

Tentative Outline (Preliminary Proposal of Thematic Issue)

Special/Thematic Issue for the journal "Current Medical Imaging"

Title: Autonomous & Decentralized Multimodal Biomedical Image Processing

Guest Editor: Dr. V. Bindhu

Scope of the Thematic Issue:

Biomedical images include significant amount of information about the anatomical and physiological structures that are vital for carrying out a biomedical diagnosis and assisting the physicians in determining the most suitable treatment plan. With the recent COVID-19 pandemic threat in the entire world, the processing and analysis of biomedical images has become an interdisciplinary area of research specialization. With the potential increase in the volume of healthcare-related data, the more precise and autonomous diagnosis based on the biomedical intelligence is an emerging future research direction for biomedical domain.

The interdisciplinary areas of deep learning, machine vision and biomedical imaging have been extensively reviewed to assist physicians and clinicians in selecting the most suitable prevention plans. In particular, the reliable biomedical image driven diagnosis often relies upon the multimodal biomedical data collected from multiple sources [sensors, wearables etc.]. The recent technological advances in utilizing multimodal computing for biomedical image processing provide an efficient, reliable, and autonomous solution to image based communication and diagnosis. Therefore, the need to perform a multimodal image processing to enhance the user experience and diagnosing accuracy is one of the potential research topics of biomedical image diagnosis and image data analysis. On the other hand, the biomedical imaging studies are also considered as the significant element for modern biomedical decision making scenario, where accessibility of biomedical data records is of critical importance. This calls for the implementation of a decentralized architecture to store and transfer the biomedical imaging data.

By considering the unexplored techniques in efficient multimodal biomedical image analysis, this special issue intends to design and develop a research platform for biomedical imaging researchers to showcase their state-of-the-art theories and techniques in the modern autonomous and decentralized multimodal imaging domain. Moreover, this special issue invites researchers from academia and industries to submit their novel and quality research contributions to promote the research and application of multimodal biomedical imaging intelligence systems.

Keywords: Deep learning, autonomous diagnosis, multimodal image processing, decentralized, architectures

Sub-topics:

- Multimodal biomedical imaging systems
- Machine learning and artificial intelligence in multimodal image data integration
- Bio-medical systems for personalized healthcare
- Adversarial learning and blockchain to securely and autonomously access imaging data
- Multi-modal biomedical fusion for accurate biomedical image driven diagnosis
- Self/Semi/Un-supervised learning methods for biomedical imaging data
- Generative adversarial networks and CNN for image data augmentation and processing
- Collection, analysis, and mining of large-scale multi-modal biomedical image database
- Intelligent visualization and understanding of multi-modal imaging data in health communication
- Multi-modal/multi-view learning in biomedical imaging domain

Tentative titles of the articles:

Article – 1: Collaborative learning-driven multi-modal covid-19 diagnosis

Article – 2: Intelligent and autonomous pattern analysis of neuroimaging data: A real-time perspective

Article – 3: Deep federated learning for autonomous biomedical image processing

Article – 4: Blockchain-based innovations in the healthcare industry: Theoretical concept, applications, and research methodologies

Article – 5: Decentralized autonomous learning for networks: A case study on pancreatic cancer segmentation

Article – 6: Deep machine intelligence for non-invasive esophageal cancer diagnosis

Article – 7: Capsules for biomedical image segmentation

Article – 8: Dynamic selection driven model for biomedical image segmentation

Schedule:

✧ Complete Thematic issue submission deadline: **November 1, 2022**

Details of Guest Editors:

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