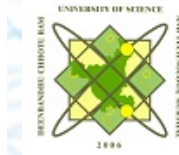




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Sofia, Bulgaria



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7th International Workshop on New Approaches for Multidimensional Signal Processing NAMSP'2026

WORKSHOP PROGRAM

Technical University of Sofia
Sofia, Bulgaria
July 23-25, 2026



Springer

<http://rcvt.tu-sofia.bg/NAMSP2026>

General Information

The purpose of the workshop is to bring together researchers working in the various areas of Multidimensional Signal Processing and its applications in fields like Telecommunications, Computer Vision, Healthcare, Bioinformatics, Remote Ecological Monitoring, Agriculture, Forestry and others. The workshop proposes themes like: Multidimensional Image Processing, Sensor Heterogeneous Data Clustering, Spatio-Temporal Filtering, Multidimensional Interpolation, Multidimensional Object Segmentation, Multiview Representation, Multidimensional Visualization, Virtual and Augmented Reality and others. Authors are invited to present their recently achieved results, exchange ideas and cooperate in a friendly framework.

The Workshop will take place online with a host **TECHNICAL UNIVERSITY OF SOFIA, Sofia, Bulgaria, between the 23th and 25th of July 2026**. We hope that the participants will appreciate the predisposing environment for future collaboration.

The “International Workshop on New Approaches for Multidimensional Signal Processing” (NAMSP 2026) is part of the “Days of Science” at Technical University of Sofia, with the kind collaboration of the Research and Development Sector at TU of Sofia, Bulgaria.

We welcome you to NAMSP’2026!

Main topics of interest

Image Processing Specific Topics

- N-Dimensional (N-D) Multicomponent Image Processing
- Adaptive N-D Filtration in Intelligent Image Systems
- Multidimensional Image Representation and Super-Resolution
- Compression of Multidimensional Spatio-Temporal Images
- Multidimensional Image Transmission Systems
- Three-Dimensional (3D) Image Processing and Reconstruction
- Multidimensional (MD) Computer Vision Systems
- Multidimensional Multimedia Systems
- Reasoning-Based Intelligent Systems for MD Image Processing
- Intelligent Analysis of MD Medical Images
- Learning-Based MD Image Processing and Expert Systems
- Neural Networks for MD Image Processing
 - MD Image Preprocessing for Pattern Recognition
- Generic and Fuzzy Systems for MD Image Processing, Analysis and Recognition
 - Data-Based MD Image Retrieval and Knowledge Data Mining
- Watermarking, Hiding and Encryption of MD Images
- Surveillance Systems, Based on Intelligent MD Image Processing
- Objects Detection and Tracking, Based on MD Image Processing
- Intelligent Multi-Spectral and Hyper-Spectral Image Processing

- Intelligent Multi-View Image Processing
- Real-Time MD Image Processing Systems and Transmission
- MD Image Processing in Robot Systems
- Intelligent Visualization of MD Images
- Web-Based Search Systems for MD Images
- Forensic Analysis Systems for MD Images

General Data Processing and Generation Topics

- Pattern Recognition
 - Deep Learning
 - Machine Learning
 - Machine Intelligence
 - Neural Networks
 - Data Mining
- Tensor-based Data Processing
- Self-organization Modeling
 - Biomedicine
 - Biological Modeling
 - Bio-inspired Methods
- Biomedical Computing
 - Financial Modeling
 - Social Modeling
 - Medical Imagistic
 - Virtual Reality
 - Augmented Reality
- 3D and Multiview Visualization
 - Telepresence
 - Computer Graphics
 - Computer Animation
 - and others...

