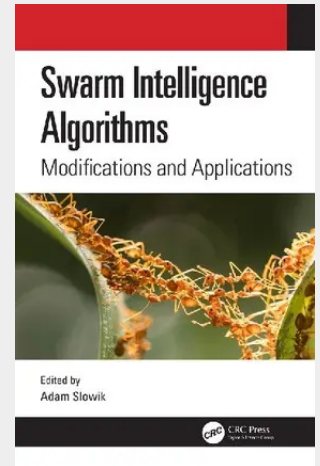


Swarm Intelligence Algorithms

Modifications and Applications

Nature-based algorithms play an important role among artificial intelligence algorithms. Among them are global optimization algorithms called swarm intelligence algorithms. These algorithms that use the behavior of simple agents and various ways of cooperation between them, are used to solve specific problems that are defined by the so-called objective function. Swarm intelligence algorithms are inspired by the social behavior of various animal species, e.g. ant colonies, bird flocks, bee swarms, schools of fish, etc. The family of these algorithms is very large and additionally includes various types of modifications to enable swarm intelligence algorithms to solve problems dealing with areas other than those for which they were originally developed. This book presents 24 swarm algorithms together with their modifications and practical applications. Each chapter is devoted to one algorithm. It contains a short description along with a pseudo-code showing the various stages of its operation. In addition, each chapter contains a description of selected modifications of the algorithm and shows how it can be used to solve a selected practical problem. This book should also be useful for undergraduate and postgraduate students studying nature-based optimization algorithms, and can be a helpful tool for learning these algorithms, along with their modifications and practical applications. In addition, it can be a useful source of knowledge for scientists working in the field of artificial intelligence, as well as for engineers interested in using this type of algorithms in their work. If the reader wishes to expand his knowledge beyond the basics of swarm intelligence algorithms presented in this book and is interested in more detailed information, we recommend the book "Swarm Intelligence Algorithms: A Tutorial" (Edited by A. Slowik, CRC Press, 2020). It contains a detailed explanation of how each algorithm works, along with relevant program codes in Matlab and the C++ programming language, as well as numerical examples illustrating step-by-step how individual algorithms work.

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