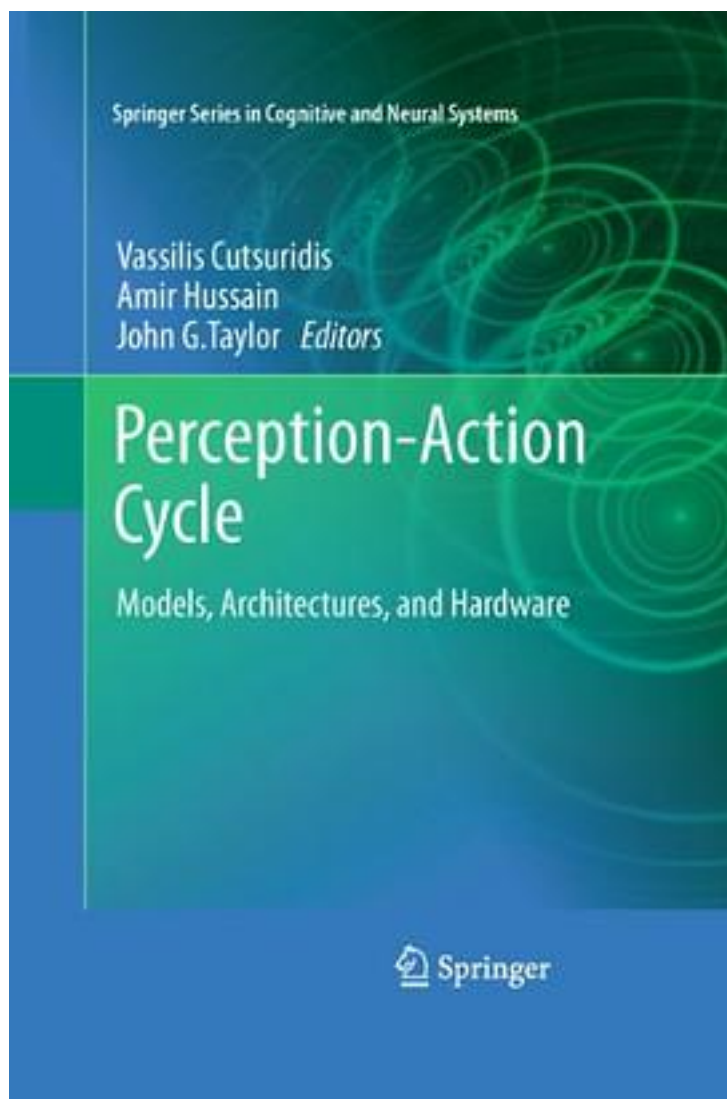


Perception-Action Cycle



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The perception-action cycle is the circular flow of information that takes place between the organism and its environment in the course of a sensory-guided sequence of behaviour towards a goal. Each action causes changes in the environment that are analyzed bottom-up through the perceptual hierarchy and lead to the processing of further action, top-down through the executive hierarchy, toward motor effectors. These actions cause new changes that are analyzed and lead to new action, and so the cycle continues. The Perception-action cycle: Models, architectures and hardware book provides focused and easily accessible reviews of various aspects of the perception-action cycle. It is an unparalleled resource of information that will be an invaluable companion to anyone in constructing and developing models, algorithms and hardware implementations of autonomous machines empowered with cognitive capabilities. The book is divided into three main parts. In the first part, leading computational neuroscientists present brain-inspired models of perception, attention, cognitive control, decision making, conflict resolution and monitoring, knowledge representation and reasoning, learning and memory, planning and action, and consciousness grounded on experimental data. In the second part, architectures, algorithms, and systems with cognitive capabilities and minimal guidance from the brain, are discussed. These architectures, algorithms, and systems are inspired from the areas of cognitive science, computer vision, robotics, information theory, machine learning, computer agents and artificial intelligence. In the third part, the analysis, design and implementation of hardware systems with robust cognitive abilities from the areas of mechatronics, sensing technology, sensor fusion, smart sensor networks, control rules, controllability, stability, model/knowledge representation, and reasoning are discussed.

作者介绍:

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