

Nonlinear H^∞ Output Feedback Control of Stochastic Time-Delay T-S Fuzzy
Model with State-Dependent Noise

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Abstract

In this paper, we study the robust H^∞ output feedback control problem for the nonlinear stochastic continuous-time time-delay systems with state-dependent noise represented by the Takagi and Sugeno fuzzy model. Based on the fuzzy approach, the fuzzy controller and the fuzzy estimator which guarantee H^∞ robustness performance for the considered nonlinear stochastic systems can be obtained by solving bilinear matrix inequalities. Then, to solve the bilinear matrix inequalities, a two-stage method is adopted to separately obtain the controller gain matrices and the estimator gain matrices by solving two sets of linear matrix inequalities.

Keyword : time-delay, nonlinear stochastic system, state-dependent noise