

Book Review

Computational Ecology: Artificial Neural Networks and Their Applications

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Abstract

A book, *Computational Ecology: Artificial Neural Networks and Their Applications*, published in 2010, was introduced and reviewed. This book provides readers with deep insights on algorithms, codes, and applications of artificial neural networks in ecology. A science discipline, computational ecology, is clearly defined and outlined in the book.

Keywords review; book; computational ecology; artificial neural networks.

Computational Ecology: Artificial Neural Networks and Their Applications (Zhang, 2010) provides readers with deep insights on algorithms, codes, and applications of artificial neural networks in ecology. It is a comprehensive and self-contained monograph. The book features mathematical representation and numerical computation of artificial neural networks. Artificial neural networks in the book are mostly treated in mathematical way. Mathematical principles and foundations of artificial neural networks are discussed in the book, which will be heuristic to understand the similarities and differences between neural network models and conventional models. Conventional models are compared to artificial neural networks in the book.

The book is made of three parts. In the first part, a science discipline, computational ecology, is clearly defined and outlined. As an area of computational ecology, artificial neural networks and their ecological applications are briefly described. The second part elaborates various algorithms and methods, design and customization, learning theory, architecture choice, interpretability, mathematical fundamental, and Matlab neural network toolkit, etc. The third part describes case studies of ecological applications of artificial neural networks, Matlab codes, and comparisons of artificial neural networks with conventional methods, etc.

The book is valuable to research scientists, university teachers, graduate students and high-level undergraduates in the areas of ecology, environmental science, and computational science.

Reference

Zhang WJ. 2010. *Computational Ecology: Artificial Neural Networks and Their Applications*. World Scientific, Singapore