Special Issue

Medical Image Analysis: New Opportunities and Challenges

Message from the Guest Editor

The development of reliable artificial intelligence tools for medical image analysis is often constrained by the limited availability of high-quality, annotated datasets. This scarcity of data spans multiple domains, from prenatal and fetal imaging to traumatic brain injury and neurodegenerative disease, where acquiring standardized, multimodal datasets remains a major challenge. This Special Issue will bring together innovative approaches addressing data scarcity and heterogeneity through synthetic data generation, cross-modality harmonization, and domain-adaptive deep learning.

Particular attention will be paid to methods that combine high-resolution microscopy, histological imaging, and MRI to link microscopic and macroscopic scales, as well as studies that use synthetic or self-supervised learning to augment limited datasets. Cross-species frameworks such as porcine or rodent imaging that inform human neuroanatomy are also encouraged. Our overarching goal is to highlight computational strategies that expand the effective data landscape, leading to more generalizable, interpretable, and biologically grounded models for clinical imaging.

Guest Editor

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About the Journal

Message from the Editor-in-Chief

The imaging term, specific with journal, is to be considered in its broadest sense. Image processing, image understanding and computer vision are all terms related to imaging acquisition, its processing and the extraction of relevant information from the scene to obtain the underlying knowledge. All tasks related to the above items are oriented toward specific applications in a broad range of areas and topics. The *Journal of Imaging* is conceived as an efficient vehicle in the scientific community for the communication and transmission of the progress and research results in the topics covered.

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