

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

Phone: +91 512-259-6524

Email: nishchal@iitk.ac.in

Webpage: <http://www.iitk.ac.in/idea/>



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 (November 2018 - onwards)

Associate Professor

Department of Electrical Engineering, Indian Institute of Technology Kanpur,
Kanpur-208016, India (May 2014 - November 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
- 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)
- **EE658A** - Fuzzy Sets, Logic & Systems and Applications
- **EE617A** - Industrial Automation & Control
- **EE380A**: Control Systems Lab
- **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. Rajiv 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. Mr. Vibhu Kumar Tripathi (13104197)

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

8. Ms. Padmini Singh (13504061)

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

9. Mr. Heera Lal Maurya (14104284)

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

10. Mr. Narendra Kumar Dhar (14104272)

Thesis Title: Event-Triggered Near Optimal Control under Cyber-Physical System Framework

Status: Thesis defended, Feb. 2020

11. Ms. Sonal Dixit (14104272)

Thesis Title: Condition-based Monitoring of Unmanned Aerial Vehicles (UAVs)

Status: In Progress

12. Mr. Vikas Singh (15104279)

Thesis Title: Development of Deep Learning Algorithms for Condition-based Monitoring

Status: In Progress

13. Mr. J Balaji (16201261)

Status: In Progress (Co-Supervised with Prof. A. K. Ghosh)

14. Ms. Teena Sharma (16104286)

Thesis Title: Deep Learning Approaches for Complex Object Recognition in Unstructured Outdoor Noisy Environment

Status: In Progress

15. Mr. Pankaj Kumar Mishra (16104276)

Thesis Title: Adaptive Control for AGV with Vision Sensor as an Unknown Nonlinear System

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)

Status: In Progress

18. Mr. Mohd Aquib (18204271)

Status: In Progress

19. Mr. Seetaram Maurya (18204282)

Status: In Progress

20. Mr. Dhan Jeet Singh (18204281)

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: Study of 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. Ms. Sejal Samaiya (EXY18007)

Thesis Title: Study of Fuzzy based Feature Selection and Classification

Status: Thesis defended, 2019

29. Astha Jain (EXY18008)

Thesis Title: Study of Object Counting Algorithms Under Varying Lighting Conditions

Status: Thesis defended, 2019

30. Mr. Ashish Kumar (17104012)

Thesis Title: Detection and Removal of salt and pepper noise by Gaussian membership function and Guided filter

Status: Thesis defended, 2019

31. Mr. Bharat Gupta (17204009)

Status: In Progress

32. Mr. Akash Banerjee (17204003)

Status: In Progress

33. Mr. Harshit Mishra (17204012)

Project Title: Three phase Unbalanced Distribution System State Estimation Using Neural Network for Pseudo Measurement Modelling

Status: Project defended, 2020

34. Mr. Sonu Kumar Jha (17204021)

Thesis Title: Multi-Step Load Demand Forecasting using Auto-Correlation, PCA, and DNN based Feature Extraction Methods

Status: Thesis defended, 2020

35. Mr. Boda Pool Singh (18104072)

Project Title: Modeling and Simulation of Fuzzy Expert System for Mitigation of Power Fluctuation in AC-DC Hybrid Microgrid Connected in a Distribution Network

Status: Project defended, 2020

36. Ms. Ankita (18104019)

Project Title: Wavelength Routing Algorithm using link Congestion and Path length in WDM Network with Wavelength Converter

Status: Project defended, 2020

37. Mr. R Kumar (18104147)

Thesis Title: Implementation of network address translation for peer-to-peer network

Status: Thesis defended, 2020

38. Mr. Jitesh PS (18104048)

Thesis Title: Development of service modules for peer to peer networks

Status: Thesis defended, 2020

39. Mr. Digvijay Singh Dhakad (18104036)

Project Title: Image registration using 3D point cloud data

Status: Project defended, 2020

40. Mr. Ratnesh Kumar (18104088)

Project Title: Image-based Registration method for 3D Reconstruction

Status: Project defended, 2020

41. Mr. Shahrukh Masood (18104169)

Thesis Title: Mixed Fuzzy Pooling in Convolutional Neural Networks for Image Classification

Status: Thesis defended, 2020

42. Mr. Mayur Sonowal (19104053)

Status: In Progress

43. Mr. Sandeep Singh (19104083)

Status: In Progress

44. Mr. Shivam Pal (15807678)

Thesis Title: Finding Prerequisite Relations between Concepts using Textbook Information

Status: Thesis defended, 2020

45. Mr. Naveen Goma (19104057)

Status: In Progress

46. Mr. Vanam Ravindra Kumar (19104079)

Status: In Progress

47. Mr. Arif Khan (19104015)

Status: In Progress

48. Mr. Tarun Agrawal (19104121)

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 defended, 2019

5. Mr. Seetaram Maurya (16104405)

Thesis Title: Transfer Learning Approach for Condition based Monitoring

Status: Converted to PhD

6. Mr. Ashish Gupta (16104402)

Project Title: Real-Time Missile Midcourse Guidance for Surface-to-Air Missile using Long Short-Term Memory

Status: Project defended, 2020

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
15. Ankur Singh, 2018
16. Rakshit Verma (160559), 2018
17. Abdul Wasim (160008), 2018
18. Akshay Bhola (14060), 2020

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 Co-Authored

1. **Nishchal K. Verma** and A. Salour, “Intelligent Condition Based Monitoring: For Turbines, Compressors, and other Rotating Machines” *Studies in Systems, Decision and Control*, Springer, 2020, ISBN 978-981-15-0512-6. (<https://www.springer.com/gp/book/9789811505119>)

Books Edited

2. **Nishchal K. Verma** and A. K. Ghosh, “Computational Intelligence: Theories, Applications and Future Directions-Volume I (ICCI-2017)” *Advances in Intelligent Systems and Computing*, Springer, 2019, ISBN 978-981-13-1132-1. (<https://www.springer.com/gp/book/9789811311314>)
3. **Nishchal K. Verma** and A. K. Ghosh, “Computational Intelligence: Theories, Applications and Future Directions-Volume II (ICCI-2017)” *Advances in Intelligent*

Systems and Computing, Springer, 2019, ISBN 978-981-13-1135-2.
(<https://www.springer.com/gp/book/9789811311345>)

4. V. K. Giri, **Nishchal K. Verma**, R. K. Patel, and V. P. Singh, “Computing Algorithms with Applications in Engineering, Proceedings of ICCAEEE 2019” *Algorithms for Intelligent Systems*, Springer, 2020, ISBN 978-981-15-2369-4.
(<https://www.springer.com/gp/book/9789811523687>)

Book Chapters

1. M. Pandey, V. Singh, and **Nishchal K. Verma**, “Fuzzy based investment portfolio management,” *Applying Fuzzy Logic for the Digital Economy and Society, Fuzzy Management Methods - Springer, Cham*, pp. 73-95, 2019.
2. V. 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 Cham*, vol. 125, pp. 269-283, 2017, ISBN- 978-3-319-69988-2
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 Technologies 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

Softwares 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	2019	--	Prof. A. K. Ghosh, Prof. L. Behera, Prof. M. J. Akhtar	In Progress
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	24,77,74 0.00	2011	2015	Prof. Y. N. Singh	Successfully Completed
5.	Instruments for monitoring of the Health Monitoring of Automotive	DST, Govt. of India	6,97,576. 00	2009	2010	--	Successfully Completed
6.	Spatiotemporal Data Based Fuzzy Video Model for Future Image Frame Generation	IIT Kanpur, India	10,00,00 0.00	2009	2010	--	Successfully Completed
7.	Transducers and Instrumentation Virtual Laboratory	Ministry of HRD, Govt. of India	40,00,00 0.00	2010	2016	--	Successfully Completed
8.	Computational Intelligence: Theories, Applications and Future Directions	SERB, DST, Govt. of India	1,50,000. 00	2013	2013	--	Successfully Completed
9.	Computational Intelligence: Theories, Applications and Future Directions	SERB, DST, Govt. of India	1,50,000. 00	2015	2015	--	Successfully 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	To Date (Month-Year)	Name of PI	Outcome
--------	-------	---------	-----------------	-----------	----------------------	------------	---------

