

PROFILE

Dr TANU

a) Education

Qualification	Specialization	Institute	Year
Post Doctoral	Neuroscience, Cognitive Computation, Reinforcement Learning	Indian Institute of Technology, Delhi, Hauz Khas, Delhi, India	2020-2021
PhD	Biomedical Signal Processing, Neurocomputation, Machine Learning	National Institute of Technology (NIT) Jalandhar, Punjab, India	2016-2021
M.tech	Signal Processing and Device Security	Punjabi University, Patiala, Punjab, India	2013-2015
B.Tech (Silver Medalist)	Electronics and Communication Engineering	Covt. GNE College, Ludhiana, Punjab, India	2009-2013

b) Teaching Experience

1. Assistant Professor, Department of Electronics Communication Engineering, Dr. B R Ambedkar National Institute of Technology, NIT Jalandhar. [1 year; July 2015-June 2016].
2. Assistant Professor, Department of Electrical and Instrumentation Engineering, Thapar Institute of Engineering and Technology, Patiala, Ounjab. [9 months, Aug 2021- April 2022]

c) Publication

JOURNALS

1. **Tanu Wadhera**, "Brain Network Topology Unraveling Epilepsy and ASD Association: Automated EEG-based Diagnostic Model", Expert System with Applications, 186, 2021; (ISBN: 0957-4174) Quartile: Q1
2. **Tanu Wadhera & Deepti Kakkar**, "Analysis of Simultaneous Visual and Complex Neural Dynamics During Cognitive Learning to Diagnose ASD", Physical and Engineering Sciences in Medicine. 44(4), 1081-1094, 2021. (ISBN: 2662-4737). Quartile: Q1
3. **Tanu Wadhera**, and Deepti Kakkar, "Social cognition and functional brain network in autism spectrum disorder: Insights from EEG graph-theoretic measures", Biomedical Signal Processing and Control, 67, 102556, 2021. (ISBN:1746-8094). Quartile: Q1
4. **Tanu Wadhera**, and Deepti Kakkar, "Quantitative Analysis of Perception Ability in Individuals with Autism Spectrum Disorder", International Journal of Learning Change, 2021.Press. (ISBN:1740-2883). Quartile: Q4
5. **Tanu Wadhera**, and Deepti Kakkar, "Conditional entropy approach to analyze cognitive dynamics in autism spectrum disorder", Neurological Research, 42(8), 869-878, 2020. (ISBN: 0161-6412). Quartile: Q2.
6. **Tanu Wadhera**, and Deepti Kakkar, "Modelling Risk Perception Using Independent and Social Learning: Application to Individuals with Autism Spectrum Disorder", Journal of Mathematical Sociology, 44(3), 223-245, 2020. (1545-5874). Quartile: Q1
7. **Tanu Wadhera** and Deepti Kakkar, "Multiplex temporal measures reflecting neural underpinnings of brain functional connectivity under cognitive load in Autism Spectrum Disorder", Neurological Research, 42(4), 327-339, 2020. Quartile: Q2

8. **Tanu Wadhwa**, Girish Wadhwa, Tarun Bhardwaj, Deepti Kakkar and Balwinder Raj, "Design and Performance Analysis of Symmetrical and Asymmetrical Triple Gate Dopingless Vertical TFET for Biorecognition", *Silicon*, 4057-4065, 2020. (ISSN:1876-9918). Quartile: Q2
9. Anoop Singh, Deepti Kakkar, **Tanu Wadhwa**, and Rajneesh Rani, "Adaptive Neuro-fuzzy based Attention Deficit/Hyperactivity Disorder Diagnostic System", *International Journal of Medical Engineering and Informatics*, 2020 (in Press). (ISSN: 1755-0661). Quartile: Q1
10. **Tanu Wadhwa** and Deepti Kakkar, "Influence of Emotional Imagery on Risk Perception and Decision Making in Autism Spectrum Disorder", *Neurophysiology*, 51(4), 281-292, 2019. (ISSN:1573-9007). Quartile Q3
11. **Tanu Wadhwa**, and Deepti Kakkar, "Diagnostic Assessment Techniques and Non-Invasive Biomarkers for Autism Spectrum Disorder", *International Journal of E-Health and Medical Communications*, 10(3), 79-95, 2018. (1947-3168). Quartile Q3
12. **Tanu Wadhwa** and Deepti Kakkar, "Recent Advances and Progress in Development of the Field Effect Transistor Biosensor: A Review", *Journal of Electronic Materials*, 48(12), 7635-46, 2019. (ISSN: 0361-5235). Quartile: Q2
13. **Tanu Wadhwa** and Deepti Kakkar, "Strengthening risk prediction using statistical learning in children with autism spectrum disorder", *Advances in Autism*, 4(3), 141-152, 2018. (ISSN: 2056-3868). Quartile: Q3
14. **Tanu Wadhwa** and Gurmeet Kaur, "Analysis and Comparison of One-dimensional Chaotic Functions", *International Organization of Scientific Research journal*, 24-29, 2015. Quartile: Q2.
15. **Tanu Wadhwa** & Gurmeet Kaur, "Design of S-box Using Combination of Chaotic Functions. *Research Cell: An International Journal of Engineering Sciences*. 20, 129-134, 2016.

