Robust Control of a Class of Nonlinear Systems Based on Observer

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Abstract

In this paper, the robust control problem for a class of nonlinear systems with disturbance is studied and the observer-based robust control problem for nonlinear systems is discussed. Firstly, the state observer is constructed for the nonlinear system satisfying condition *Lipschitz*. Secondly, considering the disturbance in the system, in order to make the system have H_∞ performance index Γ, according to the theory of Lyapunov in the form of linear matrix inequality sufficient conditions for the existence of the controller based on state observer, the observer gain matrix, and controller gain matrix and the calculation method of realize the robust control of nonlinear systems; Finally, the effectiveness of the method is verified by numerical simulation.

Key Word: Nonlinear system, Observer, H_∞ control, Robust control