				(Month-Year)			
1.	Pilot Project On Development And Implementation Of Industry 4.0 Protocols For Rail-Coach Design & Manufacturing At Modern Coach Factory, Raebarely	DST, Govt. of India	1663.84 Lacs	2019	--	Prof. N S Vyas	In Progress
2.	Development of low-cost multi-rotor mini-UAV for early detection of crop diseases and development of an optimal system for management of farming activities	Ministry of HRD, Govt. of India	77.74 Lacs	2019	--	Prof. L. Behera	In Progress
3.	Development of Solar Air Taxi	IIT Kanpur and Others	15,00,00,000.00	2018	--	Prof. A. K. Ghosh	In Progress
4.	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	Successfully Completed
5.	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
6.	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
7.	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

8.	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
9.	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
10.	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
11.	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

- Teaching Performance Excellence rated by Students for EE617A: Industrial Automation and Control from Academic Senate, IIT Kanpur, India (2019-20 Sem I)
- 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 the 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

- **Chairman**, SAEC, IIT Kanpur (Since April 2019)
- **Member**, IRDC, Dept. of Electrical Engineering, IIT Kanpur (2018)
- **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 (Sept. 2017 - Sept. 2019)
- **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

- **Coordinator**, QIP Short Term Course on Artificial Intelligence and Fuzzy Systems: Theories, Concepts and its Application, IIT Kanpur, December 9-13, 2019 ([Website](#))
- **Transducers and Instrumentation Virtual Laboratory Lecture and Demonstration**, IIT Kanpur, Sept. 14, 2019

- **Transducers and Instrumentation Virtual Laboratory Lecture and Demonstration**, Rajkiya Engineering College Kannauj, Sept. 07, 2019
- **Transducers and Instrumentation Virtual Laboratory Lecture and Demonstration**, PSIT Kanpur, Mar. 30, 2019
- **Transducers and Instrumentation Virtual Laboratory Lecture and Demonstration**, KIT Kanpur, Feb. 16, 2019
- **Coordinator**, 2018 IEEE CIS Summer/Winter School on Deep Learning and Computational Intelligence, IIT Kanpur, December 5-7, 2018 ([Website](#))
- **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/Facilities 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 studying 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

- **Keynote Speech:** “Deep Learning and its role in Artificial Intelligence”, College of Engineering, Roorkee, Uttarakhand, India, November 20, 2019
- **Invited Lecture:** “Deep Learning and its Applications”, Dept. of Computer Science, University of Hyderabad, India, November 11, 2019
- **Keynote Speech:** “Artificial Intelligence and Deep Learning”, International Conference on Computing Applications in Electrical and Electronics Engineering (ICCAEEE), Rajkiya Engineering College, Sonbhadra, India, August 30-31, 2019
- **Keynote Speech:** “Deep Fuzzy Networks”, IEEE CIS Summer School 2019 on “Big Data Analytics and Stream Processing: Tools, Techniques and Application”, Indian Institute of Information Technology Allahabad, India, August 10-14, 2019
- **Keynote Speech:** “Artificial Intelligence and Machine Vision for Facial Recognition”, Workshop on Role of Technology in Reuniting Missing Children & Trafficked Persons, National Crime Records Bureau, Ministry of Home Affairs, Mahipal Pur, NH-8, Delhi, August 5, 2019
- **Expert Lecture:** “Cognition and Deep Fuzzy Networks”, Banasthali Vidyapith, Rajasthan, India, January 5, 2019
- **Expert Lecture:** “Automated Inventory Management using Machine Vision: Recognition, Counting, and Replenishment”, Workshop on Robotics and Autonomy, IIT Kanpur, India, December 9, 2018
- **Expert Lecture:** Kanpur Institute of Technology, Kanpur, India, November 16, 2018
- **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”, 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:** 4th 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 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), IIT 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)

- **Associate Editor**, IEEE Transactions on Artificial Intelligence (Since 2020)
- **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

- [60] Vibhu Kumar Tripathi, Laxmidhar Behera, and **Nishchal K. Verma** “Finite-time Super Twisting Sliding Mode Controller based on Higher-order Sliding Mode Observer for Real-time Trajectory Tracking of a Quadrotor,” *IET Control Theory & Applications*, July 2020. (Accepted for Publication)
- [59] S. Dixit and **Nishchal K. Verma**, “Intelligent Condition Based Monitoring of Rotary Machines with Few Samples,” *IEEE Sensors Journal*, June 2020. (Accepted for Publication)
- [58] P. Singh, P. Agrawal, A. Nandanwar, L. Behera, **Nishchal K. Verma**, S. Nahavandi, and M. Jamshidi, “Multivariable Event-Triggered Generalised Super-Twisting Controller for Safe Navigation of Non-Holonomic Mobile Robot,” *IEEE Systems Journal*, March 2020. (Accepted for Publication)

- [57] A. K. Sharma, D. Singh, V. Singh, and **Nishchal K. Verma**, “Aerodynamic Modeling of ATTAS Aircraft using Mamdani Fuzzy Inference Network”, *IEEE Transactions on Aerospace and Electronic Systems (TAES)*, Feb. 2020. (Accepted for publication)
- [56] N. K. Dhar, **Nishchal K. Verma**, and L. Behera, “An Online Event-Triggered Near Optimal Controller for Nash Solution in Interconnected System,” *IEEE Transactions on Neural Networks and Learning Systems*, Jan. 2020. (Accepted for publication)
- [55] S. Maurya, V. Singh, and **Nishchal K. Verma**, “Condition Monitoring of Machines using Fused Features from EMD based Local Energy with DNN,” *IEEE Sensors Journal*, 2019. (Accepted)
- [54] P. K. Mishra, N. K. Dhar, and **Nishchal K. Verma**, “Adaptive Neural Network Control of MIMO Nonaffine Nonlinear Systems with Asymmetric Time-Varying State Constraints,” *IEEE Transactions on Cybernetics*, 2019. (Accepted for Publication)
- [53] V. Singh, **Nishchal K. Verma**, and Y. Cui, “Type-2 Fuzzy PCA Approach in Extracting Salient Features for Molecular Cancer Diagnostics and Prognostics,” *IEEE Transactions on NanoBioscience*, vol. 18, no. 3, pp. 482-489, May 2019. ([pdf](#))
- [52] R. Dev and **Nishchal K. Verma**, “Robust Noisiness Measure Based Improved Generalized Fuzzy Peer Group for Removal of Mixed Noise from Color Image”, *IEEE Signals Processing Letters*, vol. 26, no. 2, pp. 267-271, 2019. DOI: 10.1109/LSP.2018.288943
- [51] A. Mustafa, N. 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)
- [50] P. Singh, P. Agrawal, H. Karki, A. 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*, vol. 15, no. 4, pp. 1985-1997, 2019 DOI: 10.1109/TII.2018.2869622
- [49] A. Kar, N. K. Dhar, P. K. 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 (Early Access) DOI: 10.1109/TETCI.2018.2865205
- [48] A. Kar, N. K. Dhar, and **Nishchal K. Verma**, “Event-Triggered Adaptive Neural Network Controller in a Cyber-Physical Frameworks,” *IEEE Transactions on Industrial Informatics*, vol. 15, no. 4, pp. 2101-2111, Apr. 2019, DOI: 10.1109/TII.2018.2861904 ([pdf](#))
- [47] R. 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, Sept. 2018. DOI: 10.1109/LSP.2018.2852140 ([pdf](#))
- [46] R. K. Sevakula, V. Singh, **Nishchal K. Verma**, C. Kumar and Y. Cui, “Transfer Learning for Molecular Cancer Classification using Deep Neural Networks,” *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, pp. 1-1, Apr. 2018. (Early Access) DOI: 10.1109/TCBB.2018.2822803 ([pdf](#))
- [45] V. Singh, R. Dev, N. K. Dhar, P. Agrawal and **Nishchal K. Verma**, “Adaptive Type-2 Fuzzy Approach for Filtering Salt and Pepper Noise in Grayscale Images,” *IEEE Transactions on Fuzzy Systems*, vol. 26, no. 5, pp. 3170-3176, Oct. 2018. DOI: 10.1109/TFUZZ.2018.2805289 ([pdf](#))
- [44] 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, Jan. 2018. DOI: 10.1109/TII.2017.2725899 ([pdf](#))

- [43] R. 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, June 2017. DOI: 10.1109/TFUZZ.2017.2722421 ([pdf](#))
- [42] **Nishchal K. Verma**, R. K. Sevakula, and R. Thirukovalluru, "Pattern analysis framework with Graphical Indices for Condition based monitoring," *IEEE Transactions on Reliability*, vol. 66, no. 4, pp. 1085-1100, 2017. ([pdf](#))
- [41] N. K. 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](#))
- [40] 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](#))
- [39] 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](#))
- [38] **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](#))
- [37] **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](#))
- [36] **Nishchal K. Verma** and A. Roy, "Self-Optimal Clustering Technique Using Optimized Threshold Function," *IEEE Systems Journal*, vol. 99, pp. 1-14, Jul. 2013. ([pdf](#))
- [35] 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](#))
- [34] 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](#))
- [33] R. 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](#))
- [32] 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](#))
- [31] R. 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](#))
- [30] **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](#))
- [29] **Nishchal K. Verma**, "Doctoral Thesis on Gaussian Mixture Model based Non-Additive Fuzzy Systems," *IEEE Computational Intelligence Soc. Electronic Letters*, Issue 37, November 2007.
- [28] **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

