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Novel Observer-Based Output Feedback Control Synthesis of Discrete-Time Nonlinear Control Systems Via A Fuzzy Approach

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Abstract

The paper is focus on less conservative design of observer-based output feedback control synthesis of discrete-time Takagi-Sugeno fuzzy systems on account of an improved homogenous polynomial approach. Compared with those previous methods in the cited literature, a novel fuzzy observer-based output feedback law is constructed in virtue of utilizing one promising solution to homogenous polynomials that are parameter-dependent on both the current-time and those multi-steps past-time normalized fuzzy weighting functions with a pair of prescribed degrees. It is rather remarkable that more information contained in the normalized fuzzy weighting functions is integrated to build the proposed control law, and thus the conservatism left behind previous results can be released in this work. Moreover, a robust version of the underlying result is also proposed. Finally, the effectiveness of

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