

Call for Papers for “Methods of Information in Medicine - Focus Theme”

Computational intelligence re-meets medical image processing

Guest editors: *Thomas Deserno, TU Braunschweig, Germany*
 Hariton Costin, University of Medicine & Pharmacy, Iasi, Romania

The recent rapid advances in medical imaging and automated image analysis allow us to make significant improvements in our understanding of life and disease processes, and our ability to deliver high-quality healthcare.

Medical imaging and image processing domains mainly manage and process missing, ambiguous, inconsistent, complementary, contradictory, redundant and distorted data, and information has a strong structural character. In general, the processes of human and artificial understanding of any image involve the matching of features extracted from the image with pre-stored models. From the information technology point of view, the production of a high-level symbolic model requires the representation of knowledge about the objects to be modeled, their relationships, and how and when to use the information stored within the model. Therefore, all traditional and advanced techniques of image processing and computational vision, analysis and understanding may be used to process medical images, in order to extract useful information for diagnosis and treatment.

A special approach, which represents the editors' proposal for this focus theme, directs to the use of Artificial Intelligence, which recently has proven to yield promising results in medical image processing and analysis. This is because the structural character of information may successfully be approached by using certain methods of Computational Intelligence and Computer Vision. Data Fusion and similar methods successfully solve the aggregation of numerical and linguistic information, and are able to cope with often defective information, like that occurring in the biomedical imaging domain.

With continuing evolutionary progress in biomedical imaging, visualization and analysis, we can fully expect to benefit from new knowledge about life and disease processes, and from new and efficient methods of diagnosis, therapy and prevention.

This Focus Theme presents new paradigms and prominent applications in biomedical image processing, in direct relation with latest concepts in Computational Intelligence and Computer Vision. So, we are looking for innovative and novel papers, showing interesting and useful results and interpretations in the following areas, with applications in intelligent biomedical image processing:

- Deep and Reinforcement Learning
- (Convolutional) Neural Networks
- Fuzzy Logic and Systems, Neuro-Fuzzy Systems & Rough Sets
- Evolutionary and Bio-inspired Algorithms

- Intelligent, Deformable Models
- Symbolic Calculus for Knowledge Representation
- Knowledge Based Systems
- Decision Support Systems (Computer-Aided Diagnosis)
- Data Mining & Knowledge Discovery
- Semantic Nets & Data Fusion

Of course, other new concepts in Computational Intelligence may be reflected into submitted articles.

Original and high quality papers, which are not considered by other journals or conferences and have to follow the submission guidelines of “Methods of Information in Medicine”, will be rigorously reviewed by at least three reviewers. Please submit them electronically at <http://mc.manuscriptcentral.com/methods> and select “Original Article for a Focus Theme” as manuscript type. Please mention in the cover letter the title of this Focus Theme.

Submission deadline: September 30, 2017

Contact: Thomas Deserno <thomas.deserno@plri.de>,
Hariton Costin <hariton.costin@umfiasi.ro>