- [27] R. K. Sevakula and **Nishchal K. Verma**, “Balanced binary search tree multiclass decomposition with possible non-outliers,” *Springer Nature Applied Sciences*, April 2020. (Accepted for Publication)
- [26] D. J. Singh, P. Agrawal, **Nishchal K. Verma**, A. K. Ghosh and A. 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, June 2018. DOI: 10.3233/JIFS-169560 ([pdf](#))
- [25] S. K. Rajurkar, V. Singh, **Nishchal K. Verma** and Y. Cui, “Deep stacked auto-encoder with deep fuzzy network for transcriptome-based tumor type classification,” *BMC Bioinformatics*, vol. 18, 2017.
- [24] R. Agnihotri, 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,” *Int. J. Advanced Intelligence Paradigms*, vol. 15, no. 2, pp.165–182, 2020.
- [22] R. K. Sevakula, R. Thirukovalluru and **Nishchal K. Verma** and Y. Cui, “Deep neural networks for transcriptome-based cancer classification,” *BMC Bioinformatics*, 2016. ([pdf](#))
- [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 S. Singh, “Image sequence prediction using ANN and RBFNN with selected features,” *International Journal of Image and Graphics*, vol. 13, no. 2, July 2013.
- [17] N. 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] N. 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**, P. Singla and A. Roy, “Energy harvesting by Foot-Propelled Battery Charger Using Shoe Model”, *Advanced Materials Research Journal*, vol. 488-489, pp. 1268-1273, 2012. ([pdf](#))
- [13] B. Mehta, **Nishchal K. Verma**, and P. 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**, A. Roy and Y. 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] N. 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] N. 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** and 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 Y. 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

- [167] S. K. Jha, S. Maurya, and **Nishchal K. Verma**, “Generating Feature Sets for Day-Ahead Load Demand Forecasting Using Deep Neural Network,” *20th International Conference on Intelligent Systems Applications to Power Systems*, IIT Delhi, New Delhi, India, Dec. 10-14, 2019. (Accepted)
- [166] S. K. Jha, C. L. Dewangan, and **Nishchal K. Verma**, “Multi-Step Load Demand Forecasting Using Neural Network,” *20th International Conference on Intelligent Systems Applications to Power Systems*, IIT Delhi, New Delhi, India, Dec. 10-14, 2019. (Accepted)
- [165] T. Sharma, I. Agrawal, and **Nishchal K. Verma**, “Transmission Map Estimation Function to Prevent Over-Saturation in Single Image Dehazing,” *International Conference on Deep Learning, Artificial Intelligence and Robotics, (ICDLAIR) 2019*, Malaviya National Institute of Technology (MNIT), Jaipur, India, Dec. 07-08, 2019. (Accepted)

- [164] T. Sharma, P. Agrawal, **Nishchal K. Verma**, and J. Gupta, "Binning line segments in polar space for robust descriptor encoding in disparate image matching," *International Conference on Artificial Intelligence & Applications (ICAIA-2019)*, College of Engineering, Roorkee, Uttarakhand, India, Nov. 20-21, 2019. (Accepted and Presented)
- [163] T. Sharma, A. Jain, **Nishchal K. Verma**, and S. Vasikarla, "Inventory management using KAZE features under different lighting conditions," *48th IEEE Applied Imagery Pattern Recognition Workshop 2019 (AIPR 2019)*, Washington, D.C., USA, October 15-17, 2019. (Accepted)
- [162] A. Kumar, T. Sharma, **Nishchal K. Verma**, and S. Vasikarla, "Detection and removal of salt and pepper noise by Gaussian membership function and Guided filter," *48th IEEE Applied Imagery Pattern Recognition Workshop 2019 (AIPR 2019)*, Washington, D.C., USA, October 15-17, 2019. (Accepted)
- [161] V. Singh, H. Vardhan, **Nishchal K. Verma** and Y. Cui, "Optimal Feature Selection using Fuzzy Combination of Feature Subset for Transcriptome Data", *International Conference on Fuzzy Systems (FUZZ IEEE 2019)*, JW Marriot New Orleans, June 23-26, 2019. (Accepted)
- [160] T. Sharma, **Nishchal K. Verma** and S. Sudhakaran, "Fuzzy based Pooling in Convolutional Neural Network for Image Classification", *International Conference on Fuzzy Systems (FUZZ IEEE 2019)*, JW Marriot New Orleans, June 23-26, 2019. (Accepted)
- [159] T. Sharma, P. Agrawal, P. Sahoo, **Nishchal K. Verma** and S. 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 and Presented)
- [158] A. K. Sharma, D. J. 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 and Presented)
- [157] **Nishchal K. Verma**, S. Dixit, R. K. Sevakula and A. 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 and Presented)
- [156] A. K. Sharma, V. Singh, **Nishchal K. Verma** and J. Liu, "Condition Based Monitoring of Machine using Mamdani Fuzzy Network," *2018 Prognostics and System Health Management Conference, PHM-Chongqing, Chongqing, China, Oct. 2018*. DOI: 10.1109/PHM-Chongqing.2018.00204
- [155] Bhanu T., T. 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)*, July 8-13, 2018. DOI: 10.1109/IJCNN.2018.8489280
- [154] V. Singh, Harshvardhan, **Nishchal K. Verma** and Y. Cui, "Optimal Feature Selection using Fuzzy Combination of Feature Subset for Transcriptome Data," *2018 IEEE World Congress on Computational Intelligence (WCCI 2018)*. (Accepted)
- [153] S. Maurya, V. Singh, S. Dixit, **Nishchal K. Verma**, A. Salour and J. 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*. ([pdf](#))
- [152] G. Saraswat, V. Singh, **Nishchal K. Verma**, A. Salour and J. 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. ([pdf](#))

[151] P. Singh, L. Behera and **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.

[150] V. Singh, Z. U. Islam, **Nishchal K. Verma** and Y. 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](#))

[149] V. Singh, A. 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](#))

[148] **Nishchal K. Verma**, V. Singh, S. K. 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](#))

[147] H. Bharadhwaj, V. Singh and **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](#))

[146] A. Raj, K. Gandhi, B. T. 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](#))

[145] A. Kamboj, N. K. 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](#))

[144] D. J. 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](#))

[143] T. Sharma, S. K. D. Rajurkar, Nikhil Molangur, **Nishchal K. Verma**, and A. . Salou, “Multi-faced Object Recognition in an Image for Inventory Counting”, *In 2017 International Conference on Computational Intelligence: Theories, Applications and Future Directions (ICCI-2017), India*, Springer, vol. 2, pp. 333-346, Dec. 6-8, 2017. ([pdf](#))

[142] T. Sharma, P. Agrawal, and **Nishchal K. Verma**, “Detection of Dust Deposition using Convolutional Neural Network for Heritage Images”, *In 2017 International Conference on Computational Intelligence: Theories, Applications and Future Directions (ICCI-2017), India*, Springer, vol. 2, pp. 347-359, Dec. 6-8, 2017. ([pdf](#))

[141] S. Maurya, V. Singh, N. K. Dhar, and **Nishchal K. Verma**, “Improved EMD Local Energy with SVM for Fault Diagnosis in Air Compressor”, *In 2017 International Conference on Computational Intelligence: Theories, Applications and Future Directions (ICCI-2017), India*, Springer, vol. 2, pp. 81-92, Dec. 6-8, 2017. ([pdf](#))

[140] P. Mishra, P. Agrawal, N. K. Dhar, and **Nishchal K. Verma**, “On Adaptive control for AGV with vision sensor as an unknown nonlinear system”, *In 2017 International Conference*

