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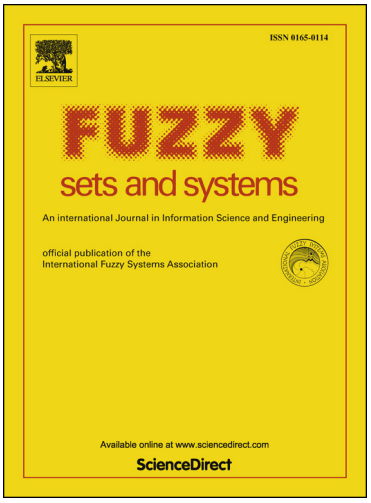

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Fault detection for T-S fuzzy systems with partly unmeasurable premise variables

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Abstract

This paper studies the fault detection problem for T-S fuzzy systems with partly unmeasurable premise variables. By using measurable premise variables and estimations of unmeasurable premise variables of fuzzy models as the premise variables of observers, a novel fuzzy fault detection observer scheme is constructed and the corresponding design condition is proposed via a set-theoretic description. Different from the conventional fault detection observer schemes, where all premise variables of the observer are the estimations of the premise variables in the fuzzy systems, the proposed method can take full advantage of the partly measurable premise variables for achieving a better fault detection performance. A numerical example is given to illustrate the effectiveness of the proposed method.

Key words: T-S fuzzy systems, fault detection, unmeasurable premise variables, H_-/H_∞ performance.

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