NAMSP'2026 Committees

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Assoc. Prof. Rumen Mironov, Technical University of Sofia, Bulgaria

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Prof. Parvinder Singh, Full Professor, Department of Computer Science & Engineering, Deenbandhu Chhotu Ram University of Science & Technology, Murthal, Haryana, India

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Bin Hu, Co-Founder of IRnet International Academic Communication Center, China

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Prof. Parvinder Singh, Full Professor, Department of Computer Science & Engineering, Deenbandhu Chhotu Ram University of Science & Technology, Murthal, Haryana, India

Assoc. Prof. Ivo Draganov, Technical University of Sofia, Bulgaria

NAMSP'2026 Workshop Program

All Hours are Bulgarian Time (GMT+3)

July 23th, 2026 (Thursday)

Join Zoom Meeting Topic: NAMSP 2026 Workshop

Time: Jul 23, 2026 10:00 Sofia

<https://us05web.zoom.us/j/83138104283?pwd=jnebPsumOwUc6LAaU2VTvp0iB16w0k.1>

Meeting ID: 831 3810 4283

Passcode: kfu4zT

10:00 – 10:30 Opening

Greetings from: Prof. Lakhmi Jain, Prof. Srikanta Patnaik

10:30-13:10 Plenary Session

Chairmen: Prof. Parvinder Singh, DCRUST, India

Assoc. Prof. Rumén Mironov, Technical University of Sofia, Bulgaria

10:30 – 11:10 Plenary Lecture 1: *S. Nagini, Convergence of Multimedia, AI, and 6G Networks*

11:10 – 11:50 Plenary Lecture 2: *Liang Zhou, Construction of an ICU Monitoring and Life Support System Driven by Synchronous Bus Architecture and Explainable AI*

11:50 – 12:30 Plenary Lecture 3: *Singh, P., From Industry 4.0 to Industry 5.0: Intelligent Multidimensional Signal Processing for Human-Centric Automation*

12:30 – 13:10 Plenary Lecture 4: *Bardul H. Khan, Effectiveness of AI in Learning*

13:10 – 13:50 Plenary Lecture 5: *Jair Minoro Abe, Beyond Classical Intelligence: Paraconsistency Shaping the Future of AI*

13:50 – 14:30 Break

14:30 – 16:15 Paper Session 1: Intelligent Analysis of Multidimensional Signals

Chairman: Prof. Parvinder Singh, DCRUST, India

- 14:30 – 14:45** Nitin Sikri, Volume-Adaptive Machine Learning Framework for Dynamic Nurse Staffing in Emergency Department Surge Periods
- 14:45 – 15:30** Nitin Sikri, Intelligent Orchestration Framework for Elastic Cloud Capacity Management: A Multi-Layer Analysis
- 15:30 – 15:45** Brigita Sziová, Szilvia Nagy, On the Circular Hough Transform Interpreted as Fuzzy Signature with Practical Example in MRI Femur Localization
- 15:45 – 16:00** S. Nagini, Karnam Akhil, V.Naga Sresht, B.Amogh, Shriya Soni, T. Vaishnavi, Robust Framework for Psoriasis Identification at Early Stage
- 16:00 – 16:15** Sweety Singh, Poonam Sheoran, Manoj Duhan, Benchmarking Psychological Benefits of Cognitive Regulation Interventions with the Assistance of Neurodiagnostic Signals Incorporating Neurocomputer Interfacing

16:15 – 16:30 Break

16:30 – 17:45 Paper Session 2: Multidimensional Signal Processing

Chairman: Assoc. Prof. Rumen Mironov, Technical University of Sofia, Bulgaria

- 16:30 – 16:45** Bilyana Genova, Nadejda Bocheva, Jean Dezert, Albena Tchamova, Human Learning during Classification of Stimulus Color and Grouping Features, and their Combination
- 16:45 – 17:00** Jean Dezert, Deqiang Han, Albena Tchamova, Analysis of the Evidential Reasoning Fusion Rule
- 17:00 – 17:15** Tingfei Men, Ahmed Ashraf, Sherif Sherif, Generation of a Large Three-Dimensional Texture Image Dataset for Machine and Deep Learning Applications
- 17:15 – 17:30** Fatimah Abdulsahib, Belal Al-Khateeb, Laszlo T. Koczy, Szilvia Nagy, Learning Without Forgetting with Hierarchical Fuzzy Signatures for Liver Tumor Classification in CT Images
- 17:30 – 17:45** Mironov, R., Local Adaptive 3D Recursive Denoising of Multidimensional Images