- on *Computational Intelligence: Theories, Applications and Future Directions (ICCI-2017)*, India, Springer, vol. 2, pp. 265-277, Dec. 6-8, 2017. ([pdf](#))
- [139] P. Sahoo, T. Sharma, P. Agrawal, and **Nishchal K. Verma**, “Rotation Invariant Descriptor for Disparate Images using Line Segments”, In *2017 International Conference on Computational Intelligence: Theories, Applications and Future Directions (ICCI-2017)*, India, Springer, vol. 2, pp. 387-405, Dec. 6-8, 2017. ([pdf](#))
- [138] H. Dua, T. Sharma, P. Agrawal, and **Nishchal K. Verma**, “An efficient algorithm for image haze removal in outdoor environment,” In *2017 International Conference on Computational Intelligence: Theories, Applications and Future Directions (ICCI-2017)*, India, Springer, vol. 2, pp. 319-331, Dec. 6-8, 2017. ([pdf](#))
- [137] Heera Maurya, Laxmidhar Behera, and **Nishchal K. Verma**, “Trajectory tracking of Quad rotor UAV using Fractional Order PID controller”, In *2017 International Conference on Computational Intelligence: Theories, Applications and Future Directions (ICCI-2017)*, India, Springer, vol. 1, pp. 171-186, Dec. 6-8, 2017. ([pdf](#))
- [136] G. Saraswat, S. Maurya, and **Nishchal K. Verma**, “Health Monitoring of Main Battle Tank Engine Using Mamdani Type Fuzzy Model”, In *2017 International Conference on Computational Intelligence: Theories, Applications and Future Directions (ICCI-2017)*, India, Springer, vol. 1, pp. 403-414, Dec. 6-8, 2017. ([pdf](#))
- [135] A. Kar, N. K. Dhar, **Nishchal K. Verma**, “Event Triggered Sliding Mode Control based Trajectory Tracking in a Cyber-Physical Space”, In *2017 International Conference on Computational Intelligence: Theories, Applications and Future Directions (ICCI-2017)*, India, Springer, vol. 1, pp. 199-211, Dec. 6-8, 2017. ([pdf](#))
- [134] **Nishchal K. Verma**, R. Dev, S. Maurya, N. K. Dhar, and P. Agrawal, “People Counting With Overhead Camera Using Fuzzy Based Detector”, In *2017 International Conference on Computational Intelligence: Theories, Applications and Future Directions (ICCI-2017)*, India, Springer, vol. 1, pp. 589-601, Dec. 6-8, 2017. ([pdf](#))
- [133] R. K Sevakula and **Nishchal K. Verma**, “Hausdorff distance based Binary Search Tree multiclass decomposition algorithm,” In *2017 International Conference on Computational Intelligence: Theories, Applications and Future Directions (ICCI-2017)*, India, Springer, vol. 2, pp. 239-249, Dec. 6-8, 2017. ([pdf](#))
- [132] **Nishchal K. Verma**, A. Mustafa, N. K. Dhar and V. Sarraf “SURF-MSER based 3D Mapping using RGB-D Camera on Automated Vehicle”, In *2017 International Conference on Computational Intelligence: Theories, Applications and Future Directions (ICCI-2017)*, India, Springer, vol. 2, pp. 373-386, Dec. 6-8, 2017. ([pdf](#))
- [131] D. J. Singh, **Nishchal K. Verma**, A. K. Ghosh, J. Sanwale, and A. Malagaudanavar, “Aerodynamic Parameter Estimation using Two-Stage Radial Basis Function Neural Network,” In *2017 IEEE International Conference on Sensing, Diagnostics, Prognostics, and Control*, Shanghai, China, August 16-18, 2017.
- [130] D. J. Singh, R. Dev, **Nishchal K. Verma**, A. K. Ghosh, and A. Malagaudanavar, “Estimating Angle of Attack of an ATAS Aircraft Using TS Fuzzy Model,” In *2017 IEEE International Conference on Sensing, Diagnostics, Prognostics, and Control*, Shanghai, China, August 16-18, 2017.
- [129] S. K. Rajurkar and **Nishchal K. Verma**, “Developing Deep Fuzzy Network with Takagi Sugeno Fuzzy Inference System”, *IEEE International Conference on Fuzzy Systems*, pp. 1-6, July 9-12, 2017 (FUZZ-IEEE 2017).
- [128] **Nishchal K. Verma**, T. Sharma, S. Maurya, D. J. Singh and A. Salour, “Real-time monitoring of Machines using Open Platform Communication”, *2017 IEEE International*

Conference on Prognostics and Health Management, Marriott Courtyard, Dallas, Texas, USA, pp. 124-129, June 19-21, 2017.

[127] **Nishchal K. Verma**, R. Dev, N. K. Dhar, D. J. Singh and A. Salour, “Real-Time Remote Monitoring of an Air Compressor Using MTConnect Standard Protocol”, *2017 IEEE International Conference on Prognostics and Health Management, Marriott Courtyard, Dallas, Texas, USA*, pp. 109-116, June 19-21, 2017.

[126] A. Mustafa, N. K. Dhar, P. Agarwal and **Nishchal K. Verma**, “Adaptive Backstepping Sliding Mode Control based on Nonlinear Disturbance Observer for Trajectory Tracking of Robotic Manipulator”, *IEEE International Conference on Control and Robotics Engineering (ICCRE), Thailand*, pp. 29-34, April 1-3, 2017.

[125] V. K. Tripathi, L. Behera, and **Nishchal K. Verma**, “Design of sliding mode and back stepping controllers for a quadcopter,” *In Systems Conference (NSC), 2015 39th National*, Dec. 14, pp. 1-6, Dec 14-16, 2015.

[124] V. K. Tripathi, L. Behera, and **Nishchal K. Verma**, “Disturbance observer based back stepping controller for a quadcopter,” *In Industrial Electronics Society, IECON 2016-42nd Annual Conference of the IEEE*, pp. 108-113, Oct. 23-26, 2016.

[123] A. Raj, **Nishchal K. Verma** and K. Gandhi, “Object Detection and Recognition using Small Labelled Datasets” *IEEE International Conference on Design and Management (IConDM), IIITDM Kancheepuram, Chennai, India*, Dec. 16-17, 2016. (Book of Abstracts)

[122] A. Agarwal and **Nishchal K. Verma**, “Generalization Ability of Majority Vote Point classifiers for Motor Fault Diagnosis” *IEEE International Conference on Industrial and Information Systems (ICIIS), IIT Roorkee, India*, Dec. 3-4, 2016. (In Proceedings)

[121] S. D. Rajurkar, A. K. Kar, S. Goswami, and **Nishchal K. Verma**, “Optimal Path Estimation and Tracking for an Automated Vehicle using GA optimized Fuzzy Controller,” *IEEE International Conference on Industrial and Information Systems (ICIIS), IIT Roorkee, India*, Dec. 3-4, 2016. (In Proceedings)

[120] A. K. Kar, N. K. Dhar, R. Chandola, S. S. F. Nawaz, and **Nishchal K. Verma**, “Trajectory Tracking by Automated Guided Vehicle using GA optimized Sliding Mode Control,” *IEEE International Conference on Industrial and Information Systems (ICIIS), IIT Roorkee, India*, pp. 71-76, Dec. 3-4, 2016.

[119] A. K. Kar, N. K. Dhar, S. S. F. Nawaz, R. Chandola, and **Nishchal K. Verma**, “Automated Guided Vehicle Navigation with Obstacle Avoidance in Normal and Guided Environments,” *IEEE International Conference on Industrial and Information Systems (ICIIS), IIT Roorkee*, pp. 77-82, India, Dec. 3-4, 2016.

[118] **Nishchal K. Verma**, N. K. Dhar, A. K. Kar, R. Dev, S. S. F. Nawaz, and A. Salour, “Internet of Things Based Framework for Trajectory Tracking Control,” *IEEE World Forum on Internet of Things, Reston, VA, USA*, pp. 265-270, Dec. 12-14, 2016.

