



航空学报 » 2006, Vol. 27 » Issue (6) :1181-1184 DOI:

论文

最新目录 | 下期目录 | 过刊浏览 | 高级检索

<< Previous Articles | Next Articles >>

基于模糊变结构的空天飞行器姿态控制

王青¹, 华莹^{1,2}, 董朝阳¹, 张明廉¹

1. 北京航空航天大学 自动化与电气工程学院自动控制系, 北京 100083; 2. 北京航天指控中心, 北京 100094

Spacecraft Attitude Control Based on Fuzzy Variable Structure

WANG Qing¹, HUA Ying^{1,2}, DONG Chao-yang¹, ZHANG Ming-lian¹

1. Department of Automatic Control, School of Automation Science and Electrical Engineering, Beijing University of Aeronautics and Astronautics, Beijing 100083, China; 2. Beijing Astronautics Control Center, Beijing 100094, China

摘要

参考文献

相关文章

Download: PDF (461KB) HTML 0KB Export: BibTeX or EndNote (RIS) Supporting Info

摘要 根据空天飞行器姿态系统具有非线性、强耦合、多输入多输出的特点,对飞行器姿态模型的非线性和不确定性,提出分散模糊变结构控制方法。利用模糊系统对不确定性函数进行逼近,将获得的模糊系统函数作为系统不确定性界函数,对模糊逼近所带来的误差以及外部干扰项,采用控制补偿方法。理论分析和仿真研究表明,提出的控制方法具有姿态跟踪精度高,实时计算量小,便于工程实现等优点。

关键词: 姿态控制 变结构控制 模糊万能逼近器 自适应性

Abstract: The spacecraft attitude system is a nonlinear and strongly coupled system with multi-input and multi output. Basing on the nonlinear and uncertain model of the spacecraft attitude system, a fuzzy variable structure control method is proposed. The fuzzy system is used to approximate the system uncertain function. Furthermore, the errors from fuzzy approximation and external disturbances are compensated so that the influence on the system is minimized. Theoretical analysis and simulation results show that the proposed control method has high tracking accuracy and low computation load and is easy for application.

Keywords: attitude control variable structure control fuzzy universal approximator adaptability

Received 2005-06-10; published 2006-12-25

引用本文:

王青;华莹;董朝阳;张明廉. 基于模糊变结构的空天飞行器姿态控制[J]. 航空学报, 2006, 27(6): 1181-1184.

WANG Qing; HUA Ying; DONG Chao-yang; ZHANG Ming-lian. Spacecraft Attitude Control Based on Fuzzy Variable Structure[J]. Acta Aeronautica et Astronautica Sinica, 2006, 27(6): 1181-1184.

Service

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ Email Alert
- ▶ RSS

作者相关文章

- ▶ 王青
- ▶ 华莹
- ▶ 董朝阳
- ▶ 张明廉