Engineering, IIT Kanpur (2017-18)
- **Warden-in-Charge**, Hall-VI (GH Tower and New RA GH), IIT Kanpur (Sept. 2013-Sept. 2016)
- **Convener**, Department Post Graduate Committee, Electrical Engineering, IIT Kanpur (Oct. 2014- Aug 2015)
- **Member**, Hall Automation Committee, IIT Kanpur (2013)
- **Chairman**, DCF Committee, IIT Kanpur (2012)

- **Warden-in-Charge**, Hall-VI (Girls' Hostel-2 and NSBRA A & Z blocks), IIT Kanpur (Sept. 2010- Sept. 2013)
- **Member**, CARE, Committee, IIT Kanpur (2010)
- **Coordinator**, Control and Automation Group, IIT Kanpur
- **Member**, Web development Committee, EE Dept., IIT Kanpur
- **Convener**, Electrical Engineering Society, IIT Kanpur (2009-2011)
- **Member**, DPGC Committee, IIT Kanpur (2009-2010)
- **Member**, Faculty Apartment Residents Welfare Group, IIT Kanpur

Research Workshops Conducted

- **Program Chair**, 2018 International Conference on Sensing, Diagnostics, Prognostics, and Control, Xi'an, China
- **General Chair**, 2017 International Conference on Computational Intelligence: Theories, Applications and Future Directions, IIT Kanpur, Dec. 06-08, 2017
- **Coordinator**, QIP Short Term Course on Deep Learning and Computational Intelligence in Automation & Control, IIT Kanpur, December 2017
- **General Chair**, IEEE Workshop on Computational Intelligence: Theories, Applications and Future Directions, IIT Kanpur, Dec. 14-17, 2015
- **Coordinator**, IEEE CIS Winter School on Computational Intelligence, IIT Kanpur, Dec. 14-16, 2015
- **General Chair**, IEEE Workshop on Computational Intelligence: Theories, Applications and Future Directions, IIT Kanpur, July 14, 2013
- **Coordinator**, QIP Short term course on Intelligent Informatics in Electrical Engineering, IIT Kanpur, July 2013

- **Coordinator**, QIP Short term course on Intelligent Informatics, IIT Kanpur, 2012
- **Coordinator**, Transducers and Instrumentation Virtual Laboratory (Sponsored by MHRD) at IIT Kanpur, Feb 4, 2012
- **Coordinator**, Brainstorming on Health Monitoring of Automotive (Sponsored by DST) at IIT Kanpur, March 9-10, 2010
- **Coordinator**, Transducers and Instrumentation Virtual Laboratory (Sponsored by MHRD) at IIT Kanpur, Dec 7, 2012

New Laboratory/Facility Developed

- **Transducers and Instrumentation Virtual Laboratory (202.3.77.143/virtuallab/)**: Transducers and Instrumentation virtual laboratory is developed under the project MHRD/EE/20100082 at IIT Kanpur. This Lab caters mainly to students of UG level for conducting the experiments online and offline to have a feel of working of various transducers and related instruments.
- **Brain Computer Interface Laboratory**: Brain Computer interface is a direct communication modality between brain and external environment that bypasses the usual peripheral pathways. In Intelligent Informatics the Brain Computer Interface Laboratory, we have the emotiv epoc, a 14-channel high-resolution wireless EEG system. The System consists of active sensors that tune into electrical signals produced by the brain to detect user thoughts, feelings, and expressions. System is capable of capturing raw EEG, affective responses, as well as evoked potentials. The aim of our BCI lab is to study EEGs of people when subjected to external visual stimulations.
- **Acoustic and Vibration Data Acquisition Facility**: Intelligent Condition Based Health Monitoring of Air Compressors system has been Set Up under the project the project BOEING/EE/20100220 which consists of four sets of single stage and double stage compressors and two acoustic and accelerometer based data acquisition system.

