



IEEE SMC'19
October 6-9, 2019 – Bari, Italy

SPECIAL SESSION ON

“Soft Computing: Data Driven Approach for Bio-medical and Healthcare”

SPECIAL SESSION CODE

kc652

Session Organizers:

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Session area: Cybernetics

Session description

This special session aims to bring together the current research progress (from both academia and industry) on data analysis for biomedical and healthcare applications. It will attract healthcare practitioners who have access to interesting sources of data but lack the expertise in using the data mining effectively. Special attention will be devoted to handle feature selection, class imbalance, and data fusion in biomedical and healthcare applications.

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. For example, data analysis methods are applied on biomedical datasets, namely DNA microarray data or Next Gen sequencing data to predict treatment outcomes of paediatric Acute Lymphoblastic Leukaemia patients. Moreover, clustering methods are routinely used to investigate the interpretation of the correlated genes associated with cellular and biological function.

Biomedical data contains several challenges in data analysis, including high dimensionality, class imbalance and low numbers of samples. Although the current research in this field has shown promising results, several research issues need to be explored as follows. There is a need to explore feature selection methods to select stable sets of genes to improve predictive performance along with interpretation. There is also a need to explore big data in biomedical and healthcare research. An increasing flood of data characterises human health care and biomedical research. Healthcare data are available in different formats, including numeric, textual reports, signals and images, and the data are available from different sources. An interesting aspect is to integrate different data sources in the data analysis process which requires exploiting the existing domain knowledge from available sources. The data sources can be ontologies, annotation repositories, and domain experts' reports. This special session aims to bring together the current research progress (from both academia and industry) on data analysis for biomedical and healthcare applications. It will attract healthcare practitioners who have access to interesting sources of data but lack the expertise in using the data mining effectively. Special

attention will be devoted to handle feature selection, class imbalance, and data fusion in biomedical and healthcare applications.

The main topics of this special session include, but are not limited to, the following:

- Information fusion and knowledge transfer in biomedical and healthcare applications.
- Data Analysis of the biomedical data including genomics.
- Text mining for medical reports.
- Statistical analysis and characterization of biomedical data.
- Machine Learning Methods Applied to Medicine
- Large Datasets and Big Data Analytics on biomedical and healthcare applications.
- Information Retrieval of Medical Images
- Single cell sequencing analysis
- Medical imaging and genomics

Keywords

- Biometric Systems and Bioinformatics
- Machine Learning
- Expert and Knowledge-based Systems

SUBMISSION

Papers must be submitted electronically for peer review through PaperCept by **March 31, 2019**: <http://controls.papercept.net/conferences/scripts/start.pl>. In PaperCept, click on the **SMC 2019 link** **“Submit a Contribution to SMC'19” and follow the steps.**

All papers must be written in English and should describe original work. For guidelines, please follow the the SMC website link http://smc2019.org/information_for_authors.html

DEADLINES

March 31, 2019: deadline for paper submission

June 7, 2019: notification of paper acceptance/rejection

July 7, 2019: deadline for final camera-ready papers.