

NATURAL COMPUTING SERIES

Alex A. Freitas

Data Mining and Knowledge Discovery with Evolutionary Algorithms

This book integrates two areas of computer science, namely data mining and evolutionary algorithms. Both these areas have become increasingly popular in the last few years, and their integration is currently an area of active research. In general, data mining consists of extracting knowledge from data. In this book we particularly emphasize the importance of discovering comprehensible and interesting knowledge, which is potentially useful to the user for intelligent decision making. In a nutshell, the motivation for applying evolutionary algorithms to data mining is that evolutionary algorithms are robust search methods which perform a global search in the space of candidate solutions (rules or another form of knowledge representation). In contrast, most rule induction methods perform a local, greedy search in the space of candidate rules. Intuitively, the global search of evolutionary algorithms can discover interesting rules and patterns that would be missed by the greedy search.

This book presents a comprehensive review of basic concepts on both data mining and evolutionary algorithms and discusses significant advances in the integration of these two areas. It is self-contained, explaining both basic concepts and advanced topics.

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