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8th International Conference on

ARTIFICIAL INTELLIGENCE, DATA SCIENCE AND CYBER SECURITY FOR HEALTH CARE AND SCIENTIFIC INNOVATIONS (ICAIDCHS – 2026)

27th & 28th March 2026

International Conference Proceedings

Editors

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MESSAGE

Er. G. Rajasekaran
Secretary, Indra Ganesan Institutions
Tiruchirappalli, Tamil Nadu

It gives me immense pleasure to extend my warm greetings to all the participants of the 8th International Conference on Artificial Intelligence, Data Science and Cyber Security for Health Care and Scientific Innovations (ICAIDCHS–2026) conducted in Hybrid Mode.

This conference provides an excellent platform for academicians, researchers, scientists, and industry experts from around the world to share their knowledge, innovative ideas, and research findings in the emerging fields of Artificial Intelligence, Data Science, and Cyber Security in healthcare and scientific research.

I appreciate the efforts of the organizing committee for bringing together distinguished speakers and participants for this significant academic event. I am confident that this conference will foster collaboration, inspire new research directions, and contribute to technological advancements in healthcare and scientific innovation.

I wish the conference great success and extend my best wishes to all participants.

Er.G.Rajasekaran

MESSAGE

Dr. G. Balakrishnan
Director, Indra Ganesan Institutions, Trichy, Tamilnadu, India
Principal, Indra Ganesan College of Engineering, Trichy, Tamilnadu, India

It is my great honor to convey my felicitations on the occasion of the 8th International Conference on Artificial Intelligence, Data Science and Cyber Security for Health Care and Scientific Innovations (ICAIDCHS–2026).

In recent years, Artificial Intelligence and Data Science have revolutionized healthcare systems and scientific research. Conferences like ICAIDCHS play a crucial role in bringing together researchers, academicians, and professionals to exchange knowledge, discuss innovative solutions, and address emerging challenges in healthcare and technology.

I congratulate the organizers for arranging this international platform in Hybrid Mode, enabling wider participation and knowledge exchange across borders.

I am confident that this conference will inspire meaningful discussions, collaborative research, and impactful innovations for the betterment of society.

I wish the conference a grand success.

Dr.G.Balakrishnan

MESSAGE

Dr. M. Anusuya
Professor / Registrar
Indra Ganesan Institutions, Trichy, Tamil Nadu, India

I am delighted to extend my heartfelt felicitations for the **One Day National Conference on "Transforming Health Care with Artificial Intelligence (AI) – A Glimpse into Future – 2026"** organized by the **Indra Ganesan College of Nursing**.

The rapid evolution of Artificial Intelligence is significantly influencing the healthcare sector by enabling data-driven decision making, early disease detection, efficient hospital management, and improved patient care. For healthcare professionals, particularly in nursing, staying informed about these technological advancements is essential to meet the demands of modern healthcare systems.

This national conference provides a valuable academic platform for scholars, practitioners, and students to exchange knowledge, present innovative research findings, and explore the future possibilities of AI in healthcare. The conference proceedings will serve as an important reference for researchers and professionals interested in the integration of AI technologies in healthcare practice.

I appreciate the sincere efforts of the organizers, faculty members, and students in successfully organizing this academic event. I wish the conference every success and hope it contributes to the advancement of knowledge and innovation in healthcare.

Dr. M. Anusuya

MESSAGE

Dr. S. Karthikeyan
Professor, Vice Principal, Indra Ganesan College of Engineering
Trichy, Tamilnadu, India

It is a matter of great pride and privilege to extend my warm greetings to all the participants, researchers, academicians, and industry professionals attending the ***International Conference on Artificial Intelligence, Data Science and Cyber Security for Health Care and Scientific Innovations*** *(ICAIDCHS'26)*, scheduled on **27th & 28th March 2026**. In today's rapidly evolving technological landscape, Artificial Intelligence, Data Science, and Cyber Security play a crucial role in transforming healthcare systems and enabling scientific innovations. The convergence of these technologies is creating new opportunities for intelligent healthcare solutions, secure data management, and advanced research that can significantly improve the quality of life and societal well-being. ICAIDCHS'26 serves as an important global platform for scholars and practitioners to present their research findings, exchange innovative ideas, and engage in meaningful discussions on emerging trends and challenges in these multidisciplinary domains. The conference encourages collaboration between academia, research institutions, and industry to develop sustainable and impactful technological solutions for healthcare and scientific advancement.

