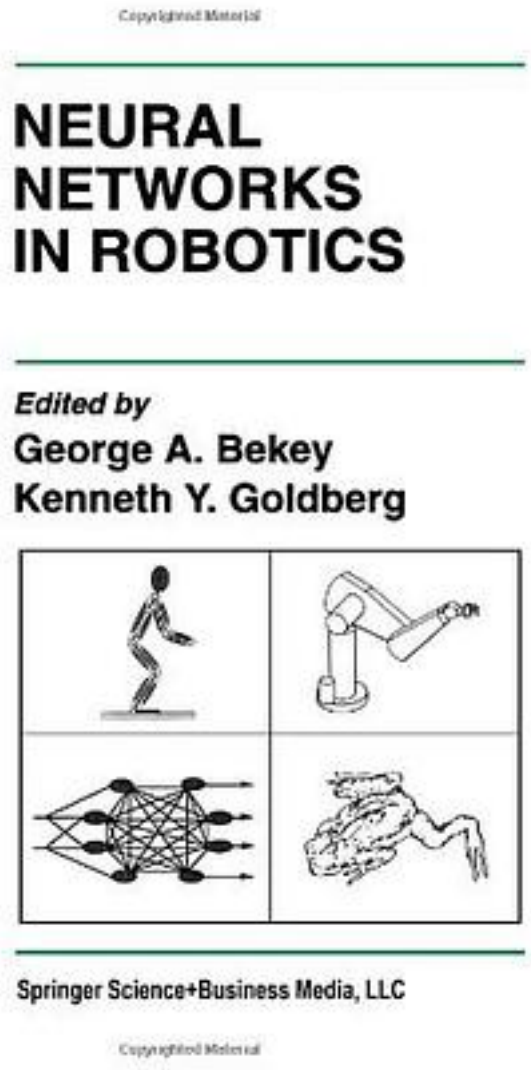
Neural Networks in Robotics



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出版者:Kluwer Academic Pub

出版时间:1992-11

装帧:HRD

isbn:9780792392682

Neural Networks in Robotics is the first book to present an integrated view of both the application of artificial neural networks to robot control and the neuromuscular models from which robots were created. The behavior of biological systems provides both the inspiration and the challenge for robotics. The goal is to build robots which can emulate the ability of living organisms to integrate perceptual inputs smoothly with motor responses, even in the presence of novel stimuli and changes in the environment. The ability of living systems to learn and to adapt provides the standard against which robotic systems are judged. In order to emulate these abilities, a number of investigators have attempted to create robot controllers which are modelled on known processes in the brain and musculo-skeletal system. Several of these models are described in this book. On the other hand, connectionist (artificial neural network) formulations are attractive for the computation of inverse kinematics and dynamics of robots, because they can be trained for this purpose without explicit programming. Some of the computational advantages and problems of this approach are also presented. For any serious student of robotics, Neural Networks in Robotics provides an indispensable reference to the work of major researchers in the field. Similarly, since robotics is an outstanding application area for artificial neural networks, Neural Networks in Robotics is equally important to workers in connectionism and to students for sensormonitor control in living systems.

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