Special Issue

Artificial Intelligence for Next-Generation Adaptive Control Systems and Robotics

Message from the Guest Editors

Artificial intelligence (AI) is transforming adaptive control, enabling automation and robotics to operate with efficiency, resilience, and autonomy. By integrating intelligent algorithms that learn from real-time data, systems dynamically adjust to changing environments, disturbances, and user demands. AI-powered controllers optimize performance, reduce costs, and improve robustness by anticipating failures, adapting to unforeseen events, and enabling real-time decisions. Leveraging machine learning, reinforcement learning, and hybrid AI–control architectures, systems evolve continuously, enhancing precision, safety, and relevance. Applications range from industrial automation and autonomous vehicles to aerial and underwater robotics. This Special Issue seeks research on AI–adaptive control, including algorithms, fault-tolerant control, reinforcement learning, hybrid methods, navigation, real-time optimization, multi-agent systems, and intelligent adaptation.

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