The conference received an encouraging response from researchers and practitioners worldwide. All submitted papers underwent a peer-review process to ensure high academic and research standards. The selected papers included in these proceedings reflect novel methodologies, practical applications, and forward-looking research that contribute significantly to the advancement of knowledge in these important areas. I congratulate the organizing committee for their dedicated efforts in successfully organizing this international conference. I also extend my sincere appreciation to the keynote speakers, reviewers, authors, and participants whose valuable contributions have made this conference a meaningful academic event. I am confident that the deliberations and outcomes of ICAIDCHS'26 will inspire new research directions, strengthen academic and industry collaborations, and promote innovative solutions for healthcare and scientific progress.

I extend my best wishes for the grand success of the conference and hope that all participants gain a rewarding and enriching experience.

Dr. S. Karthikeyan

SYNTHESIS AND ELECTROCHEMICAL STUDIES OF FUNCTIONALIZED CARBON NANOTUBE INCORPORATED Co_3O_4@V_2O_5 COMPOSITE FOR SUPERCAPACITOR APPLICATIONS

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ABSTRACT

A supercapacitor is an effective and practically reliable energy storage device that possesses several key characteristics, including high power density, durability, and a simple configuration. Identifying effective electrode materials is the primary challenge in advancing supercapacitor devices. Transition metal oxides have made significant progress. For instance, V_2O_5 has received attention due to its abundance and admirable electrochemical properties. Despite its potential, V_2O_5 faces limitations of poor conductivity and low stability. Therefore, this study aims to improve the electrochemical performance of V_2O_5 using carbon nanotube integrated Co_3O_4@V_2O_5 ternary composites for supercapacitor applications. The carbon nanotube was functionalised in an acidic medium initially. The Co_4O_4@V_2O_5 composite and f-CNT/Co_3O_4@V_2O_5 composites were synthesised using sol-gel and wet impregnation processes, respectively. The performed electrochemical analyses show the pseudocapacitive nature of the studied electrode. The Co_3O_4, Co_3O_4@V_2O_5, and f-CNT/Co_3O_4@V_2O_5 electrodes exhibit specific capacitances of 13.48, 65.12, and 222.63 $F.g^{-1}$ at 0.5 $A.g^{-1}$, respectively. Moreover, the fabricated f-CNT/Co_3O_4@V_2O_5 electrode exhibits a specific capacitance of 298.68 $F.g^{-1}$ at 1 $A.g^{-1}$, and an energy density of 93.32 $Wh.kg^{-1}$ at a power density of 3 $kW.kg^{-1}$. The device has retained 61.76 % of its capacitance and shows 95.2% columbic efficiency over 5000 cycles. This finding extends the opportunities for developing high-performance electrode materials for supercapacitor applications.

Keywords: *Supercapacitor, Power density, Energy density, Specific Capacitance*

NEXT-GENERATION REHABILITATION: CAN ARTIFICIAL INTELLIGENCE REPLACE THE HUMAN TOUCH

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ABSTRACT

Artificial intelligence (AI) and data science are increasingly transforming rehabilitation medicine by improving assistive technologies and supporting personalized patient care. AI-based systems can analyze patient data, movement patterns, and rehabilitation progress to help clinicians design more effective and individualized treatment plans. One important area of advancement is the development of intelligent artificial limbs and prosthetic devices. Modern prosthetics use sensors and AI algorithms to interpret muscle signals and adjust movements in real time, allowing users to achieve more natural and efficient mobility. These smart prostheses can significantly improve functional independence and quality of life for individuals with limb loss.

Virtual reality (VR) is also becoming an important tool in rehabilitation therapy. VR-based programs create interactive and engaging environments that promote motor learning and neuroplasticity. They are commonly used in neurological rehabilitation, such as after stroke or traumatic brain injury, by providing task-specific training and real-time feedback while improving patient motivation and participation. In addition, AI-assisted rehabilitation equipment, including robotic exoskeletons, smart gait-training devices, and sensor-based therapy systems, helps guide patient movement and provides precise biomechanical feedback. These technologies support clinicians in delivering more accurate, data-driven therapy. Together, AI, virtual reality, and intelligent assistive technologies are advancing rehabilitation medicine by enhancing recovery, improving patient engagement, and promoting greater independence.

