

**Proposed Special Session on**  
**Intelligent Bioinformatics in the Era of Big Data**  
**at**  
**17th International Conference on Intelligent Systems Design and Applications**  
**South Asian University, Delhi, India,**  
**December 14-16, 2017**

***Introduction***

The volume of biomedical data (both structured and unstructured) has risen exponentially in the last decade. Despite the rapid increase in the collection and analysis of big data, the biomedical and healthcare research communities are only beginning to capitalize on the transformative opportunities that these data provide. As large and complex data sets are becoming increasingly available to the research community, more advanced, sophisticated, and automated analytical techniques are required to investigate and manage these gigantic data.

Application of intelligent analytical techniques to big data has great potential for biomedical research, allowing identification and extraction of relevant information and facilitating more rapid discovery of meaningful patterns and opening new avenues of knowledge. However, there is an enormous need to design the cutting-edge methods for storing, processing, and interpreting these data, to yield novel insights. Modern machine learning and intelligent data mining methods can be used to extract significant knowledge from a variety of large and heterogeneous textual and tabulated data sources, enhancing the biomedical research and improving the healthcare delivery.

To accelerate the intelligent use of big data in medicine and biology, this special session/track is aimed to bring together the researcher from emerging multidisciplinary areas of bioinformatics, computational biology, health informatics, and clinical and translational data science. This session is particularly interested in research work that involves application of computational intelligence in investigating biological data, clinical data, electronic health records, biomedical literature or ontologies. Novel methods for medical data acquisition, structuring, analyses, and knowledge extraction will also be considered in this session.

***Topics of Interest***

Researchers are invited to submit unpublished original work describing the recent advances on all aspects of Intelligent Computing in the context of Biomedical and Health Informatics, Systems Biology, and including but not limited to the following topics:

- Intelligent solutions for bioinformatics and biomedicine
- Computational models for the analysis of ‘omics’ data including genomic, transcriptomics, proteomic, and metabolomics
- Next generation sequencing data analysis, applications, software, and tools
- Clinical and translational bioinformatics
- Computational biomarker and drug discovery
- Intelligent ways of gene set enrichment analysis

- Analysis and visualization of complex biological and clinical big data
- Application of artificial intelligence in the context of medicine
- Predictive models for health related big data
- Hybrid algorithms for health informatics
- Prediction and inference models for better healthcare delivery
- Intelligent diagnostic and decision support system
- High-throughput data integration techniques
- Electronics health record (EHR) based predictive models
- Intelligent survival analysis
- Mining of large scale longitudinal bio-data
- Medical text mining and natural language processing
- Data-mining and knowledge discovery for better healthcare
- Biological network analysis and systems biology
- Gene-disease relationship mining
- Intelligent meta-data analysis

### *Special Session Chairs*

Chair: Dr. Atif Khan, Knapp Center for Biomedical Discovery, University of Chicago, USA

Co-Chairs: Dr. Atul Kumar, Knapp Center for Biomedical Discovery, University of Chicago, USA

Co-Chairs: Dr. Laxmi Narayan Misra, University of Rochester Medical Center, NY USA

For further information and query, contact: Atif Khan at [atifkhan@uchicago.edu](mailto:atifkhan@uchicago.edu)