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[2008-0969]Non-synchronized Observer-Based Control of Discrete-Time Piecewise Affine Systems: An LMI Approach

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摘要

关键词

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[2008-0969]Non-synchronized Observer-Based Control of Discrete-Time Piecewise Affine Systems: An LMI Approach

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Abstract
This paper presents a novel observer-based control scheme for discrete-time piecewise affine systems based on a piecewise-quadratic Lyapunov function. The key issue addressed in this paper is that the currently active region of the system is unknown, and can not be inferred from the measured outputs. By approximating polytopic operating regions by ellipsoids and using the singular value decomposition technique to treat the constraint of matrix equality, the suggested control method can be formulated as linear matrix inequalities, and solved much more efficiently than existing methods which could be only cast as bilinear matrix inequalities. A numerical example is also given to verify the proposed approach.

Key words Piecewise affine systems piecewise Lyapunov function controller design observer linear matrix inequality

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