Studies in Systems, Decision and Control 96

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## Decentralized Neural Control: Application to Robotics



Ramon Garcia-Hernandez and

Decentralized Neural Control: Application to Robotics (Studies in Systems, Decision and Control Book 96)



This book provides a decentralized approach for the identification and control of robotics systems. This approach deals with four decentralized control schemes, which have the ability to identify the robot dynamics. This comprehensive focus on decentralized control of robot manipulators and mobile robots is intended for professors, students and professionals attempting to understand and apply advanced knowledge within their field of work. The third control scheme applies a decentralized neural inverse optimal control for stabilization. It also presents recent research in decentralized neural control and includes applications to robotics. Working out of each neural network is conducted on-line using an extended Kalman filtration system (EKF). The first indirect decentralized control scheme applies the discrete-time block control approach, to formulate a non-linear sliding manifold. The second direct decentralized neural control scheme is founded on the backstepping technique, approximated by a higher order neural network. Furthermore, instead of the centralized approach, it can be applied with parallel processors. The fourth decentralized neural inverse optimal control is designed for trajectory tracking. Decentralized control is definitely free from difficulties due to complexity in style, debugging, data gathering and storage requirements, rendering it preferable for interconnected systems.



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