Aims & Scope:

The advancement in 3D medical imaging and medical image computing has greatly changed the way of traditional patient care. Medical image computing is an interdisciplinary field with the intersection of computer science, electrical engineering, medical physics, mathematics, and medicine. The major goal of medical image computing is to extract clinically relevant information from medical images, such as computed tomography (CT), magnetic resonance (MR), ultrasound (US) or positron emission tomography (PET) images, for diagnostics, treatment planning, and image-guided therapy (IGT) or surgery. The increasing use of medical image computing approaches has advanced interpretation of radiological images toward more objective diagnoses with the help of quantitative imaging and newly developed big data systems and machine learning techniques. In addition, medical image computing has become an essential tool in IGT systems. For example, it has been widely used in radiation treatment planning and image-guided radiation therapy. New emerging techniques are being developed for efficient planning and radiation beam optimization, as well as dynamic image-guided radiation beam delivery. This special issue aims to bridge the gap between research in medical image computing for diagnostics and radiation therapy and provides a platform for the exploration of medical image computing approaches to address challenging clinical problems in computer-aided diagnostics and image-guided radiation therapy.

Key words:

Medical image computing, computer-aided diagnostics, image-guided radiation therapy

Subtopics:

Authors are invited to submit their original research papers or comprehensive overview papers in the area of applying novel medical image analysis to computer-aided diagnostics and image-guided radiation therapy. The topics include, but not limited to:

- Image registration and data fusion
- Image segmentation
- Image visualization and 3D volume rendering
- Statistical shape models and probabilistic models
- Atlas construction and atlas selection
- Texture feature extraction and analysis
- Pathological classification and outcome prediction
• Novel image computing for radiation therapy
• Automated radiation planning and optimization
• Image-guided adaptive radiotherapy
• Image-based treatment assessment and follow-up quantification

Schedule:
February 2016