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Titolo	Generative Machine Learning Models in Medical Image Computing // edited by Le Zhang, Chen Chen, Zeju Li, Greg Slabaugh
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ISBN	3-031-80965-3
Edizione	[1st ed. 2025.]
Descrizione fisica	1 online resource (VIII, 382 p. 107 illus., 97 illus. in color.)
Disciplina	006.31
Soggetti	Machine learning Medical informatics Image processing Machine Learning Health Informatics Image Processing Aprenentatge automàtic Informàtica mèdica Processament d'imatges Llibres electrònics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Part I Segmentation -- Synthesis of annotated data for medical image segmentation -- Diffusion Models For Histopathological Image Generation -- Generative AI Techniques for Ultrasound Image Reconstruction -- Part II Detection and Classification -- Vision Language Pre training from Synthetic Data -- Diffusion models for inverse problems in medical imaging -- Virtual Elastography Ultrasound via Generative Adversarial Network and its Application to Breast Cancer Diagnosis -- Generative Adversarial Networks for Brain MR Image Synthesis and Its Clinical Validation on Multiple Sclerosis -- Histopathological Synthetic Augmentation with Generative Models -- Part III Image Super resolution and Reconstruction -- Enhancing PET with Image Generation Techniques Generating Standard dose PET from Low dose PET -- EyesGAN Synthesize human face from human eyes --

Deep Generative Models for 3D Medical Image Synthesis -- Part IV
Various Applications -- Cross Modal Attention Fusion based Generative
Adversarial Network for text to image synthesis -- CHeart A
Conditional Spatio Temporal Generative Model for Cardiac Anatomy --
Generative Models for Synthesizing Anatomical Plausible 3D Medical
Images -- Diffusion Probabilistic Models for Image Formation in MRI --
Embedding 3D CT Prior into X ray Imaging Using Generative Adversarial
Networks.

Sommario/riassunto

"Generative Machine Learning Models in Medical Image Computing" provides a comprehensive exploration of generative modeling techniques tailored to the unique demands of medical imaging. This book presents an in-depth overview of cutting-edge generative models such as GANs, VAEs, and diffusion models, examining how they enable groundbreaking applications in medical image synthesis, reconstruction, and enhancement. Covering diverse imaging modalities like MRI, CT, and ultrasound, it illustrates how these models facilitate improvements in image quality, support data augmentation for scarce datasets, and create new avenues for predictive diagnostics. Beyond technical details, the book addresses critical challenges in deploying generative models for healthcare, including ethical concerns, interpretability, and clinical validation. With a strong focus on real-world applications, it includes case studies and implementation guidelines, guiding readers in translating theory into practice. By addressing model robustness, reproducibility, and clinical utility, this book is an essential resource for researchers, clinicians, and data scientists seeking to leverage generative models to enhance biomedical imaging and deliver impactful healthcare solutions. Combining technical rigor with practical insights, it offers a roadmap for integrating advanced generative approaches in the field of medical image computing.
