# CURRICULUM VITAE

**Name:** Nishchal K. Verma, PhD

**Date of Birth:** September 9th, 1973

**Mailing Address:**

107, ACES Building,

Department of Electrical Engineering,

Indian Institute of Technology Kanpur,

Kanpur - 208016, India

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## Current Position

### Professor

Department of Electrical Engineering and Inter-disciplinary Program in Cognitive Science, 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 (2007)

**M.Tech.**

Electrical Engineering, Indian Institute of Technology Roorkee, Roorkee, 247667 India (2003)

**B.E.**

Electrical Engineering, Faculty of Engineering, DEI Dayalbagh, Agra, 282005, India (1996)

## Professional / Research Experience

**Professor**

Department of Electrical Engineering, Indian Institute of Technology Kanpur, Kanpur-208016, India (October 2018 - onwards)

**Associate Professor**

Department of Electrical Engineering, Indian Institute of Technology Kanpur, Kanpur-208016, India (June 2014 - October 2018)

**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

- Artificial Intelligence/ Computational Intelligence
- Machine Learning
- Deep Learning
- Big Data
- Blockchain
- Cyber Security
- Intelligent Control
- Condition Based Monitoring/ Prognosis and Health Management of UAVs, UGVs and Rotating Machines
- Fuzzy Systems Modelling & Control
- Industrial Automation and Control
- Computer Vision and Image Processing
- Soft-Computing in Modelling and Control
- Internet of Things/ Cyber Physical Systems
- Cognitive Science and Intelligent Fault Diagnosis Systems

# 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)

   *Current Affiliation:* 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)

   *Current Affiliation:* 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)

*Current Affiliation:* 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)

*Current Affiliation:* 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)

*Current Affiliation:* 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)

*Thesis Title:* Vision based Guidance and Switching based Sliding Mode Controller for a Mobile Robot in the Cyber Physical Framework

*Status:* In Progress (Co-Supervising with Prof. L. Behera)

8. Mr. Vibhu Tripathi (13104197)

*Thesis Title:* Adaptive Controllers for a Quadcopter

*Status:* In Progress (Co-Supervising with Prof. L. Behera)

9. Mr. Narendra Kumar Dhar (14104272)

*Thesis Title:* Networked Control of HVAC Systems
*Status:* In Progress

10. Ms. Sonal Dixit (14104272)

   *Thesis Title:* Condition based Monitoring of Unmanned Aerial Vehicles (UAVs)
   *Status:* In Progress

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

   *Thesis Title:* Trajectory Tracking of Quad rotor UAV using Fractional Order PID
   Controllers
   *Status:* In Progress

12. Mr. Vikas Singh (15104279)

   *Thesis Title:* Development of Deep Learning Algorithms for Condition based
   Monitoring
   *Status:* In Progress

13. Ms. Teena Sharma (16104286)

   *Thesis Title:* Deep Learning Approaches for Complex Object Recognition in
   Unstructured Outdoor Noisy Environment
   *Status:* In Progress

14. Mr. Pankaj Kumar Mishra (16104276)

   *Thesis Title:* Adaptive Control for AGV with Vision Sensor as an Unknown
   Nonlinear System
   *Status:* In Progress

15. Mr. J. Balaji (16201261)

   *Thesis Title:* Fuzzy Models for Aircraft Parameter Estimation
   *Status:* In Progress

16. Mr. Mayank Pandey (17104274)

*Thesis Title:* Enhancement of Security Features for Blockchain using Machine Learning Algorithms
*Status:* In Progress

17. Mr. Arun K. Sharma (17204263)

*Thesis Title:* Deep Fuzzy Networks
*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

**34.** Mr.. Boda Pool Singh (18104072)

*Status:* In Progress

**35.** Ms. Ankita (18104019)

*Status:* In Progress

**36.** Mr. R Kumar (18104147)

*Status:* In Progress

**37.** Mr. Jitesh PS (18104048)

*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)

   *Thesis Title:* Fuzzy based Approaches for Mixed Gaussian and Impulse Noise Removal from Color Images
   *Status:* Thesis Submitted, 2018

5. Mr. Seetaram Maurya (16104405)

   *Thesis Title:* Transfer Learning Approach for Condition based Monitoring
   *Status:* In Progress

6. Mr. Ashish Gupta (16104402)

   *Thesis Title:* Condition based Monitoring of Defence Equipment

*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)
16. Rakshit Verma (160559), 2018 (In Progress)
17. Abdul Wasim (160008), 2018 (In Progress)
18. Akshay Bhola (14060), 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 Soft-Computing Foundations and Applications, Springer International Publishing*, pp. 301-314, 2016.

