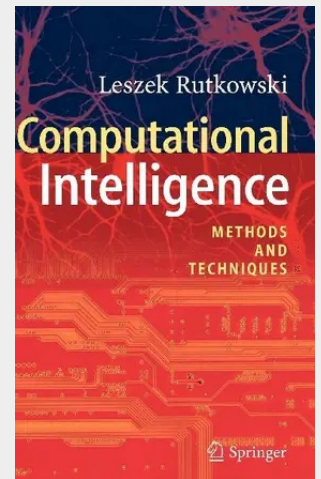


Computational Intelligence

This quite simply superb book focuses on various techniques of computational intelligence, both single ones and those which form hybrid methods. These techniques are today commonly applied to issues of artificial intelligence, for example in the processing of speech and natural language, and in building expert systems and robots. The first part of the book presents methods of knowledge representation using different techniques, namely the rough sets, type-1 fuzzy sets and type-2 fuzzy sets. Next up, various neural network architectures are presented and their learning algorithms are derived. Then, the family of evolutionary algorithms is discussed, in particular the classical genetic algorithm, evolutionary strategies and genetic programming, including connections between these techniques and neural networks and fuzzy systems. In the last part of the book, various methods of data partitioning and algorithms of automatic data clustering are given and new neuro-fuzzy architectures are studied and compared.

Publication of this book is a special event. This valuable title fills a serious gap in domestic science and technical literature. At the same time it introduces a reader to the most recent achievements in the quickly developing branch of knowledge which the computational intelligence has been for several years. The field, which is a subject of this book, is one of those important fields of science which enable to process information included in data and give their reasonable interpretation programmed by a user. Recent decades have brought a stormy development of computer techniques and related computational methods. Together with their appearance and quick progress, theoretical and applied sciences developed as well, enabling the user to fully utilize newly created computational potential and to get knowledge out of increasing wealth of data. The development of computational intelligence is then strictly connected with the increase of available data as well as capabilities of their processing, mutually supportive factors. Without them the development of this field would be almost impossible, and its application practically marginal. That is why these techniques have especially developed in recent years. The development of computational intelligence systems was inspired by observable and imitable aspects of intelligent activity of human being and nature. Nature when undertakes intelligent actions processes data in parallel regulating and adjusting these actions through feedback mechanisms.



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