July 24th, 2026 (Friday)

Join Zoom Meeting Topic: NAMSP 2026 Meeting

Time: Jul 24, 2026 10:00 Sofia

<https://us05web.zoom.us/j/83138104283?pwd=jnebPsumOwUc6LAaU2VTvp0iB16w0k.1>

Meeting ID: 831 3810 4283

Passcode: kfu4zT

10:00 – 11:30 Paper Session 1

Chairman: Assoc. Prof. Ivo Draganov, Technical University of Sofia, Bulgaria

- | | |
|----------------------|--|
| 10:00 – 10:15 | <i>Roumiana Kountcheva, Adaptive background brightness equalization and detection of irregularities and defects in digital images</i> |
| 10:15 – 10:30 | <i>Ying Wu, Yi Wang, YuanYiChuan Chen, Wenwu Yang, Ting Peng, Prediction and Quasi-causal Analysis of Pollution-related Risks in Pediatric Respiratory Outpatient Visits Using Multi-source Feature Fusion</i> |
| 10:30 – 10:45 | <i>Guojun Li, Abnormal Emotion Detection Technology of User Reviews for Digital Culture Communication Scenarios</i> |
| 10:45 – 11:00 | <i>Yu Yang, Huanhuan Fan, Design and Implementation of a Discipline Competition Data Management System for Private Universities Based on B/S Architecture</i> |
| 11:00 – 11:15 | <i>Bingbing Liu, Shaojian Xia, Geping Zhang, Xiangquan Kong, Jian Liu, Big Data-driven Refined Management System for Bridge Construction Projects</i> |

11:15 – 11:30 Break

11:30 – 12:45 Paper Session 2

Chairman: Dr. Bin Hu, Co-Founder of IRnet International Academic Communication Center, China

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|----------------------|--|
| 11:30 – 11:45 | <i>Jian Li, Xin Wang, Shenglei Zhang, Experimental Study on Turbulent Flow Based on WMS</i> |
| 11:45 – 12:00 | <i>Qingxue Li, Research on Optimization of Artificial Intelligence Translation Models Based on Transformer and Attention Mechanism</i> |
| 12:00 – 12:15 | <i>Lianqun Fu, Xuankun Zhou, Yin'en Huang, "Level-Dimension-Form" Trinity Artificial Intelligence Science Education Innovation Framework and Practical Exploration</i> |

- 12:15 – 12:30** *Yang Li, Yixiao Chang, Chunlin Wu , Research on the Design and Application Strategy of AR based Intelligent Construction Virtual Simulation Experiment Teaching Platform*
- 12:30 – 12:45** *Jiwen Deng, Chaoyang Zhang, Mingder Jean, Design of Modularised Walking Spaces for the Visually Impaired Using Artificial Intelligence*

12:45 – 14:30 Break

14:30 – 15:45 Paper Session 3

Chairman: Dr. Bin Hu, Co-Founder of IRnet International Academic Communication Center, China

- 14:30 – 14:45** *Yi Xu, Lianqun Fu, Jiang Li, Research on the Development Path of Visual Communication Design Education Teaching from the Perspective of Spatial Humanities*
- 14:45 – 15:00** *Lin Yang, Fengyi Yang, Yu Sun, Analysis of the Evolutionary Patterns of Algorithmic Features in EEG Signals of Patients with TLE and Cognitive Impairment and Those Without Cognitive Impairment Using Machine Learning Techniques*
- 15:00 – 15:15** *Yushi Lin, Music Emotion Recognition Based on multimodal and Multidimensional Spatial Connection and its Application in Piano*
- 15:15 – 15:30** *Xiaoyun Chen, Zhe Xue, Intelligent Robot Service Failure and Customer Forgiveness: The Effect of Human-Robot Similarity*
- 15:30 – 15:45** *Yukun Tian, Jie Liu, Research on Training and Evaluation of Compound Talents in Traditional Chinese Medicine- -Based on Data Mining Algorithm*

