

Monte Carlo Scheduled Maintenance Schedule Guide

This volume presents the proceedings of the CLAIB 2016, held in Bucaramanga, Santander, Colombia, 26, 27 & 28 October 2016. The proceedings, presented by the Regional Council of Biomedical Engineering for Latin America (CORAL), offer research findings, experiences and activities between institutions and universities to develop Bioengineering, Biomedical Engineering and related sciences. The conferences of the American Congress of Biomedical Engineering are sponsored by the International Federation for Medical and Biological Engineering (IFMBE), Society for Engineering in Biology and Medicine (EMBS) and the Pan American Health Organization (PAHO), among other organizations and international agencies to bring together scientists, academics and biomedical engineers in Latin America and other continents in an environment conducive to exchange and professional growth.

Maintenance, Monitoring, Safety, Risk and Resilience of Bridges and Bridge Networks contains the lectures and papers presented at the Eighth International Conference on Bridge Maintenance, Safety and Management (IABMAS 2016), held in Foz do Iguaçu, Paraná, Brazil, 26-30 June, 2016. This volume consists of a book of extended abstracts and a DVD containing the full papers of 369 contributions presented at IABMAS 2016, including the T.Y. Lin Lecture, eight Keynote Lectures, and 360 technical papers from 38 countries. The contributions deal with the state-of-the-art as well as emerging concepts and innovative applications related to all main aspects of bridge maintenance, safety, management, resilience and sustainability. Major topics covered include: advanced materials, ageing of bridges,

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assessment and evaluation, bridge codes, bridge diagnostics, bridge management systems, composites, damage identification, design for durability, deterioration modeling, earthquake and accidental loadings, emerging technologies, fatigue, field testing, financial planning, health monitoring, high performance materials, inspection, life-cycle performance and cost, load models, maintenance strategies, non-destructive testing, optimization strategies, prediction of future traffic demands, rehabilitation, reliability and risk management, repair, replacement, residual service life, resilience, robustness, safety and serviceability, service life prediction, strengthening, structural integrity, and sustainability. This volume provides both an up-to-date overview of the field of bridge engineering as well as significant contributions to the process of making more rational decisions concerning bridge maintenance, safety, serviceability, resilience, sustainability, monitoring, risk-based management, and life-cycle performance using traditional and emerging technologies for the purpose of enhancing the welfare of society. It will serve as a valuable reference to all involved with bridge structure and infrastructure systems, including students, researchers and engineers from all areas of bridge engineering.

Bridge Maintenance, Safety, Management, Life-Cycle Sustainability and Innovations contains lectures and papers presented at the Tenth International Conference on Bridge Maintenance, Safety and Management (IABMAS 2020), held in Sapporo, Hokkaido, Japan, April 11–15, 2021. This volume consists of a book of extended abstracts and a USB card containing the full papers of 571 contributions presented at IABMAS 2020, including the T.Y. Lin Lecture, 9 Keynote Lectures, and 561 technical papers from 40 countries. The contributions presented at IABMAS 2020 deal with the state of the art as well as emerging concepts and innovative

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applications related to the main aspects of maintenance, safety, management, life-cycle sustainability and technological innovations of bridges. Major topics include: advanced bridge design, construction and maintenance approaches, safety, reliability and risk evaluation, life-cycle management, life-cycle sustainability, standardization, analytical models, bridge management systems, service life prediction, maintenance and management strategies, structural health monitoring, non-destructive testing and field testing, safety, resilience, robustness and redundancy, durability enhancement, repair and rehabilitation, fatigue and corrosion, extreme loads, and application of information and computer technology and artificial intelligence for bridges, among others. This volume provides both an up-to-date overview of the field of bridge engineering and significant contributions to the process of making more rational decisions on maintenance, safety, management, life-cycle sustainability and technological innovations of bridges for the purpose of enhancing the welfare of society. The Editors hope that these Proceedings will serve as a valuable reference to all concerned with bridge structure and infrastructure systems, including engineers, researchers, academics and students from all areas of bridge engineering.

