

IEEE JOURNAL OF BIOMEDICAL AND HEALTH INFORMATICS

J-BHI Special Issue on “Multi-modal Computing for Biomedical Intelligence Systems”

In recent years, the development of biomedical imaging techniques, integrative sensors, and artificial intelligence, brings many benefits to the protection of health. We can collect, measure, and analyze vast volumes of health-related data using the technologies of computing and networking, leading to tremendous opportunities for the health and biomedical community. Meanwhile, these technologies have also brought new challenges and issues. Biomedical intelligence, especially precision medicine, is considered one of the most promising directions for healthcare development.

The practice of biomedical intelligence is based on the prescriptive and predictive analytics of Big data. Biomedical intelligence systems include hardware, computational models, databases, and software that optimize the acquisition, transmission, processing, storage, retrieval, analysis, and interpretation of vast volumes of multi-modal health-related data. Currently, these systems have been deployed in solutions that integrate a variety of technologies, including machine learning (especially deep learning), artificial intelligence, computer vision, Internet of Things, E-Health, bioinformatics, sensors, etc., to achieve patient-centric healthcare. It is expected that the efficiency, accuracy, predictive value, and benefits of biomedical intelligence will greatly improve in the years to come.

The aims of this SI are 1) to present the state-of-the-art research on Multi-modal Computing for Biomedical Intelligence Systems, and 2) to provide a forum for experts to disseminate their recent advances and views on future perspectives in the field. Researchers from academic fields and industries worldwide are encouraged to submit high quality unpublished original research articles as well as review articles in broad areas relevant to Multi-modal Computing theories and technologies for Biomedical Intelligence Systems.

Topics of interest include, but are not limited to, the following:

- Informatics of multi-modal biomedical data, such as genetic data, biomedical data, and data collected from mobile healthcare devices.
- Prescriptive and predictive analytics based on genetic sequencing data.
- Collection, visualization, analysis, and mining of data about mobile health.
- Deep learning-based processing and diagnostic analysis of biomedical data, such as nodule detection in CT images, enhancement of low-quality images, etc.
- Intelligent interrogation systems, such as health-related dialogue agents.
- Construction, analysis, and use of health-related knowledge graph.
- Adversarial training on biomedical images and other health data.
- Visualization and understanding of machine learning in biomedical engineering.
- Curative effect evaluation and prediction based on machine learning techniques.
- Hardware or database architectures that can implicitly capture intricate structures of large-scale multi-modal biomedical data.
- Improvising on the computation of biomedical processing models, exploiting parallel computation techniques, and GPU programming.
- Cloud, fog, and edge computing systems for biomedical data processing, analysis, etc.
- Security, privacy, and trust in biomedical computing systems.

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Key Dates

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