Hierarchical Dependability Models based on Non-Homogeneous Continuous Time Markov Chains

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Abstract

My diploma thesis shows a method of calculating the hazard rate of the non-homogeneous Markov chains using different homogeneous probability matrices for several hundreds small time intervals. The proposed method is applied on hierarchical dependability models allowing independent calculations of the hazard rates of multiple cooperating blocks of the system. The independent calculations are significantly faster than the calculation of a single model composed of all models of the blocks and the proposed method is very accurate compared to methods based on homogeneous Markov chains. Some parts of this diploma thesis were published at DTIS 2019 [1] and DSD 2019 [2] conferences.

Acknowledgment

References

[1] J. Řezníček, M. Kohlík, H. Kubátová, "Dependability Models based on Non-Homogeneous Continuous Time Markov Chains", paper on DTIS 2019 – Design & Technology of Integrated Systems, 2019.

[2] J. Řezníček, M. Kohlík, H. Kubátová, "Accurate Inexact Calculations of Non-Homogeneous Markov Chains", paper on DSD 2019 – Euromicro Conference on Digital System Design, 2019.