Distributed fault detection and isolation for multi-agent systems using relative information

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ABSTRACT

Automatic fault detection and isolation for multi-agent systems is of growing importance with the growth of the systems' complexity and intelligence. But their inherent decentralized structure makes it more challenging for the lack of a central node monitoring the whole system's activities. In this talk, we will discuss the distributed fault detection and isolation strategy for a class of linear multi-agent systems using only relative information. Firstly, by applying a series of model transformations, a new fault detection model which can estimate the neighbors' nominal outputs by solving linear system equations is created. The distributed FDI strategy based on the proposed model is then designed. After that, a novel event-triggered communication framework is proposed to improve the reliability of the fault detection result.

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