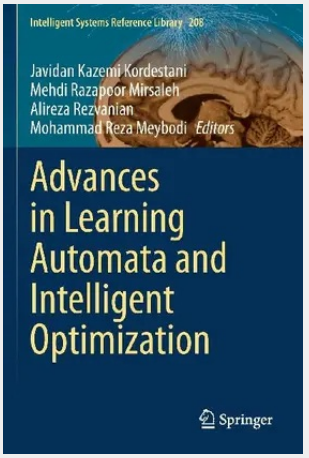
Kazemi Kordestani / Mirsaleh / Rezvanian

Advances in Learning Automata and Intelligent Optimization



This book is devoted to the leading research in applying learning automaton (LA) and heuristics for solving benchmark and real-world optimization problems. The ever-increasing application of the LA as a promising reinforcement learning technique in artificial intelligence makes it necessary to provide scholars, scientists, and engineers with a practical discussion on LA solutions for optimization. The book starts with a brief introduction to LA models for optimization. Afterward, the research areas related to LA and optimization are addressed as bibliometric network analysis. Then, LA's application in behavior control in evolutionary computation, and memetic models of object migration automata and cellular learning automata for solving NP hard problems are considered. Next, an overview of multi-population methods for DOPs, LA's application in dynamic optimization problems (DOPs), and the function evaluation management in evolutionary multi-population for DOPs are discussed.

Highlighted benefits

• Presents the latest advances in learning automata-based optimization approaches.
• Addresses the memetic models of learning automata for solving NP-hard problems.
• Discusses the application of learning automata for behavior control in evolutionary computation in detail.
• Gives the fundamental principles and analyses of the different concepts associated with multi-population methods for dynamic optimization problems.

An Introduction to learning automata and optimization.- Learning automaton and its variants for optimization: a bibliometric analysis.- Cellular automata, learning automata, and cellular learning automata for optimization.- Learning automata for behavior control in evolutionary computation.- A memetic model based on fixed structure learning automata for solving NP-Hard problems.

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