River Publishers

HealthTech Horizons

Charting the Future of Smart Healthcare Innovations, Deepfake and Metaverse

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HealthTech Horizons provides a concise yet comprehensive view of how cutting-edge technologies are transforming healthcare. Covering AI and machine learning in diagnostics, deep learning architectures (CNNs, RNNs, GANs) for genomics and imaging, synthetic data augmentation, and optimization algorithms (MRMR, EHO, HHWO) for complex biomedical datasets, this book bridges research with real-world applications.

It also examines the disruptive rise of deepfake technologies and the metaverse in telemedicine, surgical training, and immersive patient care, while addressing the ethical and computational challenges of integrating these tools responsibly. Designed for researchers, clinicians, and innovators, *HealthTech Horizons* is both a technical reference and a roadmap for the next era of smart, ethical, and intelligent healthcare systems.

The digital revolution in healthcare is no longer on the horizon—it's here. *HealthTech Horizons* dives deep into the convergence of biomedical science and advanced computational techniques, offering a research-driven perspective on how technology is redefining modern medicine. This book explores:

- **Artificial intelligence and machine learning** in diagnostics, treatment planning, and personalized medicine.
- **Deep learning architectures** (CNNs, RNNs, GANs) applied to genomics, medical imaging, and biomarker discovery.
- **Synthetic data augmentation** and **generative adversarial networks (GANs)** for enhancing predictive accuracy.
- **Feature selection and optimization algorithms** (e.g., MRMR, EHO, HHWO) for high-dimensional biomedical datasets.
- **Deepfake technologies** and their dual role in healthcare innovations and security threats.
- **Metaverse applications** in telemedicine, surgical simulation, and immersive patient care.
- **Ethical and computational challenges** in deploying AI responsibly in clinical practice.

Bridging research and practice, this book is an indispensable resource for data scientists, bioinformaticians, clinicians, and healthcare innovators seeking to understand—and shape—the next frontier of smart healthcare systems. *HealthTech Horizons* is not just about the future; it is a roadmap for leveraging algorithms, data, and virtual ecosystems to create resilient, ethical, and intelligent healthcare solutions.

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River Publishers Series in Biomedical Engineering

ISBN: 9788743809913
e-ISBN: 9788743809906
Available From: September 2026
Price: € 126.51

KEYWORDS:
Keywords: Artificial intelligence (AI) in healthcare, machine learning for medicine, deep learning (CNN, RNN, GAN), healthcare data science, genomics and bioinformatics, biomarker discovery, feature selection (MRMR, EHO, HHWO), optimization algorithms in biomedicine, synthetic data generation, generative adversarial networks (GANs), medical image analysis, predictive modeling in healthcare, smart healthcare systems, digital health technologies, deepfake in healthcare, metaverse in medicine, telemedicine and virtual care, surgical simulation and training, ethical AI in healthcare, future of healthcare innovation

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