



Robust fault decision : Contribution to Omni directional Mobile Robot

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Résumé en anglais Fault diagnosis is crucial for ensuring the safe operation of complex engineering systems and avoiding the execution of an unsafe behaviour. This chapter deals with Robust Decision Making (RDM) for fault detection of electromechanical systems by combining the advantages of Bond Graph (BG) modeling and Fuzzy logic reasoning. A fault diagnosis method implemented in two stages is proposed. In the first stage, the residuals are deduced from the BG model allowing the building of a Fault Signature Matrix (FSM) according to the sensitivity of residuals to different parameters. In the second stage, the result of FSM and the robust residual thresholds are used by the fuzzy reasoning mechanism in order to evaluate a degree of detectability for each set of components. Finally, in order to make robust decision according to the detected fault component, an analysis is done between the output variables of the fuzzy system and components having the same signature in the FSM. The performance of the proposed fault diagnosis methodology is demonstrated through experimental data of an omni directional robot. - See more at: <http://www.eurekaselect.com/102039/chapter/robust-fault-decision%3A-appl...> [19]

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