# 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 Company, USA | 2,37,58,222.00 | 2009 | 2017 | Prof. A. R. Harish | Successfully Completed |
| 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 | Successfully 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 | Successfully Completed |

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|---|---|---|---|---|---|---|
| 5. | Instruments for monitoring of the Health Monitoring of Automotive | DST, Govt. of India | 6,97,576.00 | 2009 | 2010 | -- | Success fully Complet ed |
| 6. | Spatiotemporal Data Based Fuzzy Video Model for Future Image Frame Generation | IIT Kanpur, India | 10,00,000.00 | 2009 | 2010 | -- | Success fully Complet ed |
| 7. | Transducers and Instrumentation Virtual Laboratory | Ministry of HRD, Govt. of India | 40,00,000.00 | 2010 | 2016 | -- | Success fully Complet ed |
| 8. | Computational Intelligence: Theories, Applications and Future Directions | SERB, DST, Govt. of India | 1,50,000.00 | 2013 | 2013 | -- | Success fully Complet ed |
| 9. | Computational Intelligence: Theories, Applications and Future Directions | SERB, DST, Govt. of India | 1,50,000.00 | 2015 | 2015 | -- | Success fully Complet ed |
| 10. | Computational Intelligence: Theories, Applications and Future Directions | SERB, DST, Govt. of India | 2,00,000.00 | 2017 | 2017 | -- | Success fully Complet ed |
| 11. | Computational Intelligence: Theories, Applications and Future Directions | CSIR, Govt. of India | 1,00,000.00 | 2017 | 2017 | -- | Success fully Complet ed |
| 12. | Deep learning approach for Condition based Monitoring | Shastri Indo Canadia | 3,02,400.00 | 2018 | 2018 | -- | Success fully Complet ed |

| S. No. | Title | Sponsor | Amount (in INR) | From Date (Month-Year) | To Date (Month-Year) | Name of PI | Outcome |
|---|---|---|---|---|---|---|---|
| | | n Institute | | | | | |

## 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 | 15,00,00,000.00 | 2018 | -- | Prof. A. K. Ghosh | In Progress |
| 2. | Teaching Learning Centre (TLC), Panit Madan Mohan Malviya National Mission on Teachers and Teaching (PMMMNMTT) | Ministry of HRD, Govt. of India | 7,54,00,000.00 | 2016 | 2019 | Prof. L. Behera | 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 Advanced Research in Power and Control | DST, Govt. of India | 7,00,00,000.00 (approx.) | 2010 | 2015 | Prof. S. C. Srivastava | Successfully Completed |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 5. | Path Tracking Control of Four Wheel Drive Four Wheel Steer Electric Vehicle | DST, Govt. of India | 19,60,8 00.00 | 2012 | 2016 | Prof. R. Potluri | Success fully Complet ed |
| 6. | Development of Personalized and performance based e-learning tool for existing e-resources | MCIT, Govt. of India | 30,00,0 00.00 | 2013 | 2017 | Prof. Y. N. Singh | Success fully Complet ed |
| 7. | Development of Small Sized Fixed Wing Unmanned Aerial System | IIT Kanpur, India | 1,74,00, 000.00 | 2014 | 2016 | Prof. A. K. Ghosh | Success fully Complet ed |
| 8. | Design and Development of Visually Guided Autonomous Quadrotors: Application in Surveillance and Disaster Management | IIT Kanpur, India | 30,00,0 00.00 | 2014 | 2015 | Prof. L. Behera | Success fully Complet ed |

# 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 from Shastri-Indo-Canadian Institute (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, USA (2005)

- IEEE CIS travel award US$ 700 for attending and presenting paper in FUZZ-IEEE 2005, Reno USA (2005)

- Secured highest rank in M. Tech. (Measurement and Instrumentation), 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

- **General Chair**, 2017 International Conference on Computational Intelligence: Theories, Applications and Future Directions, IIT Kanpur, December 6-8, 2017 ([Website](#))

- **Coordinator**, QIP Short Term Course on Deep Learning and Computational Intelligence in Automation & Control, IIT Kanpur, December 4-8, 2017 ([Website](#))

- **General Chair**, IEEE Workshop on Computational Intelligence: Theories, Applications and Future Directions, IIT Kanpur, December 14-17, 2015 ([Website](#))

- **Coordinator**, IEEE CIS Winter School on Computational Intelligence, IIT Kanpur, December 14-16, 2015 ([Website](#))

- **General Chair**, IEEE Workshop on Computational Intelligence: Theories, Applications and Future Directions, IIT Kanpur, July 14, 2013 ([Website](#))

- **Coordinator**, QIP Short Term Course on Intelligent Informatics, IIT Kanpur, July 15-19, 2013 ([Website](#))

- **Coordinator**, QIP Short Term Course on Intelligent Informatics in Electrical Engineering, IIT Kanpur, September 17-21, 2012 ([Website](#))

- **Coordinator**, Transducers and Instrumentation Virtual Laboratory, IIT Kanpur, December 7, 2012

- **Coordinator**, Transducers and Instrumentation Virtual Laboratory, IIT Kanpur, February 4, 2012

- **Coordinator**, Brainstorming on Health Monitoring of Automotive, IIT Kanpur, March 9-10, 2010 ([Website](#))

