

学术报告会

时间：2023年4月19日 10:00-11:30

地点：电信群楼2-410会议室

Safety Critical Control Design for Nonlinear System with Tracking and Safety Objectives

董怡

同济大学教授



摘要:

In this talk, we will discuss how to design a safety critical control law for the tracking with safety problem of a control system. It demonstrates how to sacrifice the tracking performance to keep the system trajectory in the safe zone and how to design a performance indicator function for the tradeoff between decreasing the tracking error and satisfying the safety requirement. Our design is essentially a nonlinear multi-objective control to achieve both safety and asymptotic tracking if there is no conflict between the tracking and safety, or to decrease the tracking error under the safety constraints otherwise. Different from existing methods for safety critical control problems, the design idea is to find a tracking controller without safety consideration, and then design a safety controller based on a control barrier function, which is capable of mediating both tracking and safety objectives.

简介:

董怡，毕业于香港中文大学，在 KTH 瑞典皇家理工学院从事博士后工作，现为同济大学“青年百人”特聘研究员，博导。长期从事多智能体系统协同控制理论与应用研究，在控制和人工智能领域主流期刊上发表论文 60 余篇，获得中国控制会议“关肇直奖”、上海市人工智能学会青年优秀科技论文奖等；入选上海市启明星 A 类计划，江苏省双创计划和六大人才高峰，在《Journal of Systems Science and Complexity》《Frontiers in Control Engineering》《系统科学与数学》等多本期刊和国际会议担任编委工作。