自动化学报 2007 33 (11): 1189-1195 ISSN: 0254-4156 CN: 11-2109/TP

短文

时变机器人系统的重复学习控制: 一种混合学习方案

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收稿日期 2006-7-21 修回日期 2007-3-30 网络版发布日期 接受日期

摘要
Repetitive learning control is presented for finite-time-trajectory tracking of uncertain time-varying robotic systems. A hybrid learning scheme is given to cope with the constant and time-varying unknowns in system dynamics, where the time functions are learned in an iterative learning way, without the aid of Taylor expression, while the conventional differential learning method is suggested for estimating the constant ones. It is distinct that the presented repetitive learning control avoids the requirement for initial repositioning at the beginning of each cycle, and the time-varying unknowns are not necessary to be periodic. It is shown that with the adoption of hybrid learning, the boundedness of state variables of the closed-loop system is guaranteed and the tracking error is ensured to converge to zero as iteration increases. The effectiveness of the proposed scheme is demonstrated through numerical simulation.

关键词 Adaptive control iterative learning control repetitive control robotic systems time-varying systems

分类号

Repetitive Learning Control for Time-varying Robotic Systems: A Hybrid Learning Scheme

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Abstract
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Key words Adaptive control iterative learning control repetitive control robotic systems time-varying systems

DOI: 10.1360/aas-007-1189

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