

Pattern Recognition, Data Mining, and Image Processing for Bioinformatics, Computational Biology, and Medicine

By the advent of pattern recognition techniques, data processing and making intelligent decisions on different area of biology and medicine has been facilitated. This is because of their capability of discovering regularities in data using mathematical techniques. Pattern recognition and data mining try to classify observations such as medical objects, symptoms of patients, speech, or MR images. Classification, data clustering, regression, sequence labeling, and parsing, which assigns a parse tree to an input sentence, are some pattern recognition methods. Hence, because of its capability of discovering patterns from data, there is an increasing need to do more research in the area of pattern recognition and data mining to handle complex problems of Bioinformatics, Computational Biology, and Medicine.

Regarding to the increasing need for developing pattern recognition techniques to manage these complex systems, this session welcomes the researchers and papers in the area of theory and applications of pattern recognition, data mining, and image processing with more emphasis different fields of bioinformatics and computational biology, and medicine such as Gene Expression Data, Epigenetics, Optimization of Biological Systems, Synthetic Biology, Biological Networks, Medical Social Networks, Medical Diagnosis, Medical Prescriptions, Medical Systems Development, Speech Recognition, Virtual Medical Systems, etc. The topics of this session include but are not limited to the following areas:

1. Clustering Techniques (crisp, type-1 fuzzy, and type-2 fuzzy)
2. Classification Methods (crisp, type-1 fuzzy, and type-2 fuzzy)
3. Support Vector Machines (SVM)
4. Relevance Vector Machines (RVM)
5. Kernel Methods
6. Neural Networks (NN)
7. Crisp, Type1, and Type2 Fuzzy Evolutionary Methods
8. Crisp, Type1, and Type2 Fuzzy Regression Analysis
9. Crisp and fuzzy Time Series
10. Sequential Data Analysis
11. Machine Learning
12. Real-World applications of pattern recognition and data mining in medicine, image processing, bioinformatics, computational biology, medicine, voice recognition, and computer vision, etc.



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