

Horia-Nicolai Teodorescu  
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Lakhmi C. Jain (Eds.)

# Intelligent Systems and Technologies

Methods and Applications



Springer

Horia-Nicolai Teodorescu, Junzo Watada, and Lakhmi C. Jain (Eds.)

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Intelligent Systems and Technologies

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# Intelligent Systems and Technologies

Methods and Applications

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## Preface

The extent of the use of Artificial Intelligence (AI) into real-life systems, tools, equipments, and appliances in recent years is astonishing. AI is no more a curious term and a toy for the benefit of mathematicians and their closed collaborators, but a necessary addition to products to keep them competitive and responding to the expectations of the experts and of the general public users. The developments in the field are so fast that the definitions proposed for AI are almost too limited and outdated. All fields, from avionics to medicine and from pharmaceuticals and food industry to car manufacturing require intelligent systems.

This book is primarily based on contributions to the Fifth European Conference on Intelligent Systems and Technologies, but all contributions have been significantly expanded and modified to compose self-consistent chapters. All contributions derived from the conference papers have been extended by the authors and more chapters have been added, specifically submitted for this book.

The book includes chapters on some of the recent developments in theoretical, methodological, and applicative sides of intelligent systems. The blend of fundamental theory, methods, and practical results would not satisfy every reader, but offers a consistent overview of the field for most readers.

In a field striving with new concepts, methods and tools domain like of intelligent systems, a new book is almost always useful to show new developments and applications, or to summarize and clarify recent developments. Unlike a journal, where new developments are emphasized, a volume is expected to bring more mature, better systematized, better interconnected treatment of the topics.

While mainly rooted in a conference, this volume is conceived independently. Out of about 100 papers proposed in the conference, only about 13% have been selected as suitable for further development as chapters in this volume. The criteria used in selecting the contributions for this volume have been the importance of the topic in the current stage of intelligent systems development, the scientific and applicative merit of the original form of the proposed manuscript, and the quality, clarity and systematic treatment of the presentation. Some manuscripts with excellent scientific quality but not fitting the purpose of this volume have been proposed for journal publication. The conference has its own volume of proceedings which does not overlap with the present book.

The volume is organized in three parts. The first one is an introduction to the intelligent systems. The second part is devoted to Methods and Tools used in designing intelligent systems. The third part includes the applications of intelligent systems.

While in some of our previous volumes we emphasized on specific tools and fields of applications, like neuro-fuzzy systems in medicine [1], soft computing in

human related sciences [2], intelligent systems and technologies in rehabilitation engineering [3] and in one volume on the hardware for intelligent systems [4]. In this volume, Web architectures and Web applications, and new directions like DNA computing and bioinformatics are somewhat favored.

We acknowledge with thanks all authors and reviewers for their contributions. Thanks are due to the Springer-Verlag and team for their excellent work in the production of this volume.

Horia -Nicolai Teodorescu  
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Lakhmi C. Jain

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