Grid computing denotes an approach to utilize distributed resources that are not subject to centralized control. This approach fulfils computing requirements arising within the context of current high-performance computing applications, especially in the field of computational science and engineering. This idea is analogous to an electric power network (grid), where power generators are distributed, but the users are able to access electric power without bothering about the source of energy and its location. Current grid enabling technologies consist of stand-alone architectures. A typical architecture provides middleware access to various

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services at different hierarchical levels. Computational grids enable the sharing, selection and aggregation of a wide variety of geographically distributed computational resources (such as supercomputers, clusters of computers, storage systems, data sources, instruments, people, etc.) and present them as a single, unified resource for solving large-scale computations and data intensive computing applications (e.g., molecular modeling for drug design, brain activity analysis, high energy physics, etc.). Grid computing is a new emerging research area aiming to promote the development and advancement of technologies that provide seamless and scalable access to wide-area distributed resources.

As the age of Big Data emerges, it becomes necessary to take the five dimensions of Big Data- volume, variety, velocity, volatility, and veracity- and focus these dimensions towards one critical emphasis - value. The Encyclopedia of Business Analytics and Optimization confronts the challenges of information retrieval in the age of Big Data by exploring recent advances in the areas of knowledge management, data visualization, interdisciplinary communication, and others. Through its critical approach and practical application, this book will be a must-have reference for any professional, leader, analyst, or manager interested in making the most of the knowledge resources at their disposal.

Integrated Gasification Combined Cycle (IGCC) Technologies discusses this innovative power generation technology that combines modern coal gasification technology with both gas turbine and steam turbine power generation, an important emerging technology which has the potential to significantly improve the efficiencies and emissions of coal power plants. The advantages of this technology over conventional pulverized coal power plants include fuel flexibility, greater efficiencies, and very low pollutant emissions. The book reviews the current status and future developments of key

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technologies involved in IGCC plants and how they can be integrated to maximize efficiency and reduce the cost of electricity generation in a carbon-constrained world. The first part of this book introduces the principles of IGCC systems and the fuel types for use in IGCC systems. The second part covers syngas production within IGCC systems. The third part looks at syngas cleaning, the separation of CO₂ and hydrogen enrichment, with final sections describing the gas turbine combined cycle and presenting several case studies of existing IGCC plants. Provides an in-depth, multi-contributor overview of integrated gasification combined cycle technologies Reviews the current status and future developments of key technologies involved in IGCC plants Provides several case studies of existing IGCC plants around the world

Safety and Reliability of Industrial Products, Systems and Structures deals with risk assessment, which is a fundamental support for decisions related to the design, construction, operation and maintenance of industrial products, systems and infrastructures.

Risks are influenced by design decisions, by the process of construction of systems and inf

Simulation Methods for Reliability and Availability of Complex Systems discusses the use of computer simulation-based techniques and algorithms to determine reliability and availability (R and A) levels in complex systems. The book: shares theoretical or applied models and decision support systems that make use of simulation to estimate and to improve system R and A levels, forecasts emerging technologies and trends in the use of computer

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simulation for R and A and proposes hybrid approaches to the development of efficient methodologies designed to solve R and A-related problems in real-life systems. Dealing with practical issues, *Simulation Methods for Reliability and Availability of Complex Systems* is designed to support managers and system engineers in the improvement of R and A, as well as providing a thorough exploration of the techniques and algorithms available for researchers, and for advanced undergraduate and postgraduate students.

Engineering Asset Management 2010 represents state-of-the art trends and developments in the emerging field of engineering asset management as presented at the Fifth World Congress on Engineering Asset Management (WCEAM). The proceedings of the WCEAM 2010 is an excellent reference for practitioners, researchers and students in the multidisciplinary field of asset management, covering topics such as: Asset condition monitoring and intelligent maintenance Asset data warehousing, data mining and fusion Asset performance and level-of-service models Design and life-cycle integrity of physical assets Education and training in asset management Engineering standards in asset management Fault diagnosis and prognostics Financial analysis methods for physical assets Human dimensions in integrated asset management

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Information quality management Information systems and knowledge management Intelligent sensors and devices Maintenance strategies in asset management Optimisation decisions in asset management Risk management in asset management Strategic asset management Sustainability in asset management

