

短文

基于一种修改的李亚普诺夫函数的自适应模糊滑模控制

张天平

扬州大学工学院计算机科学系,扬州

收稿日期 1999-11-8 修回日期 网络版发布日期 接受日期

摘要

针对一类不确定非线性系统,基于一种修改的李亚普诺夫函数并利用 II 型模糊系统的逼近能力,提出了一种稳定自适应模糊控制器设计的新方案.该方案能够避免现有的一些自适应模糊/神经网络控制器设计中控制增益一阶导数上界的要求.通过理论分析,证明了闭环模糊控制系统是全局稳定的,跟踪误差收敛到零.

关键词 [非线性系统](#) [模糊控制](#) [滑模控制](#) [自适应控制](#) [全局稳定性](#)

分类号 [TP273.2](#)

Adaptive Fuzzy Sliding Mode Control Based on A Modified Lyapunov Function

ZHANG Tian-Ping

Department of Computer Science, Engineering College, Yangzhou University, Yangzhou

Abstract

A new scheme of an adaptive fuzzy sliding mode controller for a class of uncertain nonlinear systems is proposed in this paper. The design is based on a modified Lyapunov function and the approximation capability of the second type fuzzy systems. In addition, the approach is able to avoid the requirement of the upper bound of the first time derivative of the control gain, which is assumed to be known a priori in some of the existing adaptive fuzzy/neural network control schemes. By theoretical analysis, the closed-loop fuzzy control system is proven to be globally stable in the sense that all signals involved are bounded, with tracking errors converging to zero.

Key words [Nonlinear systems](#) [fuzzy control](#) [sliding mode control](#) [adaptive control](#) [global stability](#)

DOI:

通讯作者

作者个人主页 [张天平](#)

扩展功能

本文信息

▶ [Supporting info](#)

▶ [PDF\(442KB\)](#)

▶ [\[HTML全文\]\(OKB\)](#)

▶ [参考文献\[PDF\]](#)

▶ [参考文献](#)

服务与反馈

▶ [把本文推荐给朋友](#)

▶ [加入我的书架](#)

▶ [加入引用管理器](#)

▶ [复制索引](#)

▶ [Email Alert](#)

▶ [文章反馈](#)

▶ [浏览反馈信息](#)

相关信息

▶ [本刊中包含“非线性系统”的相关文章](#)

▶ 本文作者相关文章

· [张天平](#)