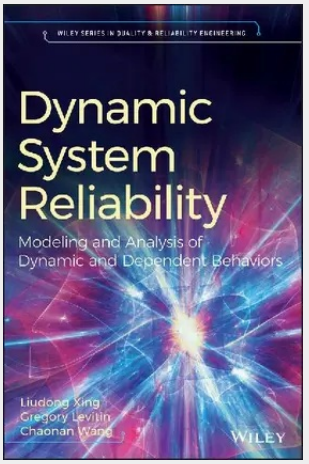
Xing / Levitin / Wang

Dynamic System Reliability

Modeling and Analysis of Dynamic and Dependent Behaviors



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Offers timely and comprehensive coverage of dynamic system reliability theory This book focuses on hot issues of dynamic system reliability, systematically introducing the reliability modeling and analysis methods for systems with imperfect fault coverage, systems with function dependence, systems subject to deterministic or probabilistic common-cause failures, systems subject to deterministic or probabilistic competing failures, and dynamic standby sparing systems. It presents recent developments of such extensions involving reliability modelling theory, reliability evaluation methods, and features numerous case studies based on real-world examples. The presented dynamic reliability theory can enable a more accurate representation of actual complex system behavior, thus more effectively guiding the reliable design of real-world critical systems. Dynamic System Reliability: Modelling and Analysis of Dynamic and Dependent Behaviors begins by describing the evolution from the traditional static reliability theory to the dynamic system reliability theory, and provides a detailed investigation of dynamic and dependent behaviors in subsequent chapters. Although written for those with a background in basic probability theory and stochastic processes, the book includes a chapter reviewing the fundamentals that readers need to know in order to understand contents of other chapters which cover advanced topics in reliability theory and case studies. - The first book systematically focusing on dynamic system reliability modelling and analysis theory - Provides a comprehensive treatment on imperfect fault coverage (single-level/multi-level or modular), function dependence, common cause failures (deterministic and probabilistic), competing failures (deterministic and probabilistic), and dynamic standby sparing - Includes abundant illustrative examples and case studies based on real-world systems - Covers recent advances in combinatorial models and algorithms for dynamic system reliability analysis - Offers a rich set of references, providing helpful resources for readers to pursue further research and study of the topics Dynamic System Reliability: Modelling and Analysis of Dynamic and Dependent Behaviors is an excellent book for undergraduate and graduate students, and engineers and researchers in reliability and related disciplines.

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