16:00 Closing

Plenary Speakers



Prof. Dr. Jair Minoro Abe, Paulista University, Brazil

Title of Lecture:

Beyond Classical Intelligence: Paraconsistency Shaping the Future of AI

Abstract: Artificial Intelligence systems increasingly operate in environments characterized by uncertainty, inconsistency, and incomplete information. Classical logic, constrained by the principle of non-contradiction, is not structurally designed to process conflicting data without trivialization. This talk presents Paraconsistent Logic, particularly Paraconsistent Annotated Evidential Logic $E\tau$, as a robust mathematical foundation for intelligent systems capable of reasoning under contradiction. The lecture introduces the formal structure of annotated propositions, certainty and uncertainty measures, and lattice-based decision mechanisms that allow conflicting evidence to be treated analytically rather than eliminated. Developments from theoretical foundations to practical implementations are discussed, including paraconsistent controllers, robotics, and Paraconsistent Artificial Neural Networks (PANN). Applications in pattern recognition, biomedical diagnosis, intelligent control, and decision-making demonstrate the practical impact of this approach. By extending intelligence beyond classical consistency constraints, paraconsistency offers a rigorous and scalable framework for the next generation of resilient AI systems operating in complex real-world conditions.

Biographical Notes: Jair Minoro Abe received a B.A. and MSc in Pure Mathematics - University of São Paulo, Brazil. Abe also received his doctoral degree and Livre-Docente title from the same university. He acted as coordinator of the Logic Area of the Institute of Advanced Studies - University of São Paulo, Brazil (1986-2019) and Full Professor at Paulista University - Brazil. He is a Senior Member of IEEE.

Professor Abe is a studios of a family of Paraconsistent Annotated Logic used to solve many complex problems in engineering. He is considered one of the pioneers in this domain. He has authored/edited books on Paraconsistent and related logic published by Springer Germany and other reputed publishers.

He is the recipient of many awards, including medals for his academic performance, and has also received many best paper awards. Professor Abe is the Editor-in-Chief of International Journal of Reasoning-based Intelligent Systems (IJRIS) ISSN (Online): 1755-0564 - ISSN (Print): 1755-0556, InderScience Publishers UK, Member of Board of Editors of Scientiae Mathematicae Japonicae, ISSN (Online): 1346-0447, International Society for Mathematical Sciences, Japan, and serves as Associate Editor and member of the Editorial Board of some journals related to intelligent systems and applications.

Professor Abe has supervised many PhD candidates successfully and presented several keynote addresses. He has authored/co-authored around 500+ publications, including books, book chapters, research papers, etc.

Professor Abe's research interests include Paraconsistent Annotated Logics and AI, ANN in Biomedicine, System design using conventional and Artificial Intelligence techniques, Intelligent Decision Making, Automation & Robotics, Cybersecurity, Teaching & Learning practices, and Cognitive Studies.

University Address: ICET, Paulista University, Rua Dr. Bacelar 1212, CEP 04026-002 São Paulo - SP – Brazil, E-mail: jairabe@uol.com.br



Prof. Dr. Parvinder Singh, Full Professor, Department of Computer Science & Engineering, Deenbandhu Chhotu Ram University of Science & Technology, Murthal, Haryana, India

Title of Lecture:

From Industry 4.0 to Industry 5.0: Intelligent Multidimensional Signal Processing for Human-Centric Automation

Abstract: Industry 4.0's data-driven automation has propelled manufacturing, yet its narrow focus on efficiency often marginalizes human expertise. Industry 5.0 re-centers the human-machine partnership, embedding resilience, personalization, and sustainability in production. This keynote highlights intelligent, multidimensional signal processing, fusing visual, acoustic, vibrational, and other sensor data with advanced AI. This integrated perception empowers human-centric automation, augmenting human creativity, decision-making, and well-being. Key challenges and opportunities include integrating heterogeneous data, ensuring system trustworthiness, and aligning AI behavior with human intent. By synergizing AI with human insight, Industry 5.0 promises to create collaborative, adaptable manufacturing systems that truly value human contributions.