Contributions outside the institute

Invited Research Talks/Keynote/Lectures/Discussions

- **Expert Lecture:** “Fuzzy Logic and Deep Learning”, Faculty Development Program (FDP) on Machine Learning and Applications (MLA-2018), ABV-IIITM Gwalior during March 26-30, 2018
- **Tutorial:** “Data Driven Models for Condition based Monitoring of Machines”, 2018 IEEE International Conference on Prognostics and Health Management, Seattle, WA, USA, 2018
- **Panel Session Moderator & Speaker:** “Deep Learning in Prognostic and Health Management”, 2018 IEEE International Conference on Prognostics and Health Management, Seattle, WA, USA, 2018
- **Invited Lecture:** “Deep Learning and Deep Fuzzy Networks”, Workshop on Swarm and Evolutionary Algorithms: Theory and Applications, IIT Roorkee on March 18th, 2018
- **Keynote Speech:** “Deep Learning and Computational Intelligence”, Amity University, Lucknow on March 15th, 2018
- **Invited Lecture:** “Deep Learning with Fuzzy Systems”, IET Lucknow on March 13th, 2018
- **Keynote Speech:** “Deep Fuzzy Networks in Condition based Monitoring”, International Conference on Signals, Machines and Automation (SIGMA 2018) at NSIT Delhi on February 24th, 2018
- **Invited Lecture:** “Deep Learning and Fuzzy Systems”, Faculty Development Program at NIT Kurukshetra on January 13th and 14th, 2018
- **Invited Lecture:** “Deep Learning and Fuzzy Deep Networks”, Faculty Development Program at Banasthali Vidyapith, Rajasthan on December 26th, 2017

- **Keynote Speech:** “Deep Learning and Fuzzy Deep Networks”, SocPros 2017 at IIT Bhubaneswar on December 23rd, 2017
- **Keynote Speech:** “Deep Learning and Fuzzy Deep Networks”, 17th International Conference on Intelligent Systems Design and Applications (ISDA) at South Asian University on December 14th, 2017
- **Plenary Speech:** “Deep Learning and Computational Intelligence”, In *6th IEEE International Conference on Computer Applications in Electrical Engineering - Recent Advances (CERA 17)* at Indian Institute of Technology Roorkee on October 6th, 2017
- **Invited Lecture:** Malaviya National Institute of Technology (MNIT), Jaipur on August 1st, 2017: *Deep Learning and Computational Intelligence*
- **Keynote Speech:** International Conference on Advances in Internet of Things and Connected Technologies (ICIoTCT 2017) May 26-27, 2017 at Malviya National Institute of Technology (MNIT), Jaipur, India (Keynote Speech)
- **Keynote Speech:** International Conference on Intelligent Systems and Signal Processing (ISSP-2017), 24th - 25th March, 2017
- **Invited Lecture:** National Institute of Technology (NIT) Silchar
- **Invited Lecture:** Indian Institute of Technology, Varanasi (IIT-BHU)
- **Speaker and Panelist:** IEEE World Forum on Internet of Things, 12-14 December 2016 // RESTON, VA, USA
- **Tutorial:** 2016 IEEE International Conference on Prognostics and Health Management, 20 Jun, 2016, Carleton University Ottawa, ON, Canada
- **Invited Lecture:** Institute of Engineering and Technology, Lucknow
- **Invited Lecture:** Johndeere, Pune
- **Invited Lecture:** AIT, New Delhi

- **Invited Lecture:** SYBASE, Dublin, San Francisco, USA
- **Invited Lecture:** Market Toppers, Gurgaon
- **Invited Lecture:** University of Chicago, Chicago, USA
- **Invited Lecture:** 4th World Conference on Soft Computing, May 25-27, 2014, University of Berkeley, Berkeley, San Francisco, USA
- **Invited Lecture:** Hangzhou Dianzi University, Hangzhou, China
- **Invited Lecture:** Center for Integrative and Translational Genomics, University of Tennessee, Memphis, USA
- **Invited Lecture:** Boeing Company, St Louis, USA
- **Invited Lecture:** Boeing Company, Everett, Seattle, WA, USA
- **Invited Lecture:** Boeing Company, Lynwood, Seattle, WA, USA
- **Invited Lecture:** Raman Research Institute, Bangalore
- **Invited Lecture:** Saint Xavier's Catholic college of Engineering, Nagercoil
- **Invited Lecture:** IIT Rajasthan, Jodhpur (NEM BOEING, IITR and IITK initiative)
- **Invited Lecture:** California State University, Dominguez Hills Carson, CA, USA
- **Invited Lecture:** Indo-German Workshop on Engineering and Analysis of Evolutionary Algorithms at DEI Dayalbagh, Agra on Jan 18, 2013
- **Invited Lecture:** IIITDM Jabalpur on March 9, 2013
- **Invited Lecture:** Banasthali Vidyapeeth, Tonk, Jaipur on March 14, 2013
- **Invited Lecture:** Huawei Technologies Pvt. Limited, Bangalore on March 25, 2013

- **Invited Lecture:** SKF Technologies India Pvt. Limited, Bangalore on Dec. 22.2014

