

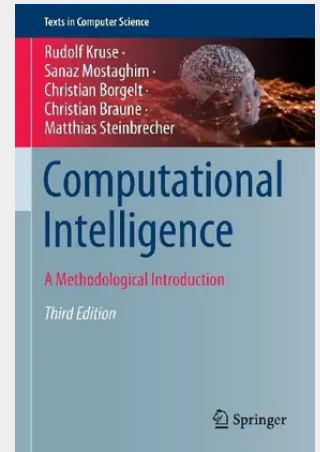
Computational Intelligence

A Methodological Introduction

This textbook provides a clear and logical introduction to the field, covering the fundamental concepts, algorithms and practical implementations behind efforts to develop systems that exhibit intelligent behavior in complex environments. This enhanced third edition has been fully revised and expanded with new content on deep learning, scalarization methods, large-scale optimization algorithms, and collective decision-making algorithms.

Features: provides supplementary material at an associated website; contains numerous classroom-tested examples and definitions throughout the text; presents useful insights into all that is necessary for the successful application of computational intelligence methods; explains the theoretical background underpinning proposed solutions to common problems; discusses in great detail the classical areas of artificial neural networks, fuzzy systems and evolutionary algorithms; reviews the latest developments in the field, covering such topics as ant colony optimization and probabilistic graphical models.

Introduction.- Part I: Neural Networks.- Introduction.- Threshold Logic Units.- General Neural Networks.- Multi-Layer Perceptrons.- Radial Basis Function Networks.- Self-Organizing Maps.- Hopfield Networks.- Recurrent Networks.- Mathematical Remarks for Neural Networks.- Part II: Evolutionary Algorithms.- Introduction to Evolutionary Algorithms.- Elements of Evolutionary Algorithms.- Fundamental Evolutionary Algorithms.- Computational Swarm Intelligence.- Part III: Fuzzy Systems.- Fuzzy Sets and Fuzzy Logic.- The Extension Principle.- Fuzzy Relations.- Similarity Relations.- Fuzzy Control.- Fuzzy Data Analysis.- Part IV: Bayes and Markov Networks.- Introduction to Bayes Networks.- Elements of Probability and Graph Theory.- Decompositions.- Evidence Propagation.- Learning Graphical Models.- Belief Revision.- Decision Graphs.



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