

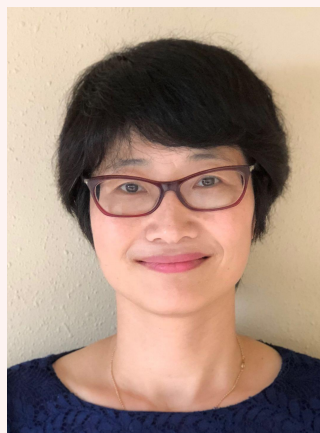
学术报告会

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Learning Control and Its Application in Rehabilitation Robotics

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摘要:

Rehabilitation robotics draws from the principle of "practice makes perfect," utilizing repetitive tasks to aid in motor re-learning and functional recovery, especially in poststroke rehabilitation. Rooted in neurocognitive rehabilitation theories, this concept has spurred the development of robot-assisted therapies, offering tailored, intensive task routines for individual patient needs. Leveraging advancements in learning control (LC) strategies, initially devised for achieving high tracking performance in industrial settings since 1978, emerges as a natural choice for controller designs in rehabilitation robotics. Unlike traditional control algorithms, LC algorithms harness information from previous iterations to enhance performance in subsequent ones. This presentation highlights cutting-edge developments in LC designs and demonstrates how various LC algorithms address the complex challenges in rehabilitation robotics. Furthermore, it explores opportunities for integrating learning control into rehabilitation robotics and identifies key research questions to drive control-theoretic advancements in this field.

简介:

Dr Ying Tan is a Professor in the Department of Mechanical Engineering at The University of Melbourne, Australia. She earned her bachelor's degree from Tianjin University, China, in 1995, and subsequently completed her PhD at the National University of Singapore in 2002. Following her doctoral studies, Dr Tan undertook a postdoctoral fellowship at McMaster University's Department of Chemical Engineering in 2002 before joining the University of Melbourne in 2004. Her exceptional research contributions have earned her prestigious accolades, including an Australian Postdoctoral Fellowship (2006-2008) and a Future Fellowship (2009-2013) from the Australian Research Council (ARC). Presently, Dr Tan serves as a member of the College of Experts (COE) of the ARC (2024-2026). She is widely recognized as a distinguished