An indispensable guide for engineers and data scientists in design, testing, operation, manufacturing, and maintenance A road map to the current challenges and available opportunities for the research and development of Prognostics and Health Management (PHM), this important work covers all areas of electronics and explains how to: assess methods for damage estimation of components and systems due to field loading conditions assess the cost and benefits of prognostic implementations develop novel methods for in situ monitoring of products and systems in actual life-cycle conditions enable condition-based (predictive) maintenance increase system availability through an extension of maintenance cycles and/or timely repair actions; obtain knowledge of load history for future design, qualification, and root cause analysis reduce the occurrence of no fault found (NFF) subtract life-cycle costs of equipment from reduction in inspection costs, downtime, and inventory Prognostics and Health Management of Electronics also explains how to understand statistical techniques and machine

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learning methods used for diagnostics and prognostics. Using this valuable resource, electrical engineers, data scientists, and design engineers will be able to fully grasp the synergy between IoT, machine learning, and risk assessment.

This research report assessed how water utilities could apply Reliability-Centered Maintenance (RCM) to new and existing infrastructure and evaluated the costs and benefits of such programs. RCM components were identified as well as how utility maintenance programs are currently developed and how such a program would be implemented. RCM pilot projects were completed with the Denver Water Board and Veolia Water Indianapolis. Costs and benefits are presented along with implementation procedures and Change Management recommendations. Includes CD.

We are very pleased to be asked to co-author this book for a variety of reasons, one of which was that it gave us further opportunity to work together. The scope proposed was very wide with the only significant proviso being that the book should be in a monograph-style and not a teaching text. This requirement has given us the opportunity to compile a wide range of relevant material relating to present-day knowledge and application in power system reliability. As many readers will be aware, we have collaborated in many ways over a relatively long period and have co-authored two other books on

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reliability evaluation. Both of these previous books were structured as teaching texts. This present book is not a discourse on "how to do reliability evaluation" but a discussion on "why it should be done and what can be done and achieved" and as such does not replace or conflict with the previous books. The three books are complementary and each enhances the others. The material contained in this book is not specifically original since it is based on information which we have published in other forms either jointly or as co authors with various other people, particularly our many research students. We sincerely acknowledge the important contributions made by all these students and colleagues. There are too many to mention individually in this preface but their names appear frequently in the references at the end of each chapter.

"Air Transport Law and Policy in the 1990s" is a collection of articles by distinguished experts in the field of international civil aviation, airport management and aircraft manufacturing. It gives an insight into the most topical developments related to the airline industry, environment and infrastructure, multilateral trends in international air transport and aircraft production, finance and airworthiness. The subjects concerned are dealt with from a policy, legal, economic and technical perspective and have as an objective to indicate trends for the next

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decade. "Pablo Mendes de Leon" is Director of the International Institute of Air and Space Law at Leiden University and a Board Member of the Netherlands Civil Aviation Foundation (Stichting Burgerluchtvaart). The Foundation has as its objective to promote the study of civil aviation from both a Dutch and an international perspective.

"Emilie Aberson" is a member of the Legal Division of the Netherlands Department of Civil Aviation.

Safety and Reliability – Safe Societies in a Changing World collects the papers presented at the 28th European Safety and Reliability Conference, ESREL 2018 in Trondheim, Norway, June 17-21, 2018. The contributions cover a wide range of methodologies and application areas for safety and reliability that contribute to safe societies in a changing world.

These methodologies and applications include: - foundations of risk and reliability assessment and management - mathematical methods in reliability and safety - risk assessment - risk management - system reliability - uncertainty analysis - digitalization and big data - prognostics and system health management - occupational safety - accident and incident modeling - maintenance modeling and applications - simulation for safety and reliability analysis - dynamic risk and barrier management - organizational factors and safety culture - human factors and human reliability - resilience engineering - structural reliability - natural hazards - security -

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economic analysis in risk management Safety and Reliability – Safe Societies in a Changing World will be invaluable to academics and professionals working in a wide range of industrial and governmental sectors: offshore oil and gas, nuclear engineering, aeronautics and aerospace, marine transport and engineering, railways, road transport, automotