

<<计算智能>>

图书基本信息

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## 前言

Several computational analytic tools have matured in the last 10 to 15 years that facilitate solving problems that were previously difficult or impossible to solve. These new analytical tools, known collectively as computational intelligence tools, include artificial neural networks, fuzzy systems, and evolutionary computation. They have recently been combined among themselves as well as with more traditional approaches, such as statistical analysis, to solve extremely challenging problems. Diagnostic systems, for example, are being developed that include Bayesian, neural network, and rule-based diagnostic modules, evolutionary algorithm-based explanation facilities, and expert system shells. All of these components work together in a "seamless" way that is transparent to the user, and they deliver results that significantly exceed what is available with any single approach. At a system prototype level, computational intelligence (CI) tools are capable of yielding results in a relatively short time. For instance, the implementation of a conventional expert system often takes one to three years and requires the active participation of a "knowledge engineer" to build the knowledge and rule bases. In contrast, computational intelligence system solutions can often be prototyped in a few weeks to a few months and are implemented using available engineering and computational resources. Indeed, computational intelligence tools are capable of being applied in many instances by "domain experts" rather than solely by "computer gurus." This means that biomedical engineers, for example, can solve problems in biomedical engineering without relying on outside computer science expertise such as that required to build knowledge bases for classical expert systems. Furthermore, innovative ways to combine CI tools are cropping up every day. For example, tools have been developed that incorporate knowledge elements with neural networks, fuzzy logic, and evolutionary computing theory. Such tools are able to solve quickly classification and clustering problems that would be extremely time consuming using other techniques.

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### 内容概要

本书面向智能系统学科的前沿领域，系统地讨论了计算智能的理论、技术及其应用，比较全面地反映了计算智能研究和应用的最新进展。

书中涵盖了模糊控制、神经网络控制、进化计算以及其他一些技术及应用的内容。

本书提供了大量的实用案例，重点强调实际的应用和计算工具，这些对于计算智能领域的进一步发展是非常有意义的。

本书取材新颖，内容深入浅出，材料丰富，理论密切结合实际，具有较高的学术水平和参考价值。

本书可作为高等院校相关专业高年级本科生或研究生的教材及参考用书，也可供从事智能科学、自动控制、系统科学、计算机科学、应用数学等领域研究的教师和科研人员参考。

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### 作者简介

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与James Kennedy共同提出了粒子群优化算法。

曾任IEEE神经网络委员会的主席。

除了本书之外。

他还著有《群体智能》（影印版由人民邮电出版社出版）等。

Yuhui Shi（史玉回），国际计算智能领域专家，现任Journal of Swarm Intelligence编委，IEEE CIS群体智能任务组主席，西交利物浦大学电子与电气工程系教授。

1992年获东南大学博士学位，先后在美国、韩国、澳大利亚等地从事研究工作，曾任美国电子资讯系统公司专家长达9年。

他还是《群体智能》一书的作者之一。

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### 媒体关注与评论

“这是第一部如此全面的计算智能教科书，包括了大量的实践示例。

”——Shun-ichi Amari，日本理化研究所脑科学研究机构“本书强调计算智能的基础是演化计算，这种全新的视角使其独树一帜。

本书有非常丰富的实际应用和计算工具，对于计算智能领域的发展意义重大。

”——Xin Yao，伯明翰计算智能与应用研究中心

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### 编辑推荐

《计算智能:从概念到实现(英文版)》是计算智能领域的经典著作,第一作者是著名的群体智能算法——粒子群优化算法的提出者。

书中系统地讨论了计算智能的理论、技术及其应用,包括神经网络、模糊系统和演化计算等内容,比较全面地反映了计算智能研究和应用的最新进展,并提出了一种行之有效的思考和使用计算智能的方法。

《计算智能:从概念到实现(英文版)》不仅学术水平较高,而且理论结合实际,很具实用价值。不但有丰富的案例研究和习题,而且提供了教辅和C/C++代码(源代码可以在图灵网站《计算智能:从概念到实现(英文版)》网页免费注册下载),非常适合作为高校教材使用。



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