



Functional and Behavior Models for the Supervision of an Intelligent and Autonomous System

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| Mots-clés | bond graph [5], electromechanical system [6], Functional Analysis [7], self-diagnosis [8], supervision [9], user operating modes [10] |
| Résumé en anglais | <p>The graphical approaches often have different backgrounds and view a system or an algebraic model from different perspectives in order to facilitate the communication and the understanding. These graphical approaches satisfy the modeling needs and give a clear and easily understandable overview of the behavioral and functional models and make easier to see what the process is, which vulnerabilities and asset that are involved and how the system works. The main goal of this paper is to develop and implement a methodology which combines the functional analysis and the bond graph (BG) tool for intelligent and autonomous systems. As a result, a supervisory interface is obtained, given under a finite automaton, displaying to the operators the possibilities the system has to achieve or not, its objectives. Each operating mode, corresponding to a vertex of the automaton, is associated with a set of services from a functional point-of-view and is defined accurately by a behavioral BG model. Furthermore, the service availability (associated to the BG elements) and the conditions for switching from one mode to another one are analyzed by fault detection and isolation algorithms generated on the basis of the structural and causal properties of the BG tool. Moreover, when a fault is not completely isolable some results can nevertheless be expressed in terms of available or unavailable services.</p> |
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