Biographical Notes: Present position: Full Professor, Department of Computer Science & Engineering, Deenbandhu Chhotu Ram University of Science & Technology, Murthal, Haryana, India

Administrative experience: Dean Faculty of IT & CS, Chairperson CSED, Proctor, Director PG Admission, Chief Security Officer, and Head Computer Centre at DCRUST Murthal

Teaching experience: Total experience - 28 years, Presently working at Deenbandhu Chhotu Ram University of Science & Technology, Murthal, Haryana (India) (DCRUST), Completed 2 terms as Chairman, Department of Computer Science & Engineering, DCR University of Science & Technology, Murthal, Honorary Visiting Professor, University of Deusto, Spain, Worked on India Bulgaria Joint Project with Technical University of Sofia, Working in Collaboration with University of Deusto, Spain, Received two Patents (One International and One Indian) in the field of Security and Image Processing, Awarded two grants from DST and one from UGC for major projects, Organized International and National Workshops/Conferences in various cities of the world and delivered Keynote Addresses, Biography published in 27th edition of Marquis Who's is Who in World 2010 and all the subsequent editions, Inclusion in the Top 100 Engineers - 2012 by Cambridge, England, Published more than 100 Papers in International Journal and Conference Proceedings.



Dr. Bardul H. Khan, George Washington University, USA

Title of Lecture:
Effectiveness of AI in Learning

Abstract: Badrul Khan's octagonal E-Learning framework reveals AI's multifaceted effectiveness in education, from personalized pedagogy to ethical governance. While AI drives innovation in adaptive learning and administrative efficiency, its success hinges on balancing technological capabilities with institutional readiness and ethical safeguards. The framework ensures a systematic approach to AI integration, prioritizing meaningful, equitable, and sustainable outcomes.

Biographical Notes: Dr. Badrul H. Khan (<http://BadrulKhan.com>) is a worldrenowned speaker, author, educator, and consultant in elearning and educational technology. He is credited with coining the phrase webbased instruction and popularizing it through his 1997 bestselling book WebBased Instruction, adopted by more than 350 colleges and universities worldwide and widely regarded as foundational to the modern elearning field.

Recognized by the 2014 NATO eLearning Forum as a founder of modern elearning, Dr. Khan has received numerous international awards, including induction into the USDLA Hall of Fame and appointment as honorary Distinguished Professor of ELearning by the Egyptian ELearning University Council. He is widely known for Khan's E-learning Framework, an eightdimensional model used globally to guide research and practice in online and blended learning.

A soughtafter keynote speaker, Dr. Khan is a past President of the International Division of AECT and has advised major organizations including the World Bank, NATO, the Asian Development Bank, several U.S. federal departments, ministries of education, and universities and corporations worldwide. He has authored or edited 16 books and over 100 articles, including Managing ELearning Strategies and other works based on his ELearning Framework, and is currently developing a new book, Promise, Challenge, and Human Judgment in AI and AGI for Modern Learning: Shiny Object Syndrome for IGI Global Scientific Publishing.

Dr. Khan established the Educational Technology Leadership graduate cohort program at The George Washington University and the Educational Technology graduate program at the University of Texas at Brownsville, holds a B.A. in Chemistry and a Ph.D. in Instructional Systems Technology from Indiana University, and hosts the KDW TV show on FOX 5 PLUS WDCA.