## 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:** "Deep Fuzzy Networks", TEQIP, GITS Udaipur, September 15, 2018

- **Expert Lecture:** "Deep Learning in Fuzzy Systems", TEQIP, National Institute of Technology Silchar, August 20, 2018

- **Expert Lecture:** "Fuzzy Logic and Deep Learning", Faculty Development Program (FDP) on Machine Learning and Applications (MLA-2018), ABV-IIITM Gwalior, March 26-30, 2018

- **Tutorial:** "Vision based Inventory Control", 2019 International Conference on Sensing, Diagnostics, Prognostics, and Control, Xian, China, August 15-17, 2018

- **Tutorial:** "Data Driven Models for Condition based Monitoring of Machines", 2018 IEEE International Conference on Prognostics and Health Management, Seattle, WA, USA, June 11-13, 2018

- **Panel Session Moderator & Speaker:** "Deep Learning in Prognostic and Health Management", 2018 IEEE International Conference on Prognostics and Health Management, Seattle, WA, USA,  June 11-13, 2018

- **Invited Lecture:** "Deep Learning and Deep Fuzzy Networks", Workshop on Swarm and Evolutionary Algorithms: Theory and Applications, Indian Institute of Technology Roorkee, March 18th, 2018

- **Keynote Speech:** "Deep Learning and Computational Intelligence", Amity University, Lucknow, March 15, 2018

- **Invited Lecture:** "Deep Learning with Fuzzy Systems", IET Lucknow, March 13, 2018

- **Keynote Speech:** "Deep Fuzzy Networks in Condition based Monitoring", International Conference on Signals, Machines and Automation (SIGMA 2018), NSIT Delhi, February 24, 2018

- **Invited Lecture:** "Deep Learning and Fuzzy Systems", Faculty Development Program, National Institute of Technology, Kurukshetra, January 13-14, 2018

- **Tutorial:** "Intelligent Health Monitoring of Rotating Machines", 2017 International Conference on Sensing, Diagnostics, Prognostics, and Control, Shanghai, China, August 16-18, 2017

- **Tutorial:** "Deep Learning, Computational Intelligence and Health Monitoring of Machines", 2017 IEEE International Conference on Prognostics and Health Management, Dallas, Texas, USA, June 19-21, 2017

- **Invited Lecture:** "Deep Learning and Fuzzy Deep Networks", Faculty Development Program, Banasthali Vidyapith, Rajasthan, December 26, 2017

- **Keynote Speech:** "Deep Learning and Fuzzy Deep Networks", SocPros 2017, Indian Institute of Technology, Bhubaneswar, December 23, 2017

- **Keynote Speech:** "Deep Learning and Fuzzy Deep Networks", 17th International Conference on Intelligent Systems Design and Applications (ISDA) at South Asian University, December 14, 2017

- **Plenary Speech:** "Deep Learning and Computational Intelligence", In 6th IEEE International Conference on Computer Applications in Electrical Engineering - Recent Advances (CERA 17), Indian Institute of Technology Roorkee, October 6, 2017

- **Invited Lecture:** "Deep Learning and Computational Intelligence", Malaviya National Institute of Technology, Jaipur, August 1, 2017

- **Keynote Speech:** International Conference on Advances in Internet of Things and Connected Technologies (ICIoTCT 2017), Malviya National Institute of Technology, Jaipur, India, May 26-27, 2017

- **Keynote Speech:** "Deep Learning and Condition based Monitoring", International Conference on Intelligent Systems and Signal Processing (ISSP-2017), March 24-25, 2017

- **Expert Lecture:** "Fuzzy Logic Controllers", TEQIP, National Institute of Technology, Silchar, February 26, 2017

- **Invited Lecture:** "Deep Learning, PID and Fuzzy Controllers", Short Term Course, Indian Institute of Technology, Varanasi, February 18, 2017

- **Speaker and Panelist:** "IoT in Developing Countries", IEEE World Forum on Internet of Things, RESTON, VA, USA, December 12-14, 2016

- **Tutorial:** "Rotating Machines: Intelligent Condition Based Monitoring", 2016 IEEE International Conference on Prognostics and Health Management, Carleton University, Ottawa, ON, Canada, June 20-22, 2016

- **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:** $4^{th}$ World Conference on Soft Computing, University of Berkeley, Berkeley, San Francisco, USA, May 25-27, 2014

- **Invited Lecture:** Hangzhou Dianzi University, Hangzhou, China

- **Invited Lecture:** Center for Integrative and Translational Genomics, University of Tennessee, Memphis, USA

- **Invited Lecture:** The Boeing Company, St Louis, USA

- **Invited Lecture:** The Boeing Company, Everett, Seattle, WA, USA

- **Invited Lecture:** The Boeing Company, Lynwood, Seattle, WA, USA

- **Invited Lecture:** Raman Research Institute, Bangalore

- **Invited Lecture:** Saint Xavier's Catholic College of Engineering, Nagercoil

- **Invited Lecture:** Indian Institute of Technology Jodhpur, Rajasthan (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, DEI Dayalbagh, Agra, January 18, 2013

