



Evidential Networks for Evaluating Predictive Reliability of Mechatronics Systems under Epistemic Uncertainties

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Résumé en anglais	<p>In reliability predicting field, the probabilistic approaches are based on data relating to the components which can be precisely known and validated by the return of experience REX, but in the case of complex systems with high-reliability precision such as mechatronic systems, uncertainties are inevitable and must be considered in order to predict with a degree of confidence the evaluated reliability. In this paper, firstly we present a brief review of the non-probabilistic approaches. Thereafter we present our methodology for assessing the reliability of the mechatronic system by taking into account the epistemic uncertainties (uncertainties in the reliability model and uncertainties in the reliability parameters) considered as a dynamic hybrid system and characterized by the existence of multi-domain interaction between its failed components. The key point in this study is to use an Evidential Network "EN" based on belief functions and the dynamic Bayesian network. Finally, an application is developed to illustrate the interest of the proposed methodology.</p>
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