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Robust $\mathcal{H}_\infty$ Fuzzy Control Design for Time Delay Nonlinear Markovian Jump Systems: An LMI Approach

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Abstract: This paper considers the problem of designing a robust $\mathcal{H}_\infty$ fuzzy state-feedback controller for a class of time delay nonlinear Markovian jump systems. The proposed controller guarantees the $\mathcal{L}_2$-gain of the mapping from the exogenous input noise to the regulated output to be less than some prescribed value. Solutions to the problem are provided in terms of linear matrix inequalities. To illustrate the effectiveness of the design developed in this paper, a numerical example is also provided.

Keywords: *$\mathcal{H}_\infty$ fuzzy control; Takagi–Sugeno (TS) fuzzy model; linear matrix inequalities (LMIs); Markovian jump parameters; time-varying delay.*

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