- **Invited Lecture:** IIITDM Jabalpur, March 9, 2013

- **Invited Lecture:** Banasthali Vidyapeeth, Tonk, Jaipur, March 14, 2013

- **Invited Lecture:** Huawei Technologies Pvt. Limited, Bangalore, March 25, 2013

- **Invited Lecture:** SKF Technologies India Pvt. Limited, Bangalore, December 22, 2014

## Research Associations and Activities

- **Program Chair:** International Conference on Sensing, Diagnostics, Prognostics, and Control, Xi'an, China (2018)

- **Keynote Session Chair**: International Conference on Sensing, Diagnostics, Prognostics, and Control, Xi'an, China (2018)

- **Panel Session Moderator:** IEEE International Conference on Prognostics and Health Management, Seattle, WA, USA (2018)

- **Panel Speaker:** IEEE International Conference on Prognostics and Health Management, Seattle, WA, USA (2018)

- **Session Chair:** IEEE International Conference on Prognostics and Health Management, Seattle, WA, USA (2018)

- **Paper Review Chair:** Prognostics and System Health Management Conference, Chongqing, China (2018)

- **Session Chair:** Prognostics and System Health Management Conference, Chongqing, China (2018)

- **Program Chair**, 2018 International Conference on Sensing, Diagnostics, Prognostics, and Control, Xi'an, China, August 15-17, 2018

- **Technical Program Committee**, 2018 IEEE International Conference on Prognostics and Health Management, Seattle, WA, USA

- **Chairman**, CDR Committee, Indigenous Design & Development of Electronic Box P/n 241900000 for Do-228 Dornier Aircraft, ASERDC, HAL, Lucknow, February 26, 2018

- **Chairman**, PDR Committee, Indigenous Design & Development of Electronic Box P/n 241900000 for Do-228 Dornier Aircraft, ASERDC, HAL, Lucknow, November 21, 2017

- **Chairman**, CDR Committee, Indigenous Design & Development of Fuel Quantity Transmitters for for Do-228 Dornier Aircraft, ASERDC, HAL, Lucknow, November 20, 2017

- **Chairman**, PDR Committee, Indigenous Design & Development of Electronic Box P/n 241900000 for Do-228 Dornier Aircraft, ASERDC, HAL, Lucknow, April 22, 2017

- **Vice Chairman,** IEEE UP Section CIS Chapter (2017)

- **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 Aerospace Applications, ASERDC, HAL, Lucknow, April 24, 2017

- **Program Chair**, 2017 International Conference on Sensing, Diagnostics, Prognostics, and Control, Shanghai, China

- **Chairman,** IEEE UP Section CIS Chapter (2016)

- **Chairman,** Design Review Committee, DC Master Box, P/No. 261300000 for HTT-40 Aircraft, ASERDC, HAL, Lucknow, May 31, 2014

- **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)

- **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 CIS Chapter

- **Convener**, Educational Activities Committee, IEEE UP Section (2011-12)

- **Reviewer**, IEEE Transactions on Fuzzy Systems

- **Reviewer**, IEEE Transactions on Systems Man and Cybernetics Part-A, B and C.

- **Reviewer**, IEEE Transactions on Geoscience and Remote Sensing

- **Reviewer**, IEEE Transactions on Knowledge and Data Engineering

- **Reviewer**, IEEE Transactions on Pattern Analysis and Machine Intelligence

- **Reviewer**, Fuzzy Sets and Systems

- **Reviewer**, Pattern Recognition

- **Reviewer**, Applied Soft Computing

- **Reviewer**, Defense Science Journal

- **Chairman**, Review Committee for Design and Development 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), Hyderabad, India, July 7-10, 2013

- **Publicity Chair**, Special Session on Soft Computing Techniques for Biometric Technologies, The 12th International Conference on Artificial Intelligence and Soft Computing (ICAISC 2013), Zakopane, Poland, June 9-13, 2013

- **General Chair**, IEEE Workshop on Computational Intelligence: Theories, Applications and Future Directions, IIT Kanpur, July 14, 2013

- **General Chair**, IEEE Workshop on Computational Intelligence: Theories, Applications and Future Directions, IIT Kanpur, December 15-17, 2015

- **Coordinator**, CIS Winter School, IIT Kanpur, December 14-16, 2015

- **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, IIT Kanpur, March 13-14, 2014

- **Program Chair**, IEEE Computational Intelligence Workshop (CIW-2014), IIIT Allahabad, October 13-15, 2014

- **Panel Member**, IEEE World Forum on Internet of Things, RESTON, VA, USA, December 12-14, 2016

## 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 2015)

- **Associate Editor**, IEEE Transactions on Neural Networks and Learning Systems (Since 2019)