Prof. Dr. S. Nagini, VNR Vignana Jyothi Institute of Engineering and Technology, Hyderabad, India

Title of Lecture:

Convergence of Multimedia, AI, and 6G Networks

Abstract: The convergence of multimedia systems, artificial intelligence (AI), and sixth-generation (6G) networks represents a paradigm shift in communication systems. 6G introduces AI-native architectures enabling intelligent, adaptive, and context-aware services. Emerging applications such as XR and holographic communication demand ultra-low latency and high bandwidth. This keynote discusses semantic communication, edge intelligence, and enabling technologies like RIS and terahertz communication. It also highlights challenges and future research directions in multidimensional signal processing.

Biographical Notes: With an illustrious tenure spanning 27+ years at the esteemed VNR Vignana Jyothi Institute of Engineering and Technology in Hyderabad and 2 years in Industry- UPTRON ACL, she boasts a wealth of experience in both teaching and cutting-edge research. Her academic contributions are exemplified by the publication of over 40+ research papers in distinguished National and International Conferences and Journals, all of which are cataloged in esteemed platforms such as Scopus, IEEE, and Springer Proceedings. Apart from this she authored a text book on “Blockchain Unchained” which is published by Notion Press. She also delivered keynote address for International Conferences.

As a distinguished Senior member of IEEE, Chair, Programme Committee ISoC and a lifelong member of ISTE and CSI, she stands as a stalwart in the academic community. Her research endeavors encompass a diverse array of domains including Data Mining, Algorithms, Image Processing, Machine Learning, Deep Learning, and Blockchain technologies.

Functioning as the linchpin for numerous International Conferences, seminars, workshops, and Faculty Development Programs (FDPs), she brings forth eminent personalities from reputable institutions and industries to benefit both students and faculty members alike. As member of Board of Studies for CSE, CSBS, Biotechnology, her contributions to curriculum enrichment have added substantial value.

Her indomitable spirit has been instrumental in the establishment of a Center of Excellence Data Science, Big Data, Virtual Reality, and Augmented Reality. Under her stewardship, the department has forged significant Memorandums of Understanding (MoUs) with prestigious software industries and academic institutions, thus bridging the gap between the Industry and Academia and conducted International Conference ICACECS for 6 times and worked as editor for few of the volumes. In the interest of students, she founded a coding club christened as Turing Hut.

Her unwavering dedication has been pivotal in achieving coveted accreditations including NBA accreditation, NAAC A++, and a notable NIRF ranking. Guiding a multitude of Undergraduate and Postgraduate projects across diverse technological domains, she has also garnered NINE patents, one of which is under process of being “granted”. Currently, she is actively mentoring two Ph.D. scholars.



Prof. Liang Zhou, Shanghai Jiao Tong University & Shanghai University of Medicine and Health Sciences, China

Title of Lecture:

Construction of an ICU Monitoring and Life Support System Driven by Synchronous Bus Architecture and Explainable AI

Abstract: The intensive care unit (ICU), as the clinical setting with the highest data density in hospitals, is currently confronted with an unprecedented "data deluge"—multi-source parameters such as ECG, blood pressure, oxygen saturation, and ventilator readings are generated continuously at millisecond intervals, forming a torrential stream of heterogeneous data. However, due to disparate device interfaces and misaligned timestamps, this valuable data often fails to translate into effective clinical decision support. Taking sepsis as an example, it accounts for approximately 20% of ICU admissions in China, with an in-hospital mortality rate as high as 32.1%, while the early warning window is frequently obscured by "data noise." To address this critical bottleneck, our team has systematically developed a next-generation AI-enabled monitoring and life support system for the ICU, following a dual-track approach of hardware-software synergy and explainable algorithms. We propose a data integration framework based on a synchronous bus architecture, which enables raw data acquisition from multi-source sensors and high-speed inter-chip collaborative computing. This framework precisely aligns multimodal physiological indicators—including ECG, blood pressure, respiration, and oxygen saturation—under a unified time-series bus, constructing a synchronized data stream with millisecond-level precision. This design effectively resolves the core challenges of dispersed data sources and temporal misalignment in the ICU, thereby providing high-quality, and integrated multimodal time-series inputs for downstream predictive models. On this foundation, we further integrate causal inference with explainable AI techniques—moving beyond merely answering "how high is the risk" to also addressing "why the risk is elevated" and "which factors are modifiable"—thus establishing a transparent closed-loop decision-making process that encompasses early warning, real-time monitoring, and intervention recommendations.

