

# EVOLUTIONARY COMPUTATION IN BIOINFORMATICS

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Bioinformatics, computational biology, and bioengineering present a number of complex problems with large search spaces. Recent Evolutionary Computation applications suggest that they are well-suited to this area of research. This special session will highlight novel applications of Evolutionary Computation approaches to problems in these areas. The scope of this special session also includes artificial immune systems, swarm intelligence, ant-colony optimization, simulated annealing, and other Computational Intelligence methods or hybridizations. Applications of these methods to bioinformatics, computational biology, and bioengineering problems are the main focus of this special session. There is a clear interest of both the Evolutionary Computation community and the Biology community for this special session.

This special session is sponsored by the IEEE CIS BBTC (Computational Intelligence Society - Bioinformatics and Bioengineering Technical Committee).

## Topics

- Analysis and visualization of large biological data sets
- Biological and medical ontologies
- Biomedical data modelling and mining
- Biomedical model parameterization
- Brain computer interface
- Computational proteomics
- Systems Biology
- Ecoinformatics and applications to ecological data analysis
- Emergent properties in complex biological systems
- Gene expression array analysis



- Gene finding
- Genetic networks
- High-throughput data analysis
- Immuno- and chemo-informatics
- In-silico optimization of biological systems
- Medical image analysis
- Medical imaging and pattern recognition
- Medicine and health informatics
- Metabolic pathway analysis
- Microarray design or oligonucleotide selection
- Modelling, simulation and optimization of biological systems
- Molecular docking and drug design
- Molecular evolution and phylogenetics
- Molecular sequence alignment and analysis
- Motif and signal detection
- Robustness and evolvability of biological networks
- Single nucleotide polymorphism (SNP) analysis
- Structure prediction and folding
- Systems and synthetic biology and
- Treatment optimization.