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SPECIAL ISSUE ON
Artificial Intelligence and Optimization Technology for Health Diagnostics and Surgical Guidance Systems

Modern medical imaging and artificial intelligence (AI) technology has provided us with better intra-operative assessment of a medical condition, a more definite diagnosis, precise guidance in diagnosis, and reduction of risk for surgery. During most clinical examinations, it was observed that medical imaging offers a more protected and important support for clinical applications in medical diagnostics and surgical procedures than any other medical devices. Importantly, medical imaging that is coupled with AI can even be supported by high-quality vision technology in the field of “minimally invasive” surgery. Our special issue will consolidate the new approaches of guiding surgery and performing the diagnosis. As an example, medical imaging has assisted medical doctors in finding residual lesions specifically and offer assistance to eradicate residual tumor and remove its reappearance effectually.

The information derived from medical images is of importance to quantitatively analyze the organs, tissues, and their functional characteristics in the human body. In this special issue, we explore methods for medical imaging and image processing based on the various well-established algorithms and machine learning techniques. Then, we are also interested in the different statistical quantification methods in order to evaluate device performance or identify cause and effect of diseases, as well as to predict health conditions in a human population. All these researches motivate us to consolidate a number of articles describing promising biomedical applications related to medical imaging within this special issue. Potential topics include, but are not limited to:

- Advanced image processing technique and AI methods related to extraction of medical and diagnosis information.
- Medical imaging modalities such as CT, MRI, ultrasound, and echocardiography to assist with clinical decision-making and therapy guidance.
- Combining clinical and engineering approach with medical imaging and analytics to assist screening, diagnosis, therapy planning, and treatment follow-ups.
- Applications of medical imaging and informatics towards their clinical translations.
- Enabling minimally invasive surgical procedures by using state-of-the-art imaging guidance.
- Managing medical image-based patient data and identification of health trends based on statistical quantification and machine learning methods.
Virtual reality surgical planning and computer vision techniques using AI.

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Note: The publisher has implemented with immediate effect that all papers submission must provide its respective plagiarism report on the value of similarity index (to be less than 12%); without this, no papers will be processed.

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