Lecture Notes in Computer Science

Edited by G. Goos and J. Hartmanis

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Reliability Evaluation of Some Fault-Tolerant Computer Architectures

Springer-Verlag
Berlin Heidelberg New York 1980

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AMS Subject Classifications (1980): 68A05
CR Subject Classifications (1974): 6.2, 6.3, 6.9

ISBN 3-540-10274-4 Springer-Verlag Berlin Heidelberg New York
ISBN 0-387-10274-4 Springer-Verlag New York Heidelberg Berlin

Printing and binding: Beltz Offsetdruck, Hemsbach/Bergstr.
2145/3140-543210

PREFACE

Computer systems play an important role in our society. A system break-down is costly, dangerous, and even causes confusion in our society. It is, therefore, of great importance to build and operate such systems with high degree of reliability. This book investigates stochastic models of some fault-tolerant computer architectures and obtains the reliability and the performance-related reliability measures by using a unique modification of regeneration point techniques in Markov renewal processes. This book also gives numerical examples of such reliability measures for comparisons of some fault-tolerant computer architectures from the viewpoints of the reliability and the performance. Several interesting results are presented based on the numerical examples. Such results are also of great use to design the system configurations of the fault-tolerant computer architectures. Throughout this book Markov renewal processes are applied to analyze stochastic models. The Appendix is devoted to sketch briefly Markov renewal processes.

The authors wish to thank M. Kajiyama and M. Kinugasa for their helpful comments and suggestions. We are also grateful for the help given by N. Kaio.

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Hiroshima, JAPAN
April 1980

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