Preface

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Biographical notes: Dinesh P. Mital is currently a Professor in Health Informatics at School of Health Professions at Rutgers University, Piscataway, NJ Campus. He received his Bachelor of Engineering degree in Electrical Engineering from the Indian Institute of Technology, Kanpur, India in 1968, and MS and PhD in Electrical Engineering, from the State University of New York at Stony Brook. He has a very well-known expert in the areas of image processing and artificial neural network-based applications. He has published monograms, book chapters, edited book, published over 150 journal papers and presented over 200 papers at international conferences. He is currently Editor-in-Chief of four international journals in health informatics area. Currently, he has been a Full Professor in the School of Health Professions, Department of Health Informatics, Rutgers University (2007–current). He has been invited in many international conferences to deliver invited papers, keynote addresses, and as a member of international advisory committees.

In this inaugural issue of the *International Journal of Artificial Intelligence in Healthcare*, we embark on a journey through a landscape, applications of artificial intelligence and compassionate healthcare converge. This journal will initiate bridge the gap between cutting-edge technology-based models, emergence of AI, and the daily realities of clinicians, patients, and researchers. The goal of this journal is to develop a showcase on how data-driven approaches can amplify human expertise, improve diagnostic precision, personalise treatment pathways and monitor progress of patient treatment in most effective ways.

The promise of applications of artificial intelligence in healthcare is not only about optimising the accuracy or automation of processes but it is about reshaping the patient experience. When a clinician utilises intelligence machines to identify early disease markers, they utilise precious time to connect with patients on a very effective and human level. When artificial intelligence-based processing eases administrative burdens, caregivers can devote more energy to empathetic listening and optimise the decision-making processes at various stages of patient management. This symbiosis of technology and empathy lies at the heart of every article in this volume.

Yet the progress of machine-based care and actions is not without complexity. There are ethical considerations surrounding patient data security, privacy, algorithmic bias, and appropriate access demand rigorous scrutiny. Interdisciplinary collaboration – uniting data scientists, disease specialists, ethicists, knowledge engineers, and healthcare providers – is essential to navigate through these challenges. The contributions here, in this journal, examine not only AI-based technical innovations in healthcare industry, but

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also develop appropriate and reliable frameworks needed to ensure responsible deployment.

Using this cutting-edge technology-based journal, we will curate original research, applied research, clinical case studies, and thought-provoking commentaries to inspire holistic dialogue. From emerging deep learning applications in medical imaging to innovative adaptive learning approaches safeguarding patient confidentiality, each piece will illuminate a facet of AI's potential to transform healthcare delivery and outcomes.

It is our hope that this new AI-based journal for healthcare applications will spark new collaborations, encourage policy discussions, and ultimately enhance patient well-being. We will invite readers to innovate question assumptions, investigate new approaches, challenge methodologies, and envision novel applications that will prioritise both efficacy and humanity.

Artificial intelligence in healthcare holds immense potential to revolutionise patient care, improve outcomes and enhance medical processes. As the technology continues to evolve, we can expect even more innovative applications in the field. *IJAIH* intends to provide an authoritative outlet that will shape a significant body of research in the area of AI applications in healthcare, medical engineering and informatics, allowing new developments to be shared across institutions, governments, organisations, researchers, students and industry. The main objectives of *IJAIH* journal are to develop, promote and establish effective channels of communication among academicians, researchers, health professionals, policy makers, government agencies, and research institutions to coordinate the research, development, practice and applications of artificial intelligence in the areas related to healthcare. This journal will aim to help professionals and researchers working in the field, academics, education and policymaking to contribute, to disseminate knowledge, and to learn from each other's research work. I sincerely hope that the *IJAIH* will provide an outstanding outlet that can shape a significant body of research in the areas of artificial intelligence-based tools applied to areas of healthcare. This will provide a platform, where results and new developments may be shared across institutions, governments, researchers and students, and also industry.

As AI continues to reshape medicine, researchers are exploring a spectrum of domains where algorithms and data-driven insights will improve patient care, streamline operations, and accelerate discovery. We will be looking forward to contributions from researchers, educators and healthcare providers to submit their contributions in areas related to AI in healthcare, specifically in area like:

- Spotlight on emerging AI ethics frameworks and regulatory landscapes.
- In-depth reviews of AI integration within telemedicine and remote monitoring.
- Tutorials on reproducible workflows for healthcare data scientists.
- Medical image analysis developing deep-learning models to detect anomalies in X-rays, MRIs, CT scans, and pathology slides – often matching or surpassing human experts in sensitivity and specificity.
- Predictive analytics and early disease detection leveraging large-scale patient data to forecast disease onset, stratify risk, and enable preventive interventions before clinical symptoms emerge.

- Drug discovery and development applying AI to screen compounds, predict molecular interactions, and optimise clinical trial design – dramatically reducing time and cost to bring new therapies to market.
- Natural language processing (NLP) and conversational agents mining electronic health records for insights, automating clinical documentation, and deploying chatbots to guide patients through care pathways while alleviating administrative burdens.
- Generative and re-generative AI applications harnessing large language and image models to draft clinical notes, simulate care scenarios, personalise patient education materials, and generate synthetic datasets for algorithm training.
- Ethical AI, fairness, and bias mitigation investigating methods to detect and correct bias in medical algorithms, ensure transparency of decision-making processes, and uphold equity in access and outcomes.
- Telemedicine and remote monitoring integrating AI-enabled analytics on wearable sensors, mobile apps, and home-based devices to extend diagnostic and monitoring capabilities beyond traditional clinical settings.

We hope this new journal will be able to provide a very effective platform for the researches to communicate their innovative achievements.