



METADATA

Title: Fundamentals of Computational Intelligence

Other Titles: Fuzzy, Neural and Evolutionary Computing: An Approach to Machine Intelligence

Language: Greek

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ISBN: 978-618-228-245-8

Subject: HUMANITIES AND ARTS, MATHEMATICS AND COMPUTER SCIENCE, NATURAL SCIENCES AND AGRICULTURAL SCIENCES, MEDICINE AND HEALTH SCIENCES, LIFE SCIENCES, BIOLOGICAL SCIENCES, ENGINEERING AND TECHNOLOGY, LAW AND SOCIAL SCIENCES

Keywords: Fuzzy Computing / Uncertainty / Fuzzy Logic Systems / Extensions of Fuzzy Set / Neural Computing



Bibliographic Reference: Dounis, A. (2024). Fundamentals of Computational Intelligence [Undergraduate textbook]. Kallipos, Open Academic Editions. <http://dx.doi.org/10.57713/kallipos-988>

Abstract

The book "Fundamentals of Computational Intelligence: Fuzzy, Neural and Evolutionary Computation - An Approach to Machine Learning" is designed as an introductory textbook in Computational Intelligence and is addressed to students of higher education institutions, but also to those who are involved in related topics on a research or professional level. Artificial Intelligence (AI), which is a key branch of Computer Science, is evolving as a dominant technology of the future. The topics covered in the text comprehensively and extensively cover the scientific field of Computational Intelligence (CI). AI comprises three main branches of research and application: 1) Fuzzy Computation, which formulates models that approximate how people think and how people describe the world around them; 2) Neural Computation, which offers powerful models to approximate how the brain works and learns; and 3) Evolutionary

Computation, which exploits biological and evolutionary models to search for optimal solutions to complex problems of excellence. The synergy of the above three disciplines has led to hybrid systems that collaborate, complement each other and provide optimal solutions to complex problems in Engineering and Science. The structure of the book is designed in a way that encourages self-learning. The textbook can be an introductory course, with a focus on intelligence technologies, for undergraduate and graduate students. The book is organized in five chapters, accompanied by an Appendix. The first three chapters are self-contained, learning entities, while the next two assume the basic knowledge of the previous three chapters. The fifth chapter complements the material of the first four chapters, where examples and applications of computational intelligence technologies are developed.