- **Associate Editor**, IEEE Computational Intelligence Magazine (Since 2016)

- **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

## IEEE/ IET Journals/ Transactions/ Magazines

[50] Aquib Mustafa, Narendra K. Dhar, and **Nishchal K. Verma**, "Event-Triggered Sliding Mode Control for Trajectory Tracking of Nonlinear Systems", *IEEE/CAA Journal of Automatica Sinica*, 2018. (Accepted for Publication)

[49] Padmini Singh, Pooja Agrawal, Hamad Karki, Amit Shukla, **Nishchal K. Verma**, and L. Behera, "Vision based Guidance and Switching based Sliding Mode Controller for a Mobile Robot in the Cyber Physical Framework", *IEEE Transactions on Industrial Informatics*, 2018. (Accepted for Publication)

[48] Aniket Kar, Narendra Kumar Dhar, Pankaj Kumar Mishra and **Nishchal K. Verma**, "Relative vehicle displacement approach for path tracking adaptive controller with multisampling data transmission," *IEEE Transactions on Emerging Topics in Computational Intelligence*, 2018. (Accepted for Publication)

[47] Aniket Kar, Narendra Kumar Dhar, and **Nishchal K. Verma**, "Event-Triggered Adaptive Neural Network Controller in a Cyber-Physical Frameworks," *IEEE Transactions on Industrial Informatics*, 2018. (Accepted for Publication). (pdf)

[46] Raghav Dev and **Nishchal K. Verma**, "Generalized Fuzzy Peer Group for Removal of Mixed Noise from Color Image," *IEEE Signal Processing Letters*, vol. 25, no. 9, pp. 1330 - 1334, 2018. (pdf)

[45] Rahul K. Sevakula, Vikas Singh, **Nishchal K. Verma**, Chandan Kumar and Yan Cui, "Transfer Learning for Molecular Cancer Classification using Deep Neural Networks," *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, 2018. (Early Access). (pdf)

[44] Vikas Singh, Raghav Dev, Narendra Kumar Dhar, Pooja Agrawal and **Nishchal K. Verma,** "Adaptive Type-2 Fuzzy Approach for Filtering Salt and Pepper Noise in Grayscale Images," *IEEE Transactions on Fuzzy Systems*, 2018. (Early Access). (pdf)

[43] N. K. Dhar, **Nishchal K. Verma**, and L. Behera, "Adaptive Critic based Event-Triggered Control for HVAC system," *IEEE Transactions on Industrial Informatics,* vol. 14, no. 1, pp. 178-188, 2018. (pdf)

[42] Rahul K. Sevakula, and **Nishchal K. Verma**, "Compounding General Purpose Membership Functions for Fuzzy Support Vector Machine in Noisy Environment," *IEEE Transactions on Fuzzy Systems*, vol. 25, no.6, pp. 1446-1459, 2017. (pdf)

[41] **Nishchal K. Verma**, Rahul K. Sevakula, and Raghuveer Thirukovalluru, "Pattern analysis framework with Graphical Indices for Condition based monitoring," IEEE Transactions on Reliability, vol. 66, no. 4, pp .1085-1100, 2017. (pdf)

[40] Narendra Kumar Dhar, **Nishchal K. Verma**, L Behera and M M Jamshidi, "On an Integrated Approach to Networked Climate Control of a Smart Home," *IEEE Systems Journal*, pp. 1-12, 2016. (pdf)

[39] R. K. Sevakula and **Nishchal K. Verma**, "Assessing Generalization Ability of Majority Vote Point Classifiers," *IEEE Transactions on Neural Networks and Learning Systems*, vol. 28, no. 12, pp. 2985-2997, 2017. (pdf)

[38] B. P. Padhy, S. C. Srivastava and **Nishchal K. Verma**, "A Wide-Area Damping Controller Considering Network Input & Output Delays and Packet Drop," *IEEE Transactions on Power Systems*, vol. 32, no. 1, pp. 166-176, 2017. (pdf)

[37] **Nishchal K. Verma**, R. K. Sevakula, S. Dixit and A. Salour, "Intelligent Condition Based Monitoring using Acoustic Signals for Air Compressors," *IEEE Transactions on Reliability*, vol. 65, no. 1, pp. 291-309, 2016. (pdf)

[36] **Nishchal K. Verma**, R. K. Sevakula, S. Dixit and A. Salour, "Data Driven Approach for Drill Bit Monitoring," *IEEE Reliability Magazine*, pp. 19-26, Feb. 2015. (pdf)

[35] **Nishchal K. Verma** and Abhishek Roy, "Self-Optimal Clustering Technique Using Optimized Threshold Function," *IEEE Systems Journal*, vol. 99, pp. 1-14, Jul. 2013. (pdf)

[34] B. P. Padhy, S. C. Srivastava and **Nishchal K. Verma**, "A Coherency Based Approach for Signal Selection for Wide Area Stabilizing Control in Power System," *IEEE Systems Journal*, vol. 7, pp. 807-816, December 2013. (pdf)

