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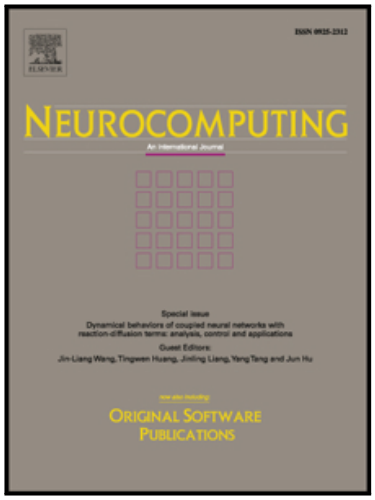

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Identification-oriented robust finite memory fault detection filter design for networked industrial process with fading channel communication

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Abstract

The fault detection problem for a class of networked industrial process with fading channel communication is studied in this paper. The dynamic of industrial process around a given operating point is first estimated based on subspace model identification (SMI) method. Then, a finite memory (FM) scheduling robust fault detection filter (FDF) strategy is proposed to generate residual signal for performing system monitoring over channel fading network. The main contributions lie in achieving the identification-oriented process monitoring via SMI and FDF on one hand, and enhancing the robustness of fault detection system against identification error and unreliable communication via FM and H_∞ performance optimization on the other hand. A practical simulation example is finally given to verify the effectiveness of the proposed fault detection methodology.

Keywords:
Fading channel, Fault detection, Finite memory, Subspace model identification

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