



A New Multi-Objective Decision-Making Approach Applied to the Tennessee Eastman Process

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Mots-clés	Complex systems [5], Decision fusion [6], fault detection [7], Fault isolation [8], Generic framework [9]
Résumé en anglais	<p>In this paper, a generic framework and a new methodology aiming to decisions fusion of various Fault Detection and Diagnosis (FDD) methods are proposed. The framework consists of a discrete Bayesian Network (BN) and can handle all FDD methods, regardless of their a prior knowledge or requirements. The methodology expresses the FDD objectives to achieve the desired performance and results in a theoretical learning of the BN parameters. The development leads to a multi-objective problem under constraints, resolved with a lexicographic method. The effectiveness of the proposed Multi-Objective Decision-Making (MODM) approach is validated through the Tennessee Eastman Process (TEP), as a challenging industrial benchmark problem. The application shows the significant improvement in FDD performances that can be ensured by the proposed methodology, in terms of high fault detection rate and small false alarm rate.</p>
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