Research Associations and Activities

- Technical Program Committee, 2018 IEEE International Conference on Prognostics and Health Management, Seattle, WA, USA
- Program Chair, 2018 International Conference on Sensing, Diagnostics, Prognostics, and Control, Xi'an, China
- Conference Chair, 2017 International Conference on Computational Intelligence: Theories, Applications and Future Directions, IIT Kanpur, India
- Chairman, PDR Committee, Design & Development of Technology Demonstrator Model for Smart Generator Control & Protection Unit (SGCPU) for airborne application, 2017.
- Program Chair, 2017 International Conference on Sensing, Diagnostics, Prognostics, and Control, Shanghai, China
- Member, International Electrotechnical Commission, Systems Evaluation Group (IEC-SEG4)
- Member, P7000 Working Group, IEEE Standards Association (IEEE-SA)
- Fellow, IETE
- Senior Member, IEEE
- Organizer, IEEE Uttar Pradesh Section Computational Intelligence Society Chapter (2013)
- Chairperson, IEEE Uttar Pradesh Section Computational Intelligence Society Chapter (Since 2013)
- Member, IEEE Computational Intelligence Society
- Member, IEEE Communications Society

- Member, IEEE Industrial Electronics Society
- Member, IEEE Sensors Council
- Member, IEEE Technology Management Council
- Member, Executive committee, IEEE UP Section
- Convener, Educational Activities Committee, IEEE UP Section (2011-12)
- Reviewer, IEEE Trans. on Fuzzy Systems
- Reviewer, IEEE Trans. on Systems Man and Cybernetics Part-A, B and C.
- Reviewer, IEEE Trans. on Geoscience and Remote Sensing
- Reviewer, IEEE Trans. on Knowledge and Data Engineering
- Reviewer, IEEE Trans. on Pattern Analysis and Machine Intelligence
- Reviewer, Fuzzy Sets and Systems
- Reviewer, Pattern Recognition
- Reviewer, Applied Soft Computing
- Reviewer, Defense Science Journal
- Regular Reviewer, few more reputed IEEE and non-IEEE Journals and conferences
- Chairman, Review committee for Design and Dev. of Interface Unit for FCG probes for Light Combat Helicopter (LCH), HAL Lucknow
- Treasurer, IEEE UP Section (2012-13)
- Publicity Chair, 2013 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE-2013) July 07-10, 2013, Hyderabad, India

- Publicity Chair, Special Session on Soft Computing Techniques for Biometric Technologies, The 12th International Conference on Artificial Intelligence and Soft Computing (ICAISC 2013) June 09 – 13, 2013, Zakopane, Poland
- General Chair, IEEE Workshop on Computational Intelligence: Theories, Applications and Future Directions July 14, 2013, IIT Kanpur
- General Chair, IEEE Workshop on Computational Intelligence: Theories, Applications and Future Directions, Dec 15-17, 2015, IIT Kanpur
- Coordinator, CIS Winter School, Dec 14-16, 2015, IIT Kanpur
- Program Committee Member, IEEE PHM 2016
- Program Committee Member, IEEE PHM 2017
- Finance and Registration Chair, 3rd International Conference Advances in Control and Optimization of Dynamical Systems March 13-14, 2014, IIT Kanpur
- Program Chair, IEEE Computational Intelligence Workshop (CIW-2014), Oct 13-15, 2014, IIIT Allahabad
- Panel Member, IEEE World Forum on Internet of Things, 12-14 DECEMBER 2016 // RESTON, VA, USA

Editorial Board (Journals/ Conferences)

- **Guest Editor, IEEE Access:** Special Section: “Advances in Prognostics and System Health Management” (Since 2018)
- **Associate Editor,** Journal of Prognostics and Health Management, Carleton University, Ottawa, Canada (Since 2018)
- **Editor,** IETE Technical Review Journal, India (Since 2018)
- **Associate Editor,** IEEE Computational Intelligence Magazine (Since 2018)
- **Associate Editor,** Transactions of the Institute of Measurement and Control, UK (Since 2014)

- **Associate Editor**, International Journal of Advances in Intelligent Informatics (Since 2016)
- **Associate Editor**, Electrical & Electronic Technology, Open Access Journal (Since 2017)
- **Guest Editor**, Special issue on “Recent Advances in Computational Intelligence” of International Journal of Computational Systems Engineering, Inderscience Publishers (Since 2017)
- **Guest Editor**, Special issue on “Computational Intelligence” of International Journal of Swarm Intelligence, Inderscience Publishers (Since 2017)
- **Guest Editor**, Special issue on “Computational Intelligence: Theories, Applications and Future Directions” of International Journal of Artificial Intelligence and Soft Computing, Inderscience Publishers (Since 2017)
- **Guest Editor**, Special issue on “Intelligent Informatics” for International Journal of Computational Vision and Robotics, vol. 4, no. 4. (2014)

Publications

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