Bio-Inspired Technologies for the Hardware of Adaptive Systems: Real-World Implementations and Applications (Studies in Computational Intelligence)

By Mircea Gh. Negoita, Sorin Hintea

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Evolvable Hardware (EHW) has emerged as a sub-domain of artificial evolution represented by a design methodology (consortium of methods) involving the application of Evolutionary Algorithms (EA) to the synthesis of digital and analogue electronic circuits and systems. Nevertheless, the most benefit for the society and indeed most revolutionizing application of EA is its hardware implementation leading to the EHW. These new EA based methodologies led to a new type of machines that is evolved to attain a desired behaviour, which means they have a behavioural computational intelligence. EHW is a special case of the adaptive hardware, namely being strongly related to the Adaptive Systems (AS) and the Adaptive Hardware (AH). The book presents a careful selection of the field that very well reflects the breadth of this high technology and its terminology and applications in context of the AS/AH. The harmonious symbiosis of the engineering approach and the accurate scientific methodology features the aspects of highly relevant and practical design principles governing the development of EHW and its connections with AS/AH. This book is both attractive and useful for everybody interested in the design and analysis of EHW in context of AS/AH and implementation of real time adaptive hardware hybrid intelligent systems.

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Editorial Review

From the Back Cover

Evolvable Hardware (EHW) has emerged as a novel and highly diversified bio- inspired technology and paradigm supporting the design, analysis and deployment of the high performance intelligent systems. EHW is a special case of the adaptive hardware, namely being strongly related to the Adaptive Systems (AS) and the Adaptive Hardware (AH). The discipline of EHW brings together hardware implementation of the main technologies of CI including fuzzy sets, neural networks, and evolutionary optimization. EHW systems also cover novel areas as Artificial Immune Systems and DNA computing. The strength of EHW hinges on the synergy between these technologies supported by the advanced analogue and digital programmable circuits. The advanced programmable circuits confer the suitable hardware environment for a CI implementation from day to day more close to the intelligence of a human being.

The authoritative coverage of the area is performed through a clear and well-organized way of presenting the fundamentals of key methods. The book presents in a thorough way almost an entire range of EHW/AH intelligent systems, and what is very important for practitioners, it also provides several real-life, working, implementations of EHW/AH systems. As a result the book can serve as a valuable introduction to EHW/AH intelligent systems, and as a guide of how to use them for solving real problems. As such it has a good chance of becoming one of the most cited references in the area.

Users Review

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Anderson Austin:

Playing with family inside a park, coming to see the coastal world or hanging out with close friends is thing that usually you have done when you have spare time, and then why you don't try point that really opposite from that. 1 activity that make you not feeling tired but still relaxing, trilling like on roller coaster you have been ride on and with addition associated with. Even you love Bio-Inspired Technologies for the Hardware of Adaptive Systems: Real-World Implementations and Applications (Studies in Computational Intelligence), you are able to enjoy both. It is excellent combination right, you still desire to miss it? What kind of hang type is it? Oh occur its mind hangout fellas. What? Still don't understand it, oh come on its identified as reading friends.

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