CALL FOR PAPERS

IEEE Transactions on Emerging Topics in Computational Intelligence

Special Issue on emerging computational intelligence techniques to address challenges in biomedical data and imaging

I. Aim and Scope

Computational intelligence, particularly deep neural networks, plays a key role in the recent bloom of data-driven automation, which can be viewed as one of the most emerging fields of artificial intelligence over the last decade. It has achieved great success in different tasks in computer vision, image processing, biomedical analysis and related fields. Researchers in deep and shallow machine learning including those working in the above fields can play a significant role in understanding and processing of complex medical data in order to improve the care of patients. Healthcare and biomedical sciences have become data-intensive fields, with a strong need for sophisticated data mining methods to extract the knowledge from the available information. The analysis of biomedical data still entails many challenges including high dimensionality, class imbalance and low numbers of samples. Although the current research in this field has shown promising results, several research issues remain to be explored. There is a need to explore novel feature selection methods to improve predictive performance along with interpretation, and address the scalability to large scale data in biomedical sciences.

This special issue intends to prompt emerging computational intelligence (CI) techniques for biomedical data and imaging. Special attention will be devoted to handling feature selection, class imbalance, bias, uncertainty modelling and data fusion in medical imaging. This is of special interest for medical experts who have access to interesting sources of data but lack of expertise in using computational intelligence techniques effectively.

II. Topics

The topics relevant to the special issue include (but are not limited to) the following topics:

- Computer aided detection and diagnosis
- Advanced computational intelligence techniques for biomedical data
- Advanced computational intelligence techniques for neuroimaging data
- Deep learning (DL) and transfer learning (TL) based methods for neuroimaging applications
- Applications of DL algorithms in biomedical data processing, pathological detection and diagnosis
- Adversarial learning, meta-learning and few-shot learning in biomedical image segmentation
- DTL for feature learning, classification, and clustering
- Evolutionary computing in bioinformatics
- Pattern recognition for imaging and genomics
- Computational intelligence for large scale imbalanced data
- Improved algorithms for multimodality neuroimaging data fusion systems
- Clustering and classification algorithms for Healthcare
- Real-world applications of computational intelligence for biomedical data and imaging

III. Submissions

Manuscripts should be prepared according to the "Information for Authors" section of the journal, and submissions should be done through the journal submission website: https://mc.manuscriptcentral.com/tetci-ieee, by selecting the Manuscript Type of "Emerging computational intelligence techniques to address challenges in biomedical data and imaging" and clearly marking "Emerging computational intelligence techniques to address challenges in biomedical data and imaging" as comments to the Editor-in-Chief. Submitted papers will be reviewed by at least three different reviewers. Submission of a manuscript implies that it is the authors' original unpublished work and is not being submitted for possible publication elsewhere.

IV. Important Dates

Paper submission deadline: March 31, 2021
Notice of the first round review results: June 30, 2021
Revision due: September 30, 2021
Final notice of acceptance/reject: November 30, 2021

V. Guest Editors

M. Tanveer, Indian Institute of Technology Indore, India
Email: mtanveer@iiti.ac.in
Chin-Teng Lin, University of Technology Sydney, Australia
Email: Chin-Teng.Lin@uts.edu.au
Chuan-Kang Ting, National Tsing Hua University, Taiwan
Email: ckting@pme.nthu.edu.tw
Javier Andreu Perez, University of Essex, UK,
Email: javier.andreu@essex.ac.uk