J-BHI Special Issue on "Information Fusion for Medical Data: early, late and deep fusion methods for multimodal data"

Medical data exists in a broad range of formats, from structured data and medical reports to 1D signals, 2D images and 3D volumes or even higher dimensional data such as temporal 3D sequences. Think about the assessment of the functioning of the heart, for instance. A physician can make an auscultation and produce a report in text format; an electrocardiogram can be made and printed in time series format, an x-ray can be performed and saved as an image; a volume can be provided through an angiography; temporal information can be given by echocardiograms, 4D information can be extracted through flow MRI. Another typical source of variability is the existence of data from different time points, such as pre and post treatment, for instance. This high and diverse amount of information needs to be organized and mined in an appropriate way so that meaningful information can be extracted. Several questions, however, arise when dealing with these situations. Should different types of information be treated differently? Should a common framework be derived? Are new analytic approaches needed? It is our hope that these and other questions will be addressed by this special issue.

In this call, we focus on sharing recent advances in algorithms and applications that involve combining multiple sources of medical information. Topics appropriate for this special issue include novel supervised, unsupervised, semi-supervised and reinforcement algorithms, new architectures, new formulations, and applications related to medical information fusion.

Topics appropriate for this special issue include (but are not limited to):
- Analysis on fusion of big medical data
- Applications of multimodal learning in image and computer vision medical areas
- Combining multiple models for medical data
- Combining multiple sources in medical data
- Cross modality learning
- Feature fusion for medical data
- Early and late fusion approaches
- Hierarchical models for medical information fusion
- Improved algorithms for medical information fusion
- Intelligent systems for medical information fusion
- Joint feature learning
- Medical multi-sensor fusion
- Multimodal metric learning for medical applications
- New models for multimodal medical data
- Transfer learning in multimodal medical data
- Deep learning with inputs from several data sources

Manuscripts must clearly delineate the role of information fusion for medical data. The manuscript should include new contributions beyond those made in earlier publications. Review works will not be considered in this special issue. Contributions should be described in sufficient detail to be reproducible on the basis of the material and references presented in the paper.

Guest Editors

Andres Ortiz
Universidad de Málaga
aortiz@ic.uma.es

Belur V. Dasarathy
Consultant - Decision Systems & Information Fusion Technologies
fusion-consultant@ieee.org

Henning Müller
HES-SO, Sierre, Switzerland
henning.mueller@hevs.ch

Inês Domingues
CISUC, Department of Informatics Engineering, University of Coimbra, Portugal
icdomingues@dei.uc.pt

Pedro H. Abreu
CISUC, Department of Informatics Engineering, University of Coimbra, Portugal
pha@dei.uc.pt

Vince D. Calhoun
The Mind Research Network
vcalhoun@mrn.org

Key Dates
Deadline for Submission: 15 Jan. 2019
First Reviews Due: 28 Feb. 2019
Revised Manuscript Due: 30 Apr. 2019
Final Decision: 31 May. 2019