[117] **Nishchal K. Verma**, A. Mustafa, V. Sarraf and A. Salour, “SURF-MSER based 3D Mapping using RGB-D Camera on Automated Vehicle,” *IEEE International conference on Design and Management (IConDM), IIITDM Kancheepuram, Chennai, India*, Dec. 16-17, 2016. (Book of Abstracts)

[116] **Nishchal K. Verma**, A. Mustafa and A. Salour, “Stereo-Vision based Object Grasping using Robotic Manipulator”, *IEEE International Conference on Industrial and Information Systems (ICIIS), IIT Roorkee, India*, Dec. 3-4, 2016. (In Proceedings)

[115] A. Mustafa, C. Tyagi and **Nishchal K. Verma**, “Inverse Kinematics evaluation for Robotic Manipulator using Support Vector Regression and Kohonen Self Organizing Map,” *IEEE International Conference on Industrial and Information Systems (ICIIS), IIT Roorkee, India*, Dec. 3-4, 2016. (In Proceedings)

- [114] **Nishchal K. Verma**, T. Sharma, R. K. Sevakula and A. Salour, "Vision based object counting using speeded up robust features for inventory control," *IEEE International conference on Computational Science and Computational Intelligence (CSCI)*, Las Vegas, Nevada, USA, pp. 709-714, Dec. 15-17, 2016.
- [113] **Nishchal K. Verma**, T. Sharma, S. D. Rajurkar and A. Salour, "Object identification for inventory management using convolutional neural network," *IEEE Applied Imagery Pattern Recognition Workshop (AIPR)*, Washington DC, USA, pp. 1-6, Oct. 18-20, 2016.
- [112] **Nishchal K. Verma**, T. Sharma, S. D. Rajurkar, R. Ranjan and A. Salour, "Vision based counting of texture-less objects using shape and color features," *IEEE International Conference on Industrial and Information Systems (ICIIS)*, IIT Roorkee, India, Dec. 3-4, 2016. (In Proceedings)
- [111] **Nishchal K. Verma**, T. Sharma, S. D. Rajurkar, N. Molangur and A. Salour, "Multi-faced object recognition in an image for inventory counting," *IEEE International conference on Design and Management (IConDM)*, IIITDM Kancheepuram, Chennai, India, Dec. 16-17, 2016. (Book of Abstracts)
- [110] V. Singh, A. Shambhav, R. K. Sevakula and **Nishchal K. Verma**, "A New Approach for Splitting Datasets implemented using Map Reduce based Fuzzy C-Means Clustering," *Fourth International conference on Business Analytics and Intelligence (ICBAI)*, IISc Bangalore, India, Dec. 19-21, 2016. (In Proceedings)
- [109] V. Singh, N. Baranwal, R. K. Sevakula, **Nishchal K. Verma** and Y. Cui, "Layer wise feature selection in Stacked Sparse Auto-Encoder for tumor type prediction," *IEEE International conference on Bioinformatics and Biomedicine (BIBM)*, Shenzhen, China, pp. 1542-1548, Dec. 15-18, 2016.
- [108] V. Singh, R. K. Gupta, R. K. Sevakula and **Nishchal K. Verma**, "Comparative Analysis of Gaussian Mixture Model, Logistic Regression and Random Forest for Big Data Classification using Map Reduce," *IEEE International conference on Industrial and Information Systems (ICIIS)*, IIT Roorkee, India, pp. 333-338, Dec. 3-4, 2016.
- [107] N. K. Dhar, **Nishchal K. Verma** and L. Behera, "Intelligent Controller Design Coupled in a Communication Framework for a Networked HVAC System", *IEEE World Congress on Computational Intelligence, Vancouver, Canada (WCCI 2016)*, pp. 1-7, July 24-29, 2016.
- [106] N. K. Dhar, **Nishchal K. Verma** and L. Behera, "Evolutionary Algorithm tuned Fuzzy PI Controller for a Networked HVAC System", *World Conference on Soft Computing, UC Berkeley, USA (WConSC 2016)*, May 22-25, 2016.
- [105] P. Porwal, S. Chakrabarti and **Nishchal K. Verma**, "A recursive formulation of the prony method for monitoring power system oscillations", *IEEE 6th International Conference on Power Systems (ICPS)*, Delhi, India, pp. 1-6, March 4-6, 2016.
- [104] R. K. Tripathi, V. Singh, Y. N. Singh and **Nishchal K. Verma**, "Trade-off between energy consumption and lifetime in two tiered wireless sensor networks", *IEEE International Conference on Prognostics and Health Management, Canada, USA*, pp. 1-4, June 20-22, 2016,.
- [103] R. Thirukovalluru, R. K. Sevakula, S. Dixit and **Nishchal K. Verma**, "Generating Optimum Feature Sets for Fault Diagnosis using Denoising Stacked Auto-encoder," *IEEE International Conference on Prognostics and Health Management, Canada USA*, pp. 1-7, June 20-22, 2016,.
- [102] Sevakula, R. K., Abhi Shah, and **Nishchal K. Verma**, "Data preprocessing methods for Sparse Auto-encoder based fuzzy rule classifier," *2015 IEEE Workshop on Computational Intelligence: Theories, Applications and Future Directions (WCI)*, pp. 1-6, Dec.14-17, 2015.

- [101] **Nishchal K. Verma**, A. Ghosh, S. Dixit, and A. Salour, "Cost-benefit and reliability analysis of prognostic health management systems using fuzzy rules", *2015 IEEE Workshop on Computational Intelligence: Theories, Applications and Future Directions (WCI)*, pp. 1-9, Dec. 14-17, 2015.
- [100] R. K. Sevakula and **Nishchal K. Verma**, "Fuzzy Rule Reduction using Sparse Auto-Encoders," *IEEE Int. Conf. on Fuzzy Systems (FUZZ-IEEE'15), Istanbul, Turkey*, pp. 1-7, Aug. 2-5, 2015.
- [99] **Nishchal K. Verma**, A. Ghosh, S. Dixit and A. Salour, "Cost-Benefit and Reliability Analysis of Prognostic Health Management Systems Using Fuzzy Rules," *In IEEE Workshop on Computational Intelligence: Theories, Applications and Future Directions (IEEE WCI 2015), India*, pp. 1-9, Dec. 14-17, 2015.
- [98] **Nishchal K. Verma**, S. K. Sahu, A. Mustafa, Ocean, N. K. Dhar and A. Salour, "Priority Based Optimal Path Routing for Automated Guided Vehicle," *In IEEE Workshop on Computational Intelligence: Theories, Applications and Future Directions (IEEE WCI 2015), India*, pp. 1-7, Dec. 14-17, 2015.
- [97] **Nishchal K. Verma**, A. Raj, G. Kumar, A. Mustafa, N. K. Dhar, A. Siddhant, P. Nama and A. Salour, "Vision Based Obstacle Avoidance and Recognition System," *In IEEE Workshop on Computational Intelligence: Theories, Applications and Future Directions (IEEE WCI 2015), India*, pp. 1-7, Dec. 14-17, 2015.
- [96] **Nishchal K. Verma**, A. Goyal, A. H. Vardhan, R. K. Sevakula and A. Salour, "Object Matching Using Speeded Up Robust Features," *In 19th INNS Asia Pacific Symposium on Intelligent and Evolutionary Systems (IES'15), Bangkok, Thailand*, pp. 415-427, 2015. ([pdf](#))
- [95] **Nishchal K. Verma**, P. Nama, G. Kumar, A. Siddhant, Ocean, A. Raj, N. K. Dhar and A. Salour, "Vision based Object Follower Automated Guided Vehicle using Compressive Tracking and Stereo-vision," *In IEEE Bombay Section Symposium (IBSS)*, pp. 1-6, Sept. 10-11, 2015.
- [94] **Nishchal K. Verma**, R. Singh, S. Dixit and A. Salour, "Thermal Imaging based Condition Based Monitoring on Android Platform," *In IEEE Bombay Section Symposium (IBSS)*, pp. 1-6, Sept. 10-11, 2015.
- [93] A.H. Vardhan, **Nishchal K. Verma**, R. K. Sevakula and A. Salour " Unsupervised approach for Object Matching using Speeded Up Robust Features" *IEEE Applied Imagery Pattern Recognition Workshop (AIPR), Washington DC, USA*, pp. 1-8, Oct. 13-15, 2015.
- [92] **Nishchal K. Verma**, D. E. Gunesh, G. S. Rao, and A. Mishra, "High Accuracy Optical Flow based future image frame predictor model," *IEEE Applied Imagery Pattern Recognition Workshop (AIPR), Washington DC, USA*, pp. 1-6, Oct. 13-15, 2015.
- [91] **Nishchal K. Verma** and Sreevidya, "Cost Benefit Analysis for Maintenance of Rotating Machines", *IEEE International Conference on Prognostics and Health Management, Austin USA*, pp. 1-7, June 22-25, 2015.
- [90] R. K. Sevakula, Mohammed Suhail and **Nishchal K. Verma**, "Fast data sampling for large scale Support Vector Machines," *IEEE Workshop on Computational Intelligence: Theories, Applications and Future Directions (WCI'15), Kanpur, India*, pp. 1-6, Dec.14-17, 2015.
- [89] **Nishchal K. Verma**, A. Goyal, A. Chaman and R. K. Sevakula, "Template matching for Inventory Management using Fuzzy Color Histogram and Spatial filters," *IEEE Conference on Industrial Electronics and Applications, Auckland, New Zealand*, pp. 317-322, June 15-17, 2015.
- [88] **Nishchal K. Verma**, Satyam Dwivedi and R. K. Sevakula, "Expectation Maximization algorithm made fast for large scale data," *IEEE Workshop on Computational Intelligence:*

Theories, Applications and Future Directions (WCI'15), Kanpur, India, pp. 1-7, Dec. 14-17, 2015.