Conferences

1. Mufti Mahmud; M Shamim Kaiser; Muhammad Arifur Rahman; and **Tanu Wadhwa** et al., "Towards Explainable and Privacy-Preserving Artificial Intelligence for Personalisation in Autism Spectrum Disorder", 24th International Conference on Human-Computer Interaction (HCII2022), 2022.
2. Manasawi Srivastava, **Tanu Wadhwa**, & A.K. Verma. Full Range Soft-Switching for On-board EV Charger using Multi-classification Algorithm. In 2021 IEEE 2nd International Conference on Smart Technologies for Power, Energy and Control (STPEC) (pp. 1-6). IEEE. (2021, December).
3. **Tanu Wadhwa** and Mufti Mahmud. "Influences of Social Learning in Individual Perception and Decision Making in People with Autism: A Computational Approach. 15th International Conference on Brain informatics (BI22). 2022, Italy
4. **Tanu Wadhwa** and Mufti Mahmud, "Computing Hierarchical Complexity of the Brain from Electroencephalogram Signals: A Graph Convolutional Network based Approach. International Joint Conference on Neural Networks (IJCNN), IEEE WCCI 2022. (Italy).
5. **Tanu Wadhwa**, "Hybrid Deep Convolutional Neural Network for Multiclassification of Autism Spectrum Disorders", *Emerging Technologies- AI, IoT, & CPS for science and Technology Applications*, NITTTR Chandigarh, 2021.
6. **Tanu Wadhwa** & Deepti Kakkar, "Design and Analysis of Field Effect Transistor-based Biosensor to assist Screening and Detection of Autism Spectrum Disorder. *International Behavior*", 3rd BMI International Autism Conference, 2020, Hyderabad, 2020.
7. **Tanu Wadhwa** & Deepti Kakkar, "Analysis of Weighted Visibility Graphs in Evaluation of Autism Spectrum Disorder", *International Conference ICTESM*, Kuala Lumpur, Malaysia., 37-43 Malaysia, 2020.
8. **Tanu Wadhwa** & Deepti Kakkar, "Automatic Detection of Autism Spectrum Disorder by Tracing the Disorder Co-morbidities", 9th Annual Information Technology, Electromechanical Engineering and Microelectronics Conference (IEMECON) 132-136, Jaipur, IEEE.

9. **Tanu Wadhra** & Deepti Kakkar, "Accounting For Order-Frame Length Trade-off Savitzky-Golay Smoothing Filters", 5th International Conference on Signal Processing and Integrated Networks (SPIN), Amity University, 805-810, IEEE UP Section, 2018.
10. **Tanu Wadhra** & Deepti Kakkar, "A Study on Machine Learning Based Generalized Automated Seizure Detection System", 8th International Conference on Cloud Computing, Data Science and Engineering (Confluence) Amity University, 769-774, IEEE Delhi.
11. **Tanu Wadhra** & Deepti Kakkar, "Drift-Diffusion Model Parameters Underlying Cognitive Mechanism and Perceptual Learning in Autism Spectrum Disorder", 3rd International Conference on Soft Computing: Theories and Applications, NITJ, 2018.
12. **Tanu Wadhra** & Gurmeet Kaur, "Design of S-box Using Combination of Chaotic Functions", Second International Conference on Innovative Trends in Electronics Engineering (ICITEE2-2016) Punjabi University, Patiala, Vol.2, pp. 31-34, PU Patiala, 2016.
13. **Tanu Wadhra** & Gurmeet Kaur, "Analysis and Comparison of One-Dimensional Chaotic Map Functions", National Conference on Advances in Engineering Technology Management, Ambala, India, CT Institute, 2015.
14. **Tanu Wadhra** & Gurmeet Kaur, "A New Chaotic Pseudorandom Number Generator Using Chaotic Logistic and Tent Map Functions", International multi-Track Conference on Sciences, Engineering and Technical Innovations, Jalandhar, India, CT Institute, 2015.
15. **Tanu Wadhra** & Gurmeet Kaur, "Applications of Chaotic Functions", International multi-Track Conference on Sciences, Engineering and Technical Innovations, Jalandhar, India, CT Institute, 2015.
16. **Tanu Wadhra** & Gurmeet Kaur, "Algorithm For Tracking Channel Performance Of Optical Networks To Enhance Security", Proceedings National Conference on Embedded Systems and Wireless Technologies, Ropar, Punjab, India. pp. 4-6, 2014.

Books

1. **Tanu Wadhra** & Deepti Kakkar, "Interdisciplinary approaches to altering Neurodevelopmental disorders", IGI USA 2020. (ISBN:1799830691)
2. **Tanu Wadhra** & Deepti Kakkar, "Enabling Technology for Neurodevelopmental Disorders: From Diagnosis to Rehabilitation", Taylor and Francis 2022. (ISBN:9780367761189).

