Precision Medicine with Big Data

Precision medicine approaches have received significant research attentions to advance personalized health management, diagnosis and treatment, according to each individual’s differences in pre-existing disease conditions, environmental exposures, varieties of lab test results, and genetic backgrounds. With wide adoptions of electronic patient health records and advancements of high-throughput omics profiling techniques, many big datasets have been collected and generated to address research and clinical needs of precision medicine, to make novel discoveries and improve efficiency of treating diseases. However, complex and big biomedical data generated by different measurement modalities pose significant challenges for efficient data management, scalable data mining methodology, integration of multiple data types, and interpretations of translational relevance. By intelligently investigating large amounts of medical data (big data), novel data-driven discoveries can be made to facilitate prevention, diagnosis and decision making of precision medicine. Hence, we call for novel big data methodologies and systems in areas of precision medicine research and applications. The objective of this Topical Collection is Precision Medicine with Big Data.

Topics to be covered include, but are not limited to:

- The application of omics technologies in precision medicine
- Medical data grids and medical research support services
- Cloud and semantic medical data services
- Medical data collection, pre-processing, management, and analysis methodologies
- Development of data-driven discoveries of diseases biomarkers
- Medical data memory, disk and cloud-based storage and analytics security, trust and risk in medical big data
- The development of bioinformatics algorithms to facilitate data integration using next-generation sequencing, microarray, or other technologies
- Multi-aspect analysis in fMRI/DTI/EEG/ECG/TCD/ERP/MRI/PET/Eye-tracking data
- Medical imaging for precision disease prognosis, diagnosis and treatment
- Multimedia medical data mining and reasoning
- Statistical analysis and pattern recognition in medical image, audio and video
- Knowledge representation and discovery in medical image, audio and video
- Medical image, audio and video processing techniques, compression and coding
- Statistical/mathematical models using combined data sets for predicting disease outcomes
- Data modeling and formal conceptual models of medical data
- Machine learning algorithms for medical signal processing and data analyzing
- Medical disease diagnosis, analysis, classification, such as cancer diagnosis, analysis, classification
- The application of artificial intelligence in medical disease, medical instruments, remote diagnosis
Important dates:

Submission deadline: 1 June 2019
First notification of Acceptance/Rejection: 1 July 2019
Revised manuscripts Submission Deadline: 1 September 2019
Final notification of Acceptance: 1 October 2019
Final Paper Due: 31 October 2019

Submission Guidelines:

Submitted papers should present original, unpublished work, relevant to one of the topics of the Topical Collection. All submitted papers will be evaluated on the basis of relevance, significance of contribution, technical quality and quality of presentation, by at least three independent reviewers. It is the policy of the journal that no submission, or substantially overlapping submission, be published or be under review at another journal or conference at any time during the review process. Manuscripts should be submitted online at https://www.editorialmanager.com/joms/default.aspx choosing “SI:(Precision Medicine with Big Data)” as article type. When uploading your paper, please ensure that your manuscript is marked as being for this Topical Collection. All the papers will be peer-reviewed following the JOMS reviewing procedures. Authors should prepare their manuscripts according to the online submission page of Journal of Medical Systems at http://www.springer.com/public+health/journal/10916

Guest Editors:

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Dr. Zhou is a senior scientist, was working in University of Wisconsin-Madison, and Genome Surveillance, Madison. He is proficiency in genetics, genomics, molecular biology, microbiology and cancer biology. He has been granted 4 patents and has authored or coauthored 45 peer-reviewed publications, including Natural, Science, and Cell System.

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Dr. Zhang is currently an Professor of College of Information and Computer, Taiyuan University of Technology, PhD supervisor , an advanced member of Chinese Institute of Electronics, a member of
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