# Load Balancing Using Time Series Analysis for Soft Real Time Systems with Statistically Periodic Loads

By National Aeronautics and Space Administration (NASA)

Biblioscholar Mrz 2013, 2013. Taschenbuch. Book Condition: Neu. 246x189x9 mm. This item is printed on demand - Print on Demand Neuware - This thesis provides design and analysis of techniques for global load balancing on ensemble architectures running soft-real-time object-oriented applications with statistically periodic loads. It focuses on estimating the instantaneous average load over all the processing elements. The major contribution is the use of explicit stochastic process models for both the loading and the averaging itself. These models are exploited via statistical time-series analysis and Bayesian inference to provide improved average load estimates, and thus to facilitate global load balancing. This thesis explains the distributed algorithms used and provides some optimality results. It also describes the algorithms' implementation and gives performance results from simulation. These results show that our techniques allow more accurate estimation of the global system load ing, resulting in fewer object migration than local methods. Our method is shown to provide superior performance, relative not only to static load-balancing schemes but also to many adaptive methods. 150 pp. Englisch.

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