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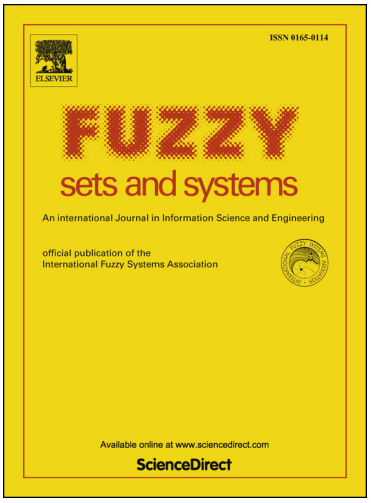

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Adaptive fuzzy control for feedback linearizable MIMO nonlinear systems with prescribed performance

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Abstract

In this paper, a new adaptive fuzzy control scheme with prescribed performance is developed for a class of feedback linearizable uncertain MIMO nonlinear systems with unknown control direction and external disturbances. The fuzzy systems are employed to approximate the unknown nonlinear functions, and a Nussbaum-type function is applied to resolve the unknown control direction problems. By using the prescribed performance bounds, an adaptive fuzzy controller equipped with the Nussbaum-type gain function is developed. The proposed design scheme guarantees that all the signals in the closed-loop systems are bounded and that the tracking errors converge to a prescribed performance bounds by guaranteeing the convergence of the filtered tracking error to a predefine performance bounds. Two simulation

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