[87] **Nishchal K. Verma**, "Vision Based Automated Guided Vehicle and Inventory Management", *BOEING NEM Roadshow 2015 at Seattle, WA, USA*, 2015.

[86] **Nishchal K. Verma**, N.K. Sunny and A. Mishra, "Generation of Future Image Frame using Autoregressive Model," *IEEE Conference on Industrial Electronics and Applications, Auckland, New Zealand*, pp. 171-176, June 15-17, 2015.

[85] Tripathi, R. Kr, Sateesh Krishna Dhuli, Y. N. Singh, and **Nishchal K. Verma**, "Analysis of weights for optimal positioning of base station in a Wireless Sensor Network," *IEEE 2014 Twentieth National Conference on Communications (NCC)*, pp. 1-4, Feb. 28- March 2, 2014.

[84] A. Kaushal and **Nishchal K. Verma**, "Implementation of vehicle to grid concept using ANN and ANFIS controller", *In 9th IEEE Conference on Industrial Electronics and Applications*, pp. 960-965, June 9-11, 2014.

[83] **Nishchal K. Verma** and Amrita Singh, "Minimizing Intra Class Variations in Multiclass Common Spatial Patterns for Motor Imagery EEG Signals", *IEEE International Conference on Industrial and Information Systems, India*, pp. 1-6, Dec. 15-17, 2014.

[82] **Nishchal K. Verma**, Vishnu and Suresh K Sharma, "Motor Imagery EEG Signal Classification on DWT and Cross Correlated Signal Features", *IEEE International Conference on Industrial and Information Systems, India*, pp. 1-6, Dec. 15-17, 2014.

[81] **Nishchal K. Verma**, Jatin V Singh, Mehak Gupta, R. K Sevakula and S. Dixit, "Windows Mobile and Tablet App for Acoustic Signature Machine Health Monitoring", *IEEE International Conference on Industrial and Information Systems, India*, pp. 1-6, Dec. 15-17, 2014.

[80] **Nishchal K. Verma**, R. K Sevakula and Sakshi Goel, "Study of transforms for their comparison", *International Conference on Industrial and Information Systems, India*, pp. 1-6, 2014.

[79] **Nishchal K. Verma**, R. Gupta, R.K. Sevakula and A. Salour, "Signal transforms for feature extraction from vibration signal for air compressor monitoring," *In IEEE Region 10 TENCON, Thailand*, pp. 1-6, Oct. 22-25, 2014.

[78] **Nishchal K. Verma** and Aakansha Mishra, "Large Displacement Optical Flow Based Image Predictor Model", *IEEE Applied Imagery Pattern Recognition Workshop, (AIPR), Washington DC, USA*, pp. 1-7, Oct. 14-16, 2014.

[77] Adarsh, J. Ramkumar, **Nishchal K. Verma** and S. Dixit, "Detection and Classification for Faults in Drilling Process using Vibration Analysis", *IEEE PHM 2014, Washington, USA*, pp. 1-6, June 22-25, 2014.

[76] R. K. Sevakula and **Nishchal K. Verma**, "Clustering based Outlier Detection in Fuzzy SVM", *The 2014 IEEE International Conference on Fuzzy Systems (WCCI 2014), Beijing, China*, pp. 1172-1177, July 6-11, 2014.

[75] **Nishchal K. Verma**, Nitin K. Singh and R. K. Sevakula, "Ranking of Sensitive Positions using Empirical Mode Decomposition and Hilbert Transform", *IEEE Conference on Industrial Electronics and Applications China*, pp.1926-1931, June 9-11, 2014.

[74] Ashish Kaushal and **Nishchal K. Verma**, "Vehicle to Grid Concept Using ANN and ANFIS Controller", *IEEE Conference on Industrial Electronics and Applications 2014, China*, pp.960-965, June 9-11, 2014.

[73] Ramakiran B, Pradip Sircar and **Nishchal K. Verma**, "Soft computing Approaches for Two Dimensional Beamforming", *4th World Conference on Soft Computing, Berkeley, USA*, pp. 25-27, May 2014,.

- [72] Prashant Prakash, **Nishchal K. Verma** and Laxmidhar Behera, "Eigenvalue Assignment via the Smith Predictor based IMC & the Matrix Lambert W function for Control of Time-delayed Process Systems", *3rd International conference on Advances in Control and Optimization of Dynamical Systems ACODS 2014, IIT Kanpur, India*, vol. 3, no. 1, pp 997-1002, March 2014.
- [71] **Nishchal K. Verma**, "Health monitoring of rotating machines and OEE", *BOEING NEM Roadshow 2014 at Seattle, WA, USA*, 2014.
- [70] B. P. Padhy, Suresh. C. Srivastava and **Nishchal K. Verma**, "A network Delay Compensation Technique for Wide-Area SVC Damping Controller in Power System", *IEEE PES Transmission & Distribution Conference & Exposition 2014, Chicago, USA*, pp. 1-6, April 14-17, 2014.
- [69] R. K. Sevakula and **Nishchal K. Verma**, "Clustering based Outlier Detection in Fuzzy SVM," *IEEE Int. Conf. on Fuzzy Systems (FUZZ-IEEE'14), Beijing, China*, pp. 1172-1177, July 6-11, 2014.
- [68] **Nishchal K. Verma**, Ankan Bansal, and Shikha Singh, "Generation of future image frames for an image sequence," *In Intelligent Interactive Technologies and Multimedia, Springer Berlin Heidelberg*, pp. 154-162, 2013.
- [67] R. K. Shakya, Satyam Agarwal, Yatindra Nath Singh, **Nishchal K. Verma** and Amitabha Roy, "DSAT-MAC: Dynamic Slot Allocation based TDMA MAC protocol for Cognitive Radio Networks," *arXiv preprint arXiv*: pp. 1301-4204, Jan. 2013.
- [66] **Nishchal K. Verma**, Anirudh K. Agrawal, R. K. Sevakula, Divya Prakash, and A. Salour, "Improved signal preprocessing techniques for machine fault diagnosis," *2013 IEEE 8th International Conference on Industrial and Information Systems*, pp. 403-408, Dec. 17-20, 2013.
- [65] R. K. Sevakula and **Nishchal K. Verma**, "Fuzzy Support Vector Machine using Hausdorff Distance," *IEEE Int. Conf. on Fuzzy Systems (FUZZ-IEEE'13), Hyderabad, India*, pp. 1-6, July 7-10, 2013.
- [64] Arsad Jamal and **Nishchal K. Verma**, "Automatic Fault Diagnosis System Using Acoustic Data", *IEEE Eighth International Conference on Industrial and Information Systems (ICIIS), Kandy, Sri Lanka*, pp. 421-426, Dec. 17-20, 2013.
- [63] **Nishchal K. Verma** and Shikha Singh, "Generation of Future Image Frames Using Optical Flow," *2013 IEEE Applied Imagery Pattern Recognition Workshop (AIPR), Washington DC, USA*, pp. 1-7, Oct 23-25, 2013.
- [62] **Nishchal K. Verma** and Sreevidya, "Study on Multi Unit Models for Machine Maintenance", *IEEE Workshop on Computational Intelligence: Theories, Applications and Future Directions, IIT Kanpur, India*, pp. 181-184, July, 2013.
- [61] Jayesh Gupta, Sumanik Singh and **Nishchal K. Verma**, "MTBA: MATLAB Toolbox for Biclustering Analysis", *IEEE Workshop on Computational Intelligence: Theories, Applications and Future Directions, IIT Kanpur, India*, pp. 94-97, July, 2013.
- [60] **Nishchal K. Verma**, Sumanik Singh, Jayesh Gupta, R. Sevakula, S. Dixit and Al Salour, "Feature Level Analysis", *IEEE Workshop on Computational Intelligence: Theories, Applications and Future Directions, IIT Kanpur, India*, pp. 181-184, July, 2013.
- [59] **Nishchal K. Verma**, "Health monitoring of rotating machines", *BOEING NEM Roadshow 2013 at Seattle, WA, USA*, 2013.
- [58] R. K. Sevakula and **Nishchal K. Verma**, "Fuzzy Support Vector Machine Using Hausdorff Distance", *The 2013 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE-2013), Hyderabad, India*, pp. 1-6, July 7-10, 2013.

