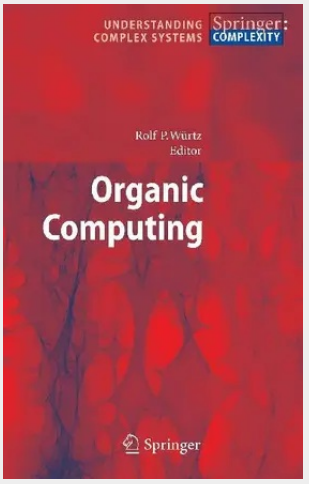
Würtz

Organic Computing

Organic Computing is a research field emerging around the conviction that problems of organization in complex systems in computer science, telecommunications, neurobiology, molecular biology, ethology, and possibly even sociology can be tackled scientifically in a unified way. From the computer science point of view, the apparent ease in which living systems solve computationally difficult problems makes it inevitable to adopt strategies observed in nature for creating information processing machinery. In this book, the major ideas behind Organic Computing are delineated, together with a sparse sample of computational projects undertaken in this new field. Biological metaphors include evolution, neural networks, gene-regulatory networks, networks of brain modules, hormone system, insect swarms, and ant colonies. Applications are as diverse as system design, optimization, artificial growth, task allocation, clustering, routing, face recognition, and sign language understanding.

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