

CURRICULUM VITAE

Name: Nishchal K. Verma, PhD

Date of Birth: September 9th, 1973

Mailing Address:

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

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Current Position

Professor

Department of Electrical Engineering and Inter-disciplinary Program in Cognitive Science,
Indian Institute of Technology Kanpur, Kanpur - 208016, India

Academics and Research Qualifications

Ph.D.

Electrical Engineering, Indian Institute of Technology, Delhi, New Delhi, 110016, India
(2007)

M.Tech.

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

B.E.

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

Professional / Research Experience

Professor

Department of Electrical Engineering, Indian Institute of Technology Kanpur,
Kanpur-208016, India (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)
- **EE658** - Fuzzy Sets, Logic & Systems and Applications
- **EE617A** - Industrial Automation & Control
- **EE210/EE203A** - Introduction to Electrical Engineering
- **EE698Y** - Industrial Instrumentation for Process Control
- **EE680** - Intelligent Instrumentation
- **EE698B** - Intelligent Informatics
- **EE671** - Neural Networks
- **ESO210** - Introduction to Electrical Engineering
- **EE455** - Transducers and Instrumentation

New Courses Designed

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

Supervision of Theses

Ph.D. Thesis Supervision

1. Dr. Narendra Kohli (Y4108070)

Current Affiliation: Professor & Head, Dept. of CSE, HBTU Kanpur, India

Thesis Title: Automated Health Care Systems: Performance Enhancement

Status: Thesis defended, 2011

2. Dr. Ashutosh Dwivedi (Y4104101)

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

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

3. Dr. Rajeev Tripathi (Y7104097)

Current Affiliation: Assistant Professor, NIT Delhi, India

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

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

4. Dr. 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: Networked Control of HVAC Systems

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: 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)

Status: Thesis defended, 2019

29. Astha Jain (EXY18008)

Status: Thesis defended, 2019

30. Mr. Ashish Kumar (17104012)

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)

Status: In Progress

34. Mr. Sonu Kumar Jha (17204021)

Status: In Progress

35. Mr. Boda Pool Singh (18104072)

Status: In Progress

36. Ms. Ankita (18104019)

Status: In Progress

37. Mr. R Kumar (18104147)
Status: In Progress
38. Mr. Jitesh PS (18104048)
Status: In Progress
39. Mr. Digvijay Singh Dhakad (18104036)
Status: In Progress
40. Mr. Ratnesh Kumar (18104088)
Status: In Progress
41. Mr. Shahrukh Masood (18104169)
Status: In Progress
42. Mr. Mayur Sonowal (19104053)
Status: In Progress
43. Mr. Sandeep Singh (19104083)
Status: In Progress
44. Mr. Shivam Pal (15807678)
Status: In Progress
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)

Thesis Title: Condition based Monitoring of Defence Equipment

Status: In Progress

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

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

16. Rakshit Verma (160559), 2018

17. Abdul Wasim (160008), 2018

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 | 24,77,740.00 | 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 | 10,00,000.00 | 2009 | 2010 | -- | Successfully Completed |
| 7. | Transducers and Instrumentation Virtual Laboratory | Ministry of HRD, Govt. of India | 40,00,000.00 | 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 (Month-Year) | To Date (Month-Year) | Name of PI | Outcome |
|--------|---|---------------------------------|-----------------|------------------------|----------------------|-------------------|-------------|
| 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 | Ministry of HRD, | 7,54,00,000.00 | 2016 | 2019 | Prof. L. Behera | In Progress |

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|-----|--|-------------------------|--------------------------|------|------|------------------------|------------------------|
| | Madan Mohan Malviya National Mission on Teachers and Teaching (PMMMNTT) | Govt. of India | | | | | |
| 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)

- **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

- [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](#))
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