
Foreword

Special issue on Emerging Trends and Innovations in Artificial Intelligence and Information Science

The rapid evolution of Artificial Intelligence (AI) and Information Science is fundamentally reshaping the ways organizations, industries, and societies generate knowledge, make decisions, and address increasingly complex challenges. Advances in machine learning, deep learning, large language models, edge computing, blockchain, and intelligent decision-support systems are accelerating digital transformation across diverse sectors, including education, healthcare, hospitality, sustainability, and business management. As these technologies continue to mature, new opportunities emerge for innovation, efficiency, personalization, and societal impact, while simultaneously raising important questions regarding implementation, governance, and responsible use.

This special issue of the Journal of Information Science and Engineering on Emerging Trends and Innovations in Artificial Intelligence and Information Science draws primarily on extended and selected papers originating from the WorldCist25 conference. It brings together a collection of high-quality research contributions that reflect the breadth, diversity, and interdisciplinary nature of contemporary research in Artificial Intelligence and Information Science. The selected articles present both theoretical advancements and practical applications, demonstrating how intelligent systems are being designed, developed, and deployed to address complex real-world challenges across a wide range of domains. Collectively, these contributions highlight emerging methodologies, innovative technologies, and novel perspectives that are shaping the future of AI-driven research and practice.

The issue opens with Hospitality Business Analytics: Understanding Analytics Knowledge in Hotel Management, which examines the role of analytics capabilities in the hospitality sector and contributes to a deeper understanding of data-driven decision-making in hotel management. The growing importance of intelligent educational technologies is represented by LLM and Retrieval Augmented Generation-based Student Support System for University Students and Personalization Learning Recommendation Model Based on Graph Cognitive Diagnosis, both of which explore innovative approaches to enhancing learning experiences through advanced AI-driven personalization and student support mechanisms.

Several contributions focus on intelligent healthcare systems and biomedical applications. Design of an Iterative Method for Enhanced IoMT Network Management Using Deep Q-Network and Recurrent Neural Networks addresses the optimization of Internet of Medical Things (IoMT) environments through advanced reinforcement learning techniques. Computational Intelligence-Based Epileptic Seizure Prediction Using Continual Deep Learning Approach proposes innovative predictive models for neurological healthcare, while GAN-Augmented Lightweight CNN-GRU Hardware IP Core for Neurological Disorder Classification, Growth Pattern Classification in Lung Adenocarcinoma Using Deep Learning (OL-RNC), and Real-Time Breast Cancer Diagnosis Using Edge-AI and Telegram Bot for Remote Healthcare demonstrate the transformative potential of AI in medical diagnostics, disease classification, and remote healthcare delivery.

The increasing intersection between AI and sustainability is explored in Artificial Intelligence and Corporate Sustainability in SMEs: Exploring the Role of AI in Advancing Sustainable Business Practices, which examines how intelligent technologies can support sustainable development and organizational transformation within small and medium-sized enterprises. Complementing this perspective, Blockchain in Portuguese Healthcare: Perceived Usefulness, Trust, and Readiness – A Qualitative Case Study investigates the adoption of emerging digital technologies in healthcare systems, providing valuable insights into trust, readiness, and stakeholder perceptions surrounding blockchain implementation.

The articles in this special issue illustrate the expanding influence of AI and information science across educational, organizational, industrial, and healthcare contexts. They demonstrate how emerging technologies are driving innovation while simultaneously highlighting the importance of human-centered design, ethical considerations, trust, sustainability, and practical applicability. The contributions also underscore the increasingly interdisciplinary nature of AI research, requiring collaboration among computer scientists, engineers, healthcare professionals, educators, managers, and policymakers.

We extend our sincere gratitude to all authors for their valuable contributions and to the reviewers for their dedication, expertise, and constructive feedback throughout the peer-review process. We are deeply grateful to the JISE Editor-in-Chief and editorial team of the Journal of Information Science and Engineering for their support and commitment in making this special issue possible.

We hope that the research presented in this volume will stimulate further

scholarly inquiry, inspire innovative applications, and contribute to the continued advancement of Artificial Intelligence and Information Science for the benefit of academia, industry, and society.

• Introduction to Guest Editors •



Maria José Sousa (PhD in Industrial Management, with Habilitation in Management and Public Management) is a professor and researcher at ISCTE – University Institute of Lisbon. She served as Pro-Rector (2022–2024) and was a member of the scientific committee of the PhD in Law and Economics (Cycle XXXIX) at the University of Molise. She was also a member of the Advisory Board of Banco Português de Fomento in the area of Public Policies (2024–2026). She held a postdoctoral position from 2016 to 2018, researching digital education, with several publications in high-impact journals (Journal of Business Research, Journal of Grid Computing, Future Generation Computer Systems, among others). She worked as an expert on a European Commission project to create a new category of digital skills to be included in the European Innovation Scoreboard (EIS). Her current research interests focus on Organisational Innovation, Digital Transformation of the Organisations and AI in Human Resources Management and Development. She is co-author of more than 180 scientific articles and book chapters (European Planning Studies, Information Systems Frontiers, Systems Research and Behavioral Science, Computational and Mathematical Organization Theory, among others). She has been guest editor of more than 10 special issues for Elsevier and Springer. She served as Chair of ISO/TC 260 – Human Resource Management, representing Portugal at ISO – International Organization for Standardization. She coordinates and participates in several European innovation projects (funded by programmes such as Erasmus+, Horizon Europe, and ICMPD) and is also an External Expert of the COST Association – European Cooperation in Science and Technology, as well as an expert for the European Innovation Council (EIC) in Research and Innovation.



Álvaro Rocha is Honorary Professor and Professor of Information Systems at the Universidade Lusófona. He holds a D.Sc. in Information Science, a Ph.D. in Information Systems and Technologies, an M.Sc. in Information Management, and a B.Sc. in Computer Science. He is a researcher at ADVANCE – ISEG Centre for Advanced Research in Management and collaborates with LIACC and CINTESIS. His research focuses on information systems quality, maturity models, intelligent information systems, requirements engineering, e-Government, e-Health, online service quality, and digital technologies in education. He serves as Vice-Chair of the IEEE Portugal Section Systems, Man, and Cybernetics Society Chapter and is the Founder and Editor-in-Chief of the journals JISEM (Journal of Information Systems Engineering & Management) and RISTI (Revista Ibérica de Sistemas e Tecnologias de Informação). He is also Scientific Manager of Springer's Information Systems Engineering & Management book series and has held several international expert roles, including Vice-Chair of Experts for the European Commission's Horizon 2020 Programme, as well as expert appointments for Horizon Europe, COST, and research and innovation agencies in Italy, Latvia, Mexico, Poland, and Cyprus.



Jiann-Liang Chen is a prominent Taiwanese computer scientist and academic leader currently serving as the Executive Vice President and Dean of Research and Development at the National Taiwan University of Science and Technology (NTUST). He earned his Ph.D. in Electrical Engineering from National Taiwan University. A Distinguished Professor in NTUST's Department of Electrical Engineering since 2015, Dr. Chen previously served as the Dean of the College of Electrical Engineering and Computer Science. His extensive leadership roles in public and industrial sectors include serving as Convener of the Information Engineering Discipline for the National Science and Technology Council and President of the Mobile Security Alliance.
