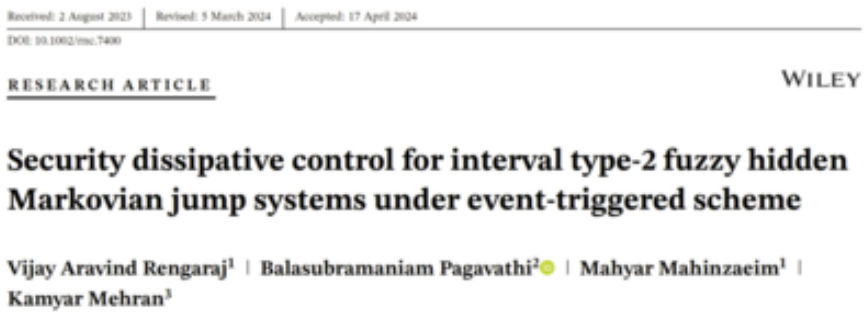
NEWS



Received: 2 August 2023 | Revised: 5 March 2024 | Accepted: 17 April 2024
DOI: 10.1002/rnc.7400

RESEARCH ARTICLE

WILEY

Security dissipative control for interval type-2 fuzzy hidden Markovian jump systems under event-triggered scheme

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NEW PAPER on event-triggered control of nonlinear systems

03.05.2024 | Check out our new paper in the Q1 journal International Journal of Robust and Nonlinear Control!

The paper presents a new design approach for resilient fault-tolerant event-triggered (ET) based security control of Markovian jump nonlinear systems (MJNSs) in the presence of nonperiodic denial-of-service (DoS) attacks. The approach is developed based on interval type-2 (IT-2) fuzzy models of the plant. The state error produced by data packet loss is turned into a parameter in the proposed ET condition during nonperiodic DoS attacks. The uncertain triggering variable is considered in the resilient fault-tolerant ET condition for the MJNSs. In contrast to the usual strategy, the fault-tolerant ET strategy is designed to send the required data packets to the controller during nonperiodic DoS attacks, which significantly contributes to the minimization of performance loss. Dissipative, passive, and H8-control schemes are all covered in a unifying framework by using a generalized performance index. Plant and controller modes are considered under mismatched membership functions to regulate asynchronous phenomena. Sufficient conditions depending on the membership functions that guarantee the stability of the closed-loop system are derived. Finally, two numerical examples are provided to demonstrate the effectiveness of the proposed approach.

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