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Metrics

Document type

Conference Paper

Source type

Book Series

ISSN

21945357

ISBN

978-303026473-4

DOI

10.1007/978-3-030-26474-1_33

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Advances In Intelligent Systems and Computing • Volume 1020, Pages 461 - 477 • 2020 • 15th International Scientific Conference on Intellectual Systems of Decision Making and Problems of Computational Intelligence, ISDMCI 2019 • Kherson • 21 May 2019 through 25 May 2019 • Code 229069

Information Technology of Control and Support for Functional Sustainability of Distributed Man-Machine Systems of Critical Application

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0.73

FWCI 

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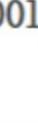
Abstract

The paper considers information technology for control and support of the functional sustainability (FS) of man-machine systems of critical application, which complements the theory and methods for solving the tasks of ensuring systemâ€™s fault tolerance and liveness, based on the interaction of a set of operation security indicators, as well as human factor indicators, in managing and making decisions on its each hierarchical level. A Bayesian Trust Network was built to evaluate the entire systemâ€™s FS, with the help of which, on the basis of expert knowledge, an assessment of the state probability of both individual components of the structural organization and a comprehensive FS assessment of the entire distributed system was performed. For practical substantiation of the obtained results, an experiment was carried out, the results of which confirmed the practical importance of the proposed information technology, which can be used for the control and support of the FS of man-machine distributed systems of critical application. © Springer Nature Switzerland AG 2020.

Author keywords

Complex organizational and technical objects; Decision making; Fault tolerance of the system; Functional sustainability; Human factor; Information technology; Man-machine systems; Systemâ€™s liveness

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