

عنوان مقاله:

Integer-order Versus Fractional-order Adaptive Fuzzy Control of Electrically Driven Robots with Elastic Joints

محل انتشار:

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خلاصه مقاله:

Real-time robust adaptive fuzzy fractional-order control of electrically driven flexible-joint robots has been addressed in this paper. Two important practical situations have been considered: the fact that robot actuators have limited voltage, and the fact that current signals are contaminated with noise. Through of a novel voltage-based fractional order control for an integer-order dynamical system and based on a Lyapunov's functions analysis, it is shown that the overall closed-loop system is robust, BIBO stable and the joint position tracking error is uniformly bounded. The satisfactory performance in lower energy consumption of the proposed fractional control scheme is verified in comparison with a standard integer-order controller by experimental results.

کلمات کلیدی:

Actuator Saturation, Direct Adaptive Fuzzy Control, Flexible-joint Robots, Fractional-order Control

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