



Information Physics

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Research Fields

Soft computing, Data mining, Data analysis, Optimization algorithm

Keywords

entropy maximization, fuzzy theory, fuzzy clustering, fuzzy modeling, simulated annealing, deterministic annealing, quantum annealing, particle swarm optimization, genetic algorithm, genetic programming, tabu search, reinforcement learning

● Research Outline

Data analysis

Statistical mechanics investigates the macroscopic properties of a physical system consisting of several elements. Recently, there has been great research interest in applying statistical mechanical models or tools to information science, especially data analysis.

Accordingly, by applying entropy maximization, the concept of temperature is introduced in computer algorithms, and are statistically mechanically investigated.

Optimization algorithm

Many engineering problems can be formulated as optimization problems.

Accordingly, modifications and combinations of meta-heuristic approaches, such as annealing methods, particle methods, and evolution methods have been studied to solve those problems.

Brief Biographical History:

2000-Joined National Institute of Technology, Gifu College

Main Works:

“Multi-q extension of Tsallis entropy based fuzzy c-means clustering,” *Journal of Advanced Computational Intelligence and Intelligent Informatics*, Vol.18, No.3, pp.289-296 (2014)

“Quantitative analyses and development of q-incrementation algorithm for FCM with Tsallis entropy maximization,” *Advances in Fuzzy Systems*, Vol.201□, 404510 (2015)

Membership in Learned Societies:

The Information Processing Society of Japan,

The Japanese Society for Artificial Intelligence,

The Physical Society of Japan