Book Chapters

1. **Tanu Wadhra** & Deepti Kakkar, "Big Data-Based System: A Supportive Tool in Autism Spectrum Disorder Analysis", Interdisciplinary Approaches to Altering Neurodevelopmental Disorders 303-319, IGI, 2020. (ISBN:1799830691)
2. **Tanu Wadhra** & Deepti Kakkar, "Behavioral Modelling using Deep Neural Network Framework for ASD Diagnosis and Prognosis", The Emergence of Technology for Automated Healthcare: Internet of Things and Deep Learning Models Accepted. Wiley Publishers. 2020. 281-295 (ISBN: 9781119791720).
3. Joy Karan, **Tanu Wadhra** & Deepti Kakkar, "Risk Mitigation in Children with Autism Spectrum Disorder Using Brain Source Localization", The Emergence of Technology for Automated Healthcare: Internet of Things and Deep Learning Models Accepted. Wiley Publishers. 2020. 237-247 (ISBN: 9781119791720).
4. **Tanu Wadhra** & Deepti Kakkar, "Drift-Diffusion Model Parameters Underlying Cognitive Mechanism and Perceptual Learning in Autism Spectrum Disorder", Soft Computing: Theories and Applications 847-857. Springer, Singapore, 2020. (ISBN:9789811507519)
5. **Tanu Wadhra** & Deepti Kakkar, Gurjot Kaur Vasudha Menia, "Pre-Clinical ASD Screening Using Multi-Biometrics-Based Systems". Design and Implementation of Healthcare Biometric Systems. IGI USA. 185-211, 2019. (ISBN:9781522575252)

6. **Tanu Wadhera**, Deepti Kakkar, "Eye Tracker: An Assistive Tool in Diagnosis of Autism Spectrum Disorder". Emerging Trends in the Diagnosis and Intervention of Neurodevelopmental Disorders 121-152, IGI USA. 2019. (ISBN: 9781522570042)

d) Consultancy

1. Consultancy to RIGVAIMANIKI TECHNOLOGIES PRIVATE LIMITED in developing "Smart Charger Algorithms for Electric Vehicle Fast Charging Stations". From Sept 13, 2021- Dec 27, 2021.
2. Consultancy to "Autophilic Mechatronics Solutions Pvt. Ltd. in imparting "Intelligence within the EV Chargers & Charging". From March 01, 2021- March 31, 2022.

e) Other achievements

Academic Achievements

1. Visiting Researcher at Nottingham Trent University, England, UK.
2. Speaker Award, Design and Analysis of Field Effect Transistor-based Biosensor to assist Screening and Detection of Autism Spectrum Disorder, Behavior Momentum India 2020, Hitex City, Hyderabad.
3. MHRD, Government of India Scholarship in Ph.D (GATE basis).
4. Full tuition fee waiver in B.Tech based on opening rank in Combined Entrance Test (CET-State Government Scholarship Scheme).
5. Engineer Award, Second Award on Engineer's Day, Institution of Electronics and Telecommunication Engineers (IETE), Chandigarh.
6. Third position in Young Managers Contest, GENESIS 2013- Guru Nanak Dev Engineer College, Ludhiana.

Research Achievements

Reviewer for International Journals

1. Link: <https://publons.com/researcher/4571534/tanu-wadhera/>
2. **Editor** (Review): Frontiers in Psychology.
3. Reviewer at Biomedical Signal Processing & Control (Elsevier).
4. Reviewer at Frontiers in Neuroscience.

Events

1. Co-Organizer in workshop titled "Open, Explainable and Ethical Approaches to Brain Research: Opportunities and Challenges" at 15th International Conference on Brain informatics. 2022, Italy.

Professional affiliations

1. Member IEEE.
2. Member Institute of Electronics and Telecommunication Engineering (IETE).
3. Member Society of Automotive Engineers (SAE).

Expert Talks

1. Speaker in online expert session Image Processing Techniques and Its Applications "NITTTR Chandigarh, 24th May, 2022

2. Speaker in STC on “Emerging Trends in Signal Processing, Communication and VLSI (ETSPCV-2022)” at NIT Delhi on 6th June, 2022.
3. Speaker in AICTE sponsored faculty development program on biosensors, actuators and smart materials, at IIT-JAMMU, July 14, 2021.
4. Opening Speaker for FDP, “Exploring Research Problems using Machine Learning”, at CSE Department, Coimbatore Institute of Technology, Coimbatore, March 15, 2021.
5. Speaker in Expert Talk, Research Trends in Communication and Signal Processing, NIT Jalandhar 2020, Punjab, India.
6. Speaker in Expert Talk, One Week Short Term Training Program 8th Artificial Intelligence and Machine Learning with Data Science, Guru Nanak Engineering College, Ludhiana 2020, India.