

SPECIAL SESSION (SS05) Computational Biology and Bioinformatics

Organizers:

Dr. Sunilkumar S Manvi,
*Professor, School of Computing and Information Technology,
REVA University, Bangalore*

Prof. Nimrita Koul
Assistant Professor, School of Computing and Information Technology, REVA University, Bangalore

Objective of the Special Session:

Advancement in technologies like next generation sequencing, medical imaging and molecular medicine has given rise to an enormous volume of biological data like gene transcripts, nucleotide and protein sequences, next generation sequencing data and other high-throughput omics data. This demands use of intelligent, distributed and parallel computing systems to analyze such data and gain useful insights from it. This data being inherently non-metric, needs that the ad-hoc measures of similarity and dissimilarity be defined to make sense of it. This cannot be done without the domain knowledge. Therefore, an interdisciplinary field of Systems biology has emerged, involving coordinated efforts of biologists, medical practitioners, computer scientists mathematicians and programmers for analysis, simulation, optimization and modelling of this data. Computational tools can analyze this data and help with development of better medicines, treatment approaches and healthcare systems for the benefit of the society. Artificial intelligence and machine learning techniques have been vastly successful in tasks like classification of diseases from gene expression data, knowledge discovery, modelling and optimization, prediction of response of complex biological systems to any medicines and treatment approaches.

We invite researchers, scholars, scientists to contribute papers and meet at this special session for exchange of ideas and development of research collaborations.

Topics of interest include (but are not limited to):

1. Gene expression analysis and regulatory networks
2. Biological network reconstruction and analysis
3. Biomarker discovery
4. Disease classification
5. DNA, RNA and protein sequence analysis
6. Drug discovery and validation
7. Next-generation sequencing



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8. Network Medicine and Systems Biology
9. Sequence analysis, alignment and comparison
10. Modelling of Complex Biological Systems
11. Predictive medicine and medical image analysis
12. Distributed and parallel computing systems for biological data
13. Graph kernels and string kernels in biology
14. Protein folding/function prediction and Proteomics
15. Analysis of metabolic pathways
16. Protein structure prediction
17. Biological data visualization
18. Bio-inspired computing