



Robotics

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Special Issue Reprint

Applications of Neural Networks in Robot Control

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The Reprint Applications of Neural Networks in Robot Control presents recent advances in the integration of artificial neural networks within robotic systems, highlighting the growing role of learning-based approaches in perception, planning, control, and autonomous decision making. The collected contributions address a wide range of robotic applications, including legged locomotion, mobile robot navigation, robotic manipulation, aerial vehicles, firefighting robots, and magnetic actuation systems. The papers demonstrate how modern neural architectures are increasingly employed to improve adaptability, robustness, and performance in complex and uncertain environments. Several contributions emphasize the importance of hardware and software co-design, energy efficiency, and the transfer of learned behaviors from simulation to real-world platforms. The Reprint also highlights emerging research directions, including neuromorphic computing, continual learning, multimodal perception, explainable artificial intelligence, and the certification of safety for autonomous systems. By bringing together theoretical developments, methodological innovations, and experimental applications, this Reprint provides a comprehensive overview of current trends in neural network-based robot control. It serves as a valuable reference for researchers, engineers, and practitioners working at the intersection of artificial intelligence, robotics, and intelligent autonomous systems.

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