Biographical Notes: Liang Zhou, Ph.D., Doctoral Supervisor, Shanghai Outstanding Leader in Rehabilitation Medicine, Craftsman in White Magnolia Rehabilitation. Visiting Professor at St. Paul Information University of Science and Technology in North Macedonia, Dual-appointment Professor at University of Banja Luka in Bosnia and Herzegovina, Academic Leader of the Rehabilitation Medicine Department at Gongli Hospital, Pudong New District, Shanghai, Dual-appointment Principal Investigator at Tai'an Central Hospital in Shandong Province. He has been selected for the "Outstanding Young Talent Cultivation Program" of Shanghai Jiao Tong University School of Medicine, the "Overseas Outstanding Young Talent" program of the Republika Srpska in Bosnia and Herzegovina, and serves as the Leader of the Shandong Provincial Health Leading Science and Technology Innovation Team. He holds the positions of Executive Deputy Director of the Shanghai 5G+ Smart Healthcare Innovation Laboratory, Executive Deputy Director of the Shanghai Intelligent Medical Appliances and Active Health Collaborative Innovation Center, Executive Director of the China Yangtze River Delta – Balkan Peninsula Biomedical International Technology Transfer Collaborative Innovation Center, and Executive Deputy Director of the Medical Intelligence Development Institute, China Hospital Development Institute of Shanghai Jiao Tong University. He is also the Vice President of the Smart Hospital Technology Transformation Branch of the National Health Industry Enterprise Management Association, Secretary-General of the Health Management Branch of the China Medical Equipment Association, and Deputy

Secretary-General of the Harvard University Alumni Association of the Shanghai Overseas Returned Scholars Association.

His main research fields include active health and smart wellness care. He has dedicated to research in the field of medical-engineering integration in a long-term, specializing in explainable artificial intelligence and its applications in wellness care. He focuses precisely on addressing pain points and challenges in medical services and wellness care, breaking through key technologies such as machine vision, human-machine collaboration, and cluster control. As a core member, he has innovatively established a new generation of remote medical service models and application platforms, effectively enhancing the overall operational efficiency of the healthcare service system. Simultaneously, as a core member, he has deeply developed the "5G+ Smart ICU" application scenario, which was selected for the "National Excellent Project List of 5G+ Healthcare Application Pilots" organized by the Ministry of Industry and Information Technology and the National Health Commission, becoming a national demonstration benchmark for 5G+ smart healthcare and actively promoting the high-quality development and digital transformation of medical services.

In recent years, he has successively led and undertaken projects such as the National Natural Science Foundation of China and "Science and Technology Innovation Action Plan" in Shanghai Science and Technology Commission. He has also participated as a core member in 16 various research projects, including the Ministry of Science and Technology's National Key R&D Program and the National Natural Science Foundation's Major Research Plan. He has published over 80 papers in domestic and international core journals, including those indexed by SCI and EI, and obtained 32 self-developed technology patents and software copyrights. He serves as the Editor-in-Chief of the Scopus-indexed journal International Journal of Electronic Healthcare, Associate Editor of the International Journal of Intelligent Systems Technologies and Applications, which is EI-indexed, Associate Editor of the SCI-indexed journal, Emerging Materials Research, and Associate Editor of the SCI-indexed journal, Applied Intelligence.