[33] Rajiv K. Shakya, Y. N. Singh and **Nishchal K. Verma**, "Generic Correlation Model for Wireless Sensor Network Applications," *IET Wireless Sensor Systems*, vol. 3, pp. 266-276, December 2013. (pdf)

[32] Rajiv K. Tripathi, Y. N. Singh and **Nishchal K. Verma**, "Clustering algorithm for non-uniformly distributed nodes in a wireless sensor network," *IET Electronics Letters*, vol. 49, no. 4, pp. 299-300, 2013. (pdf)

[31] B. P. Padhy, S. C. Srivastava, and **Nishchal K. Verma**, "Robust Wide-Area Fuzzy Output Feedback Controller for Enhancement of Stability in Multi-Machine Power System," *IEEE Systems Journal*, vol. 6, no. 3, pp. 426-435, September 2012. (pdf)

[30] Rajiv K. Tripathi, Y. N. Singh and **Nishchal K. Verma**, "Two-Tiered Wireless Sensor Networks - Base Station Optimal Positioning Case Study," *IET Wireless Sensor Systems Journal*, vol. 2, no. 4, pp. 351-360, 2012. (pdf)

[29] **Nishchal K. Verma** and M. Hanmandlu, "Additive and Non-Additive Fuzzy Hidden Markov Models," *IEEE Transactions on Fuzzy Systems*, vol. 18, no. 1, pp. 40-56, February 2010. (pdf)

[28] **Nishchal K. Verma**, "Doctoral Thesis on Gaussian Mixture Model based Non-Additive Fuzzy Systems," *IEEE Computational Intelligence Soc. Electronic Letters, Issue 37*, November 2007.

[27] Nishchal K. **Verma** and M. Hanmandlu, "From Gaussian mixture model to non-additive fuzzy systems," *IEEE Transactions on Fuzzy Systems*, vol. 15, no. 5, pp. 809-827, October 2007. (pdf)

## International Journals

[26] Dhan Jeet Singh, Pooja Agrawal, **Nishchal K. Verma**, A. K. Ghosh and Appasaheb Malagaudanavar, "Interval type-2 TS fuzzy model for angle of attack sensor of the aircraft," *Journal of Intelligent and Fuzzy Systems*, vol. 34, no. 6, pp. 3891-3901, 2018. (pdf)

[25] Shreedharkumar Rajurkar, Vikas Singh, **Nishchal K. Verma** and Yan Cui, "Deep stacked auto-encoder with deep fuzzy network for transcriptome-based tumor type classification," *BMC Bioinformatics*, vol. 18, 2017.

[24] Agnihotri, Rajesh, A. P. Dimri, H. M. Joshi, **Nishchal K. Verma**, C. Sharma, J. Singh, and Y. P. Sundriyal, "Assessing operative natural and anthropogenic forcing factors from long-term climate time series of Uttarakhand (India) in the backdrop of recurring extreme rainfall events over northwest Himalaya," Elsevier, *Journal of Geomorphology*, vol. 284, pp. 31-40, 2017. (pdf)

[23] P. Agrawal, T. Sharma, and **Nishchal K. Verma**, "Supervised Approach for Object Identification using Speeded Up Robust Features," *International Journal of Advanced Intelligence Paradigms (IJAIP)*, 2017. (Accepted for publication)

[22] R. K. Sevakula, R. Thirukovalluru and **Nishchal K. Verma** and Y. Cui, "Deep neural networks for transcriptome-based cancer classification," *BMC Bioinformatics*. (Accepted for publication)

[21] **Nishchal K. Verma**, E. Dutta and Y. Cui, "Assessing the Quality of Biclusters using Fuzzy Biclustering Index," *International Journal of Data Mining and Bioinformatics*, vol. 15, no. 4, pp. 291-311, 2016. (pdf)

[20] **Nishchal K. Verma**, R. K. Sevakula, S. Dixit, A. Salour, "Ranking of Sensitive Positions Using Statistical and Correlational Analysis," *International Journal on Smart Sensing and Intelligent Systems*, vol.6, no. 4, pp.1745-1762, 2013. (pdf)

[19] **Nishchal K. Verma**, S. Singh, J. K. Gupta, R. K. Sevakula, S. Dixit, A. Salour, "Smartphone Application for Fault Recognition," *International Journal on Smart Sensing and Intelligent Systems*, vol. 6, no. 4, pp.1763-1782, 2013. (pdf)

[18] **Nishchal K. Verma** and Shikha Singh, "Image sequence prediction using ANN and RBFNN with selected features," *International Journal of Image and Graphics*, vol. 13, no. 2, July 2013.

