

Preface

Advances in Neural Networks: Computational and Theoretical Issues is a book series dedicated to recent advances in computational and theoretical issues of artificial intelligence methods. Special attention is reserved to information communication technologies (ICT) applications that are of public utility and profitable for a living science that simplify user access to future, remote and nearby social services. In particular, avatars replacing human in high-responsibility tasks, companion agents for elderly and impaired people, robots interacting with humans in extreme, stressful time-critical conditions, wearable sensors and apps for clinical applications. In addition, new mathematical models for representing data, reasoning, learning and interacting are considered as well as new psychological and computational approaches from existing cognitive frameworks and algorithmic solutions. Any book edition will select new topics that report progresses towards the implementation of automaton human levels of intelligence, crucial for developing believable and trustable HCI systems that enhance the end user's quality of life. The content of the book is organized in sections and in each edition new topics are afforded and discussed on the basis of their contribution in the conception of new ICT functionalities and evaluation methods for modelling the concepts of learning, reasoning, interaction and data interpretation. Each edition of the book is related to a long running international conference, International Workshop on Neural Networks (WIRN, currently at the 25th edition), where researchers contributing to the book meet each year to propose new topics, advances and applications in the field of neural networks, machine learning and artificial intelligence.

After the conference, the topics of major interest are selected and researchers proposing these topics are invited to contribute to the book.

This second edition, different from the previous ones, is dedicated to computational intelligence for ICT (the subtitle of the current book), and emphasizes robotic applications, embedded systems, and ICT computational and theoretical methods for psychological and neurological diseases. The last theme is inspired by the European Call for Collaboration "Connect2Sea, Supporting European Union and Southeast Asia ICT strategic partnership and policy dialogue: Connecting ICT

EU-SEA Research, Development and Innovation Knowledge Network” which supported a special session of WIRN organized by the EU Partners and the SEA Partners.

The content of book is organized in sections. Each section is dedicated to a specific topic. The topics accounted for this edition are the following:

1. Introduction
2. Machine learning
3. Artificial neural networks: algorithms and models
4. Intelligent cyberphysical and embedded system
5. Computational intelligence methods for biomedical ICT in neurological diseases
6. Neural networks-based approaches to industrial processes
7. Reconfigurable, modular, adaptive, smart robotic systems for optoelectronics industry: the White’R instantiation

Given the themes afforded, we believe that this book is unique in proposing a holistic and multidisciplinary approach to implement autonomous and complex human–computer interfaces. We would like to thank the contributors and the reviewers.

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