- [57] **Nishchal K. Verma**, V. K. Gupta, M. Sharma, and R. K. Sevakula, "Intelligent condition based monitoring of rotating machines using sparse auto-encoders," *In IEEE Conference on Prognostics and Health Management (PHM)*, pp. 1-7, June 24-27, 2013.
- [56] **Nishchal K. Verma** and Sreevidya, "Cost Benefit Analysis for Condition Based Monitoring", *IEEE International Conference on Prognostics and Health Management, Maryland, USA*, pp. 1-6, June 24-27, 2013.
- [55] **Nishchal K. Verma** and T. Subramanian, "Cost benefit analysis of intelligent condition based maintenance of rotating machinery", *In Proc., 7th IEEE Conf. Industrial Electronics and Applications*, pp. 1390-1394, July 18-20, 2012.
- [54] **Nishchal K. Verma**, P. Kumar, R. K. Sevakula, S. Dixit and A. Salour, "Ranking of Sensitive Positions Based on Statistical Parameters and Cross Correlation Analysis", *6th IEEE International Conference on Sensing Technology, Kolkata, India*, pp. 815-821, Dec. 18-21, 2012.
- [53] **Nishchal K. Verma**, S. Singh, J.K. Gupta, R.K. Sevakula, S. Dixit and A. Salour, "Smartphone Application for Fault Recognition", *IEEE 6th International Conference on Sensing Technology, Kolkata, India*, pp. 1-6, Dec. 18-21, 2012.
- [52] **Nishchal K. Verma**, S. Sarkar, S. Dixit, R.K. Sevakula and A. Salour, "Android App for Intelligent CBM", *22nd IEEE Symposium on Industrial Electronics (ISIE), Taipei, Taiwan*, pp. 1-6, May 28-31, 2013.
- [51] Shakya, R. K., Yatindra Nath Singh, and **Nishchal K. Verma**, "Optimizing channel access for event-driven wireless sensor networks: analysis and enhancements." *arXiv preprint arXiv:* , vol. 1203, no. 5874, (2012).
- [50] R. K. Sevakula and **Nishchal K. Verma**, "Wavelet Transforms for Fault Detection using SVM in Power Systems," *IEEE Int. Conf. on Power Electronics, Drives and Energy Systems (PEDES 2012), Bengaluru, India*, pp.1-6, Dec.16-19, 2012.
- [49]. R. K. Sevakula and **Nishchal K. Verma**, "Support Vector Machine for Large Databases as Classifier," *Int. Conf. on Swarm, Evolutionary, and Memetic Computing (SEMCCO'12), Springer Berlin Heidelberg, Bhubaneswar, India*, pp. 303-313, Dec. 2012,
- [48] **Nishchal K. Verma** and Shimaila, "Generation of future image frames using adaptive network based fuzzy Inference System (ANFIS) on spatiotemporal framework", *2012 IEEE Applied Imagery Pattern Recognition Workshop (AIPR)*, pp. 1-8, Oct. 9-11, 2012.
- [47] **Nishchal K. Verma**, "Future Image Frame Generation Using Artificial Neural Network with Selected Features", *IEEE Applied Imagery Pattern Recognition Workshop (AIPR)*, pp. 1-8, Oct. 9-11, 2012.
- [46] **Nishchal K. Verma**, "Health monitoring of rotating machines", *BOEING NEM Roadshow 2012 at Seattle, WA, USA*, 2012.
- [45] **Nishchal K. Verma**, Ankan Bansal and Shikha Singh, "Generation of Future Image Frames for an Image Sequence", *Intelligent Interactive Technologies and Multimedia, Springer Berlin Heidelberg*, pp. 154-162, 2013.
- [44] R. K. Sevakula and **Nishchal K. Verma**, "Support vector machines for large databases as classifier", *In Swarm, Evolutionary, and Memetic Computing, Springer Berlin Heidelberg*, pp. 303-313, 2012.
- [43] R. K. Shakya, Y. N. Singh and **Nishchal K. Verma**, "A Correlation Model for MAC Protocols in Event-Driven Wireless Sensor Networks", *accepted to appear in proc. IEEE TENCON-2012, Cebu, Philippines*, issue. 3, vol. 4, pp. 266-276, Nov. 19-22, 2012.
- [42] R. K. Shakya, Y. N. Singh and **Nishchal K. Verma**, "Modeling Spatial Correlation for MAC protocols in Event-driven Wireless Sensor Networks", *accepted to appear in proc. IEEE ET2ECN-2012, SVNIT, Surat, INDIA*, pp. 1-6, Dec. 19-21, 2012.

- [41] R. K. Shakya, Y. N. Singh and **Nishchal K. Verma**, "A Novel Spatial Correlation Model for Wireless Sensor Network Applications", *In proceedings of IEEE WOCN'2012, Indore, India*, pp. 1-6, Sep. 20-22, 2012.
- [40] **Nishchal K. Verma**, Tarun Maini and Al Salour, "Acoustic Signature Based Intelligent Health Monitoring of Air Compressors with Selected Features", *IEEE Proc. Ninth International Conference on Information Technology: New Generations (ITNG)*, pp. 839-845, 2012.
- [39] N. Kohli and **Nishchal K. Verma**, "Videoconferencing System using Open Source Technologies", *Proc. International Conference on Recent Advances and Future Trends in Information Technologies, Punjabi University, Patiala, India*, vol. no. 3, pp. 1-3, March 2012.
- [38] R. K. Tripathi, Y. N. Singh and **Nishchal K. Verma**, "N-LEACH, a balanced cost cluster-heads selection algorithm for Wireless Sensor Network", *IEEE Proc. National Conference on Communications (NCC 2012), IIT Kharagpur, India*, 3-5 Feb., 2012, pp.1-5.
- [37] **Nishchal K. Verma**, Kadambari Jagannatham, Abhijit Bahirat and Tanu Shukla, "Finding Sensitive Sensor positions under faulty condition of Reciprocating Air Compressors", *Proc. International Conference on IEEE Recent Advances in Intelligent Computational Systems, Trivandrum*, pp. 242-246, Sep. 22-24, 2011.
- [36] **Nishchal K. Verma**, Kadambari Jagannatham, Abhijit Bahirat, Tanu Shukla and T S S Subramaniam, "Statistical Approach for finding Sensitive Positions for Condition Based Monitoring of Reciprocating Air Compressors", *Proc. IEEE Control and System Graduate Research Colloquium Incorporating 2011 IEEE International Conference on System Engineering and Technology, UiTM Shah Alam, Selangor Malaysia*, pp. 10-14, June 27-28, 2012.
- [35] **Nishchal K. Verma**, A. Roy and Al Salour, "An Optimized Fault Diagnosis Method for Reciprocating Air Compressors Based on SVM", *Proc. IEEE Control and System Graduate Research Colloquium Incorporating 2011 IEEE International Conference on System Engineering and Technology, UiTM Shah Alam, Selangor Malaysia*, pp. 65-69, June 27-28, 2011.
- [34] P. Agrawal, **Nishchal K. Verma**, Saurabh Agrawal and S. Vasikarla, "Color Segmentation Using Improved Mountain Clustering Technique Version-2", *IEEE Information technology: New generation (ITNG), 2011 Eighth International Conference, Las Vegas, Nevada USA*, pp.536-542, April 11-13, 2011.
- [33] **Nishchal K. Verma**, "Health monitoring of rotating machines", *BOEING NEM Roadshow 2011 at Seattle, WA, USA, 2011*.
- [32] Saurabh Agrawal, **Nishchal K. Verma**, P. Tamrakar and Pradip Sircar, "Content Based Color Image Classification using SVM", *IEEE Information technology: New generation (ITNG), 2011 Eighth International Conference, Las Vegas, Nevada USA*, pp. 1090-1094, April 11-13, 2011.
- [31] Bhuwan Mehta, **Nishchal K. Verma** and Pradip Sircar, "Single Channel Musical Source Separation by Nonnegative Matrix Factorization using Alpha Divergence", *ICCANS/EESP 2011 Conference, Maldives*, no. 6, pp. 273-282.
- [30] **Nishchal K. Verma**, Shruti Bajpai, Amarjot Singh, Aditya Nagraire, Sheela Meena and Y. Cui, "A Comparison of Biclustering Algorithms", *In International conference on Systems in Medicine and Biology (ICSMB 2010) in IIT Kharagpur India*, pp. 90-97, Dec. 16-18, 2010.
- [29] Bibhu Prasad Padhy, S. C . Srivastava and **Nishchal K. Verma**, "A Wide-Area Continuous Time model Predictive Control, Scheme for Multi-Machine Power System", *16th*

NATIONAL POWER SYSTEMS CONFERENCE, in *Osmania University, Hyderabad, A.P, INDIA*, pp. 272-277, Dec.15-17, 2010.

