More than 50 percent of all data generated in life sciences is in the form of images, but the potential use of this form of data is only partially tapped. The latest high-throughput image-acquisition devices in the laboratory environments produce thousands of images a day and volumes images are increasing. One of the major challenges is that many image analysis software tools currently in use require a considerable response time or temporary storage space. These requirements have continuously increased, especially when they are executed under real-time constraints. In addition, medical imaging applications may involve different standards so that different algorithms have to be used at different stages of the processing chain.

In general, the audience of JRTIP focus has been researchers from both academia and industry, working in the multidisciplinary field of image and video processing. JRTIP bridges the gap between the theory and practice of image processing. It covers real-time image processing systems and algorithms for industrial, medical, consumer electronics, portable and embedded device applications. It presents practical, low-cost, and real-time architectures for image processing systems as well as tools, simulation and modelling for real-time image processing algorithms and their implementations.

This special issue on ‘Real-Time Processing of Medical Images’ is intended to present the current state-of-the-art in the field of parallel programming of imaging applications and the future trends in real-time medical image processing, including parallel computing (computational models, parallel algorithms and hierarchical memory optimizations), programming frameworks, real-time implementation of embedded medical image processing applications on parallel architectures: Multi-core platforms, GPU architecture, parallel modern workstations based on RISC processors, cell architecture, etc.

Contributions are solicited to this special issue by submitting original and unpublished papers that illustrate research results, projects, surveying works and industrial experiences that are dealing with theory and applications within the theme of parallel computing for Real-Time Image Processing with emphasis placed on the real-time aspects of parallel programming of medical imaging applications (parallel computational models, performance optimisation and hierarchical memory, new parallel paradigms to map algorithms efficiently, low, medium level and coarse-grain algorithms, and embedded applications).

Authors are encouraged to submit contributions in any of the following or related areas for parallel computing and real-time processing for:

**Medical image processing**

- Applied digital signal processing
- Coding and Transmission
- Digital signal processing in communications
- Image & signal processing applications
- Image acquisition and display:
- Image and video processing & analysis
- Image formation
- Image scanning, display, and printing
Parallel computing for real time medical image processing

- Models and parallel algorithms for medical imaging
- Advanced techniques for parallel image processing
- Advanced data visualization techniques and biomedical imaging technologies
- Multi-thread and multi core programming (homogenous and heterogeneous architecture) in healthcare software development
- Advanced medical technology based on parallel programming of GPU and multi-GPU
- Hierarchical memory and optimisation techniques to enhance cache and memory utilization of healthcare software.

**Programming, optimisation and compilation techniques, development environments**

- Medical application framework based on parallel architectures
- Optimisation and compilation techniques of medical algorithms
- Software for big data saving and processing in medical imaging

**Real-time and embedded medical image processing applications and parallel implementation in:**

- Medical imaging
- Interactive equipment, embedded vision sensors
- Virtual reality
- High speed image processing applications
- 2D/3D measurement systems

**IMPORTANT DATES:**

Papers due: March 2, 2015
Review and revision to be completed: Sept 15, 2015
Camera ready paper due: Dec 15, 2015

The guidelines for authors and reviewers are available for download from the JRTIP webpage: [http://www.springer.com/11554](http://www.springer.com/11554).

It is expected that all potential authors would volunteer as reviewers to support the efficiency of the review process for this special issue. They can register as reviewers with their profile of expertise and contact information in the Editorial Manager: [www.editorialmanager.com/rtip](http://www.editorialmanager.com/rtip) where also submissions can be uploaded indicating to be considered for the Special Issue on Real-Time Processing of Medical Images.

The issue is to be reviewed on a “fast track” basis. Prior to sending full paper submissions, it is highly recommended to query the appropriateness of submissions with a 100-200 word abstract by contacting the guest editors with the following contact information:

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