Special Issue Reprint

Artificial Intelligence in Image-Based Screening, Diagnostics, and Clinical Care

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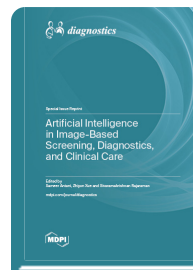Edited by
Sameer Antani
Zhiyun Xue
Sivaramakrishnan Rajaraman

Artificial intelligence (AI) in medical imaging is revolutionizing healthcare by enhancing screening, diagnostics, and clinical care. This integration is crucial as the global healthcare industry strives to enhance accuracy, efficiency, and accessibility. AI and machine learning (ML) extend far beyond simple automation, ushering in an era of precision medicine with diagnostics and treatments tailored to individual patients. Advances in deep learning (DL) further enable rapid analysis of complex imaging data, supporting clinical decisions, reducing diagnostic variability, and facilitating early detection—ultimately leading to improved outcomes. Despite its promise, integrating AI into clinical settings faces challenges. Effective AI models require high-quality, annotated training datasets; yet, the scarcity of such data and the imbalance between cases and controls hinder model development. Moreover, real-world medical datasets often include noisy and incomplete data, which can compromise algorithm reliability and introduce biases. The Special Issue "Artificial Intelligence in Image-Based Screening, Diagnostics, and Clinical Care" highlights groundbreaking advancements in AI/ML for medical imaging. It addresses challenges posed by limited and imperfect data while presenting innovative methodologies for image-based screening, diagnostics, and management. By showcasing original research and reviews, this issue provides valuable insights into state-of-the-art AI applications poised to effectively address global health challenges.

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