[28] N. Kohli and **Nishchal K. Verma**, "SVM based methods optimized by feature selection for arrhythmia classification in ECG," *Proceedings of the International Conference on Biomedical Engineering and Assistive Technologies, Punjab*, Dec. 2010.

[27] Ashutosh Dwivedi, **Nishchal K. Verma**, Prem K. Kalra, "A Novel Scheme for Face Detection Using Entropy Initialized Counter Propagation Network", *Tencon 2010, Hiroshi INABA, Waseda University*, Nov.23, 2010.

[26] **Nishchal K. Verma** and Nikhil R. Pal, "Prediction of satellite images using fuzzy rule based Gaussian regression", *2010 IEEE Applied Imagery Pattern Recognition International Conference Washington DC, USA*, pp.1-8, Oct. 13-15, 2010.

[25] Nagendra K Singh, **Nishchal K. Verma** and Yatindra Nath Singh, "Learning through ICT-A good approach via open Source-Brihaspati", *4th IEEE International Conference on advance Computing and Communication Technologies, ICACCT-2010, Panipat, India*, Oct. 2010.

[24] N. Kohli, **Nishchal K. Verma** and A. Roy, "SVM based arrhythmia classification in ECG", *2010 IEEE International Conference on Education and Information Technology, Chongqing, China*, pp. 486-490, Sept. 2010.

[23] N. Kohli, **Nishchal K. Verma** and A. Roy, "SVM based Methods for arrhythmia classification in ECG," *2010 IEEE International Conference on Computer and Communication Technology (ICCT-2010), MNIT, Allahabad, India*, pp.486-490, Sept.17-19, 2010.

[22] **Nishchal K. Verma**, P. Tamrakar and Saurabh Agrawal, "On generating future satellite-image frame using artificial neural network", *International Conference on Image and Video Processing and Computer vision (IVPCV-2010), Orlando, Florida, USA*, pp.158-164, July 12-14, 2010,

[21] **Nishchal K. Verma** and P. K. Kalra, "Condition Based Monitoring of Rotating Machines", *BOEING NEM Roadshow 2010 at Seattle, WA, USA, 2010*.

[20] R. K. Tripathi, R. Shakya, **Nishchal K. Verma** and Y. N. Singh, "Localized Detection of Bottleneck Nodes and Quantification of Criticality in a Wireless Sensor Networks", *2010 IEEE Region 8 International Conference on Computational Technologies in Electrical and Electronics Engineering, SIBIRCON 2010, Irkutsk Listvyanka, Russia*, pp. 326-328, July 11-15, 2010.

[19] N. Kohli and **Nishchal K. Verma**, "Performance Issues of Health Care System Using MySQL", *3rd IEEE International Conference on Computer Science and Information Technology, Chengdu, China*, pp. 497-5019, July 11, 2010.

[18] **Nishchal K. Verma**, A. Roy and S. Vasikarla, "Medical Image Segmentation Using Improved Mountain Clustering technique version-2", *2010 7th IEEE Intl. Conference on Information Technology (Data mining) (ITNG 2010), Las Vegas, USA*, pp. 156-161, Apr. 2010.

[17] N. Kohli and **Nishchal K. Verma**, "Performance Issues of Health Care System with Audio and Video Facilities", *3rd International Conference on Data management 2010, IMT, Ghaziabad, India*, hospital. 1, no. 2, pp. 3, Mar. 2010.

[16] **Nishchal K. Verma** and A. Roy, "Color Segmentation Using Improved Mountain Clustering Technique Version-2", *Second IEEE International Conference on Intelligent Human Computer Interaction (IHCI-2010), IIIT Allahabad, India*, pp. 536-542, Jan. 16-18, 2010.

- [15] N. Kohli and **Nishchal K. Verma**, “Performance Issues of Smart Card based online Health Care Automation System”, *International Conference on Signals, Systems and Automation 2009 (ICSSA 09)*, Gujarat, India, Dec. 2009.
- [14] J. K. Arora and **Nishchal K. Verma**, “System of Osmotic Transport Across Cell Membranes in Human Corneal Epithelial Cells in Non Dilute Solution”, *Joint International Conference on Applied Systems Research and XXXIII National Systems Conference DEI Dayalbagh Agra, India*, 33, no. 1-2, pp. 33-40, Nov. 2009.
- [13] **Nishchal K. Verma**, A. Roy, S. Gupta and Y. Cui, “Improved Mountain Clustering Technique for Microarray Data”, *Joint International Conference on Applied Systems Research and XXXIII National Systems Conference, DEI Dayalbagh Agra, India*, Nov. 2009.
- [12] **Nishchal K. Verma**, P. Gupta, P. Agrawal and Y. Cui, “MRI Brain Image Segmentation for Spotting Tumors Using Improved Mountain Clustering Approach”, *In 2009 IEEE Applied Imagery Pattern Recognition International Conference Washington DC, USA*, pp. 1-8, Oct., 14-16, 2009.
- [11] **Nishchal K. Verma**, P. Gupta, P. Agrawal and Y. Cui, “Fuzzy Rule Based Unsupervised Approach for Salient Gene Extraction”, *In 2009 IEEE Applied Imagery Pattern Recognition International Conference Washington DC, USA*, pp.1-5 Oct. 14-16, 2009.
- [10] **Nishchal K. Verma**, P. Gupta, P. Agrawal, M. Hanmandlu, S. Vasikarla and Y. Cui, “Medical Image Segmentation Using Improved Mountain Clustering Approach”, *In the 6th IEEE International Conference on Information Technology - New Generation, ITNG, Las Vegas*, pp. 1307-1312, April 27-29, 2009.
- [9] **Nishchal K. Verma** and P. K. Kalra, “Health monitoring of rotating machines”, *BOEING NEM Roadshow 2009 at Seattle, WA, USA*, 2009.
- [8] **Nishchal K. Verma** and Y. Cui, “Fuzzy rule based unsupervised approach for salient gene extraction”, *IEEE International conference of innovative technologies (ICIT)*, Bahadurgarh, India, vol. 10, no. S7, 2009.
- [7] **Nishchal K. Verma** and M. Hanmandlu, “Adaptability in Additive Fuzzy Systems via EM Algorithm”, *In Proceedings of International Conference on AIML-06, Sharm Elsheikh, Egypt*, no. 6, pp. 35-42, June 13-15, 2006.
- [6] **Nishchal K. Verma** and M. Hanmandlu, “Non-additive Generalized Fuzzy System Under the Framework of Cluster weighted Model”, *In Proceedings of International Conference on AIML-06, Sharm Elsheikh, Egypt*, 15, no. 5, pp. 809-827, June 13-15, 2006.
- [5] **Nishchal K. Verma** and M. Hanmandlu, “Fuzzy Modeling of Earth’s Magnetic Field”, *IEEE International Magnetism Conference, Intermag 2006, San Diego, USA*, pp 339-339, May 8-12, 2006.
- [4] A. Chowdhari, M. Hanmandlu and **Nishchal K. Verma**, R. D. Choudhari, “Mesh Based Clustering Without Stopping Criterion”, *In Proceedings of IEEE INDICON 2005 Conference, Chennai, India*, pp.530-534, Dec. 11-13, 2005.
- [3] **Nishchal K. Verma** and M. Hanmandlu, “Interactive Fuzzy System Using CWM”, *2005 Annual IEEE India Conference - Indicon, Chennai, India*, pp. 375-378, Dec. 11-13, 2005.
- [2] **Nishchal K. Verma**, M. Hanmandlu and N. Ahmad, “Cluster-Weighted Modeling for an Interactive Fuzzy System”, *In Proceedings of CERA 2005, An International Conference*, vol.2, IIT Roorkee, India, Sept. 29-Oct. 1, 2005.
- [1] M. Hanmandlu, **Nishchal K. Verma**, N. Ahmad and S. Vasikarla, “Cluster Weighted Modeling as a basis for Non-additive GFM”, *The 2005 IEEE International Conference on Fuzzy Systems, Reno, USA*, pp. 252-257, May 22-25.

References

- 1) **Prof. Nikhil R. Pal**, (Email: nrpal59@gmail.com) ECSU, Indian statistical Institute Kolkata, 700001, India.
- 2) **Dr. Al Salour** (Email: al.salour@boeing.com), Technical Fellow, Boeing Company, St. Louis, USA.

(Nishchal K. Verma)