Keywords*: Artificial Intelligence (AI), Rehabilitation Medicine, Assistive Technologies, Virtual Reality (VR), Robotic Rehabilitation*

BIONANOMEDICINE IN THE ERA OF ARTIFICIAL INTELLIGENCE: EMERGING STRATEGIES FOR PRECISION HEALTHCARE

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ABSTRACT

Bionanomedicine is an interdisciplinary field that integrates nanotechnology with biological systems to develop advanced diagnostic and therapeutic strategies for complex diseases. In recent years, the integration of artificial intelligence (AI) with bionanomedicine has significantly accelerated the discovery, design, and clinical translation of nanomaterials for biomedical applications. AI-driven computational models enable the rapid prediction of nanoparticle physicochemical properties, biological interactions, and therapeutic efficiency, thereby reducing experimental time and cost. Machine learning and deep learning algorithms are increasingly applied to optimize nanoparticle synthesis, drug loading efficiency, targeted delivery, and toxicity prediction. AI-assisted imaging and biosensing technologies further enhance the capability of nanosystems in early disease detection, particularly in cancer, infectious diseases, and neurological disorders. Moreover, intelligent nano-platforms integrated with AI analytics facilitate personalized medicine by enabling patient-specific treatment strategies based on genomic, proteomic, and clinical data.

Despite these promising advancements, challenges remain in data standardization, model interpretability, regulatory approval, and ethical considerations. Addressing these issues will be crucial for the successful translation of AI-enabled bionanomedicine into clinical practice. This presentation highlights recent developments, key technological innovations, and future perspectives in AI-assisted bionanomedicine, emphasizing its potential to revolutionize precision diagnostics, targeted drug delivery, and next-generation therapeutic systems.

Keywords: *Bionanomedicine; Artificial Intelligence; Nanoparticle; Machine Learning, Precision Medicine; Targeted Drug Delivery; Nanodiagnostics.*

SYNERGIZING SMART SYSTEMS: AI, IOT AND DATA SCIENCE INNOVATIONS IN HEALTHCARE AND SUSTAINABLE ENERGY

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ABSTARCT

The convergence of Artificial Intelligence, Data Science, and the Internet of Things is fundamentally reshaping both healthcare delivery and sustainable energy systems. This session explores the interdisciplinary applications of these transformative technologies, drawing from extensive research in machine learning, deep learning, and IoT-enabled systems. The presentation first examines the foundational role of AI in creating smart, resilient infrastructures through case studies on fault detection in smart grids, optimal power prediction for solar energy systems, and advanced battery management systems for electric vehicles employing CNN-BiGRU models. These frameworks demonstrate how predictive analytics can optimize complex systems, enhance operational efficiency, and drive innovation. These same principles are directly transferable to healthcare, where similar models enable continuous patient monitoring, early diagnosis, and intelligent management of critical medical infrastructure. The discussion highlights recent innovations in healthcare technology, including the development of reinforcement learning algorithms for closed-loop cardiac rhythm regulation in smart pacemaker devices, deep neural network integration with biosignal acquisition systems for intelligent pacemaker control, and novel low-noise CMOS bioamplifiers for characterizing neurodegenerative diseases. Additionally, lightweight neural compression techniques for real-time health analytics in IoT environments are examined, demonstrating their crucial role in enabling remote patient monitoring without compromising data integrity or speed, thereby democratizing access to quality healthcare. By demonstrating that methodologies driving next-generation smart energy grids, electric vehicle infrastructure, and renewable energy systems—prediction, optimization, and intelligent control—are equally applicable to revolutionizing patient care, diagnostic accuracy, and scientific discovery, this presentation advocates for interdisciplinary collaboration to build a smarter future where technology serves humanity with both intelligence and ethical consideration.

Keywords: *Artificial Intelligence, Machine Learning, Healthcare Analytics, Internet of Things, Data Science, Smart Energy Systems.*

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