[17] Narendra Kohli and **Nishchal K. Verma**, "Performance analysis of online health care system," *International Journal of Engineering, Science and Technology*, vol. 3, no. 1, pp. 191-205, 2011. (pdf)

[16] Narendra Kohli and **Nishchal K. Verma**, "Arrhythmia Classification using SVM with Selected Features," *International Journal of Engineering, Science and Technology*, vol. 3, no. 8, pp. 122-131, 2012. (pdf)

[15] **Nishchal K. Verma**, "Estimation of Fuzzy Measures Using Covariance Matrices in Gaussian Mixtures," *Applied Computational Intelligence and Soft Computing Journal*, Article ID 402420, 16 pages, 2012. (pdf)

[14] **Nishchal K. Verma**, Pallavi Singla and Abhishek Roy, "Energy harvesting by Foot-Propelled Battery Charger Using Shoe Model", *Advanced Materials Research Journal*, vol. 488-489, pp. 1268-1273, 2012. (pdf)

[13] Mehta, Bhuwan, **Nishchal K. Verma**, and Pradip Sircar, "Performance analysis of alpha divergence in nonnegative matrix factorization of monaural musical sounds," *International Journal of Engineering, Science and Technology*, vol. 3, no. 6, pp. 273-282, 2011. (pdf)

[12] **Nishchal K. Verma**, Abhishek Roy and Yan Cui, "Improved Mountain Clustering Algorithm for Gene Expression Data Analysis", *Journal of Data Mining and Knowledge Discovery*, vol. 2, no. 1, pp. 30-35, 2011. (pdf)

[11] J. Arora, **Nishchal K. Verma** and M. M. Srivastava, "Mathematical modeling on Osmotic Transport across cell membranes in human corneal epithelial cells in

non-dilute solution", *National Academy of Sciences*, vol. 33, no. 1 and 2, pp. 33-40, 2010.

[10] Narendra Kohli and **Nishchal K. Verma**, "MySQL based selection of appropriate indexing technique in Hospital System using SVM", *International Journal of Engineering, Science and Technology*, vol. 2, no. 6, pp. 119-130, 2010. ([pdf](#))

[9] Narendra Kohli and **Nishchal K. Verma**, "Performance Issues of Health Care System using SQL server", *International Journal of Computer Science and Information Security*, vol. 8, no. 2, pp. 279-284, May 2010.

[8] **Nishchal K. Verma** M Hanmandlu "Adaptive non-additive generalized fuzzy systems", *Elsevier applied Soft Computing Journal*, vol. 10, no. 3, pp. 820-831, June 2010.

[7] **Nishchal K. Verma** and Yan Cui, "Fuzzy Rule Based Unsupervised Approach for Gene Saliency", *BMC Bioinformatics*, vol. 10, no. 7, pp. A2, June 2009. ([pdf](#))

[6] **Nishchal K. Verma** and M. Hanmandlu, "ANAFS computation of H-component of Earth's magnetic field", *International Journal of Computational Intelligence and Applications*, vol.7, no. 1, pp. 43-56, March 2008. ([pdf](#))

[5] **Nishchal K. Verma** and M. Hanmandlu, "Data driven model using Adaptive Fuzzy System", *International Journal of Automation and Control*, vol.2, no. 4, pp. 447-458, 2008. ([pdf](#))

[4] **Nishchal K. Verma** and M. Hanmandlu, "Color segmentation via. Improved Mountain Clustering Technique," *International Journal of Image and Graphics*, vol. 7, no. 2, pp. 407-426, April 2007. ([pdf](#))

[3] **Nishchal K. Verma** and B. K. Panigrahi, "Data based Adaptive Computation Technique", *International Journal of Information and Communication Technology*, vol. 1, no. 1, pp. 98-111, April 2007. ([pdf](#))

[2] **Nishchal K. Verma** and M. Hanmandlu, "Non-additive Generalized Fuzzy System under the Framework of Cluster weighted Model", *International Journal on*

*Artificial Intelligence and Machine Learning*, vol. 6, Issue 2, pp. 27-33, June 2006. ([pdf](#))

[1] **Nishchal K. Verma** and M. Hanmandlu, "Adaptability in Additive Fuzzy Systems via EM Algorithm", *International Journal of Artificial Intelligence and Machine Learning*, vol. 6, no. 2, pp. 34-41, June 2006. ([pdf](#))

## Peer reviewed Conferences

[160] Teena Sharma, Pooja Agrawal, Piyush Sahoo, **Nishchal K. Verma** and Shantaram Vasikarla, "Line Segments based Rotation Invariant Descriptor for Disparate Images" *In 2018 IEEE Applied Imagery Pattern Recognition workshop*, *Washington, DC*, Oct. 9-11, 2018. (Accepted)

[159] Arun K. Sharma, Dhanjeet Singh and **Nishchal K. Verma**, "Data Driven Aerodynamic Modeling Using Mamdani Fuzzy Inference Systems", *2018 International Conference on Sensing, Diagnostics, Prognostics, and Control, Xi'an*, *China,* August 15-17, 2018. (Accepted)

