



A NEW STABILITY CRITERIA FOR TAKAGI-SUGENO PERTURBED FUZZY SYSTEMS

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Abstract. In this paper, we introduce the notion of global practical exponential stability for Takagi-Sugeno fuzzy systems in presence of perturbations. The proposed approach for stability analysis is based on the determination of the bounds of perturbations that characterize the asymptotic convergence of the solutions to a small ball centered at the origin. The goal is to study systems whose desired behavior is asymptotic stability about the origin of the state space or a close approximation to this. All state trajectories are bounded and approach a sufficiently small neighborhood of the origin under some perturbations. The effectiveness of the presented criterion is demonstrated by a numerical example.

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