[158] **Nishchal K. Verma**, Sonal Dixit, Rahul K. Sevakula and Al Salour, "Computational Framework for Machine Fault Diagnosis with Autoencoder Variants", *2018 International Conference on Sensing, Diagnostics, Prognostics, and Control, Xi'an*, *China,* August 15-17, 2018. (Accepted)

[157] Arun K. Sharma, Vikas Singh, **Nishchal K. Verma** and Jie Liu, "Condition Based Monitoring of Machine using Mamdani Fuzzy Network," *2018 Prognostics and System Health Management Conference, PHM-Chongqing, Chongqing, China,* Oct. 26-28, 2018. (Accepted)

[156] Bhanu Teja, Teena Sharma, **Nishchal K. Verma** and S. R. Sahoo, "Image Dehazing for Object Recognition using Faster RCNN," *2018 IEEE World Congress on Computational Intelligence (WCCI 2018)*. (Accepted)

[155] Vikas Singh, Harshvardhan, **Nishchal K. Verma** and Yan Cui, "Optimal Feature Selection using Fuzzy Combination of Feature Subset for Transcriptome

Data," *2018 IEEE World Congress on Computational Intelligence (WCCI 2018).* (Accepted)

[154] Seetaram Maurya, Vikas Singh, Sonal Dixit, **Nishchal K. Verma**, Al Salour and Jie Liu, "Fusion of Low-level Features with Stacked Autoencoder for Condition based Monitoring of Machines," *2018 IEEE International Conference on Prognostics and Health Management, Seattle, WA, USA,* June 11-13, 2018. (Accepted)

[153] Gaurav Saraswat, Vikas Singh, **Nishchal K. Verma**, Al Salour and Jie Liu, "Prognosis of Diesel Engine (MBT) using Feature Extraction Techniques: A Comparative Study," *2018 IEEE International Conference on Prognostics and Health Management, Seattle, WA, USA,* June 11-13, 2018. (Accepted)

[152] Padmini Singh, Laxmidhar Behera, **Nishchal K. Verma**, "Design of Passivity Based Cyber Physical System With Markovian Losses and Delay," *IFAC World Congress, Toulouse, France,* vol. 50, no. 1, pp. 1971-1976, July 9-14, 2017.

[151] Vikas Singh, Zeeshan Ul Islam, **Nishchal K. Verma** and Yan Cui, "Feature Learning using Stacked Autoencoder for Shared and Multimodal Fusion of Medical Images", *In 2017 International Conference on Computational Intelligence: Theories, Applications and Future Directions (ICCI-2017), India,* Springer, vol. 1, pp. 53-66, Dec. 6-8, 2017. (pdf)

[150] Vikas Singh, Anirudh Swaminathan, **Nishchal K. Verma**, "Convolutional Neural Network with Stacked Autoencoder for Kernel Initialization", *In 2017 International Conference on Computational Intelligence: Theories, Applications and Future Directions (ICCI-2017), India,* Springer, vol. 2, pp. 53-63, Dec. 6-8, 2017. (pdf)

[149] **Nishchal K. Verma**, Vikas Singh, Shreedharkumar Rajurkar and Mohd Aqib, "Fuzzy Inference Network with Mamdani Fuzzy Inference System", *In 2017 International Conference on Computational Intelligence: Theories, Applications and Future Directions (ICCI-2017), India,* Springer, vol. 1, pp. 375-388, Dec. 6-8, 2017. (pdf)

[148] Homanga Bharadhwaj, Vikas Singh, **Nishchal K. Verma**, "Type - 2 Fuzzy TSK: A Type-2 Fuzzy Systems approach for Clustering based identification of a T-S Regression model", *In 2017 International Conference on Computational Intelligence: Theories, Applications and Future Directions (ICCI-2017), India,* Springer, vol. 1, pp. 359-374, Dec. 6-8, 2017. (pdf)

[147] Akhilesh Raj, Kanishk Gandhi, Bhanu Teja Nalla, and **Nishchal K. Verma**, "Object Detection and Recognition using Small labeled Datasets", *In 2017 International Conference on Computational Intelligence: Theories, Applications and Future Directions (ICCI-2017), India,* Springer, vol. 2, pp. 407-419, Dec. 6-8, 2017. (pdf)

[146] Ankur Kamboj, Narendra Kumar Dhar, and **Nishchal K. Verma**, "Event Triggered Control for Trajectory Tracking by Robotic Manipulator", *In 2017 International Conference on Computational Intelligence: Theories, Applications and Future Directions (ICCI-2017), India,* Springer, vol. 1, pp. 161-170, Dec. 6-8, 2017. (pdf)

[145] Dhanjeet Singh, **Nishchal K. Verma**, Ajoy Kanti Ghosh, and Jitu Sanwale, "Aerodynamic Parameter Modeling Using TS Fuzzy Systems from Flight Data", *In 2017 International Conference on Computational Intelligence: Theories, Applications and Future Directions (ICCI-2017), India,* Springer, vol. 1, pp. 425-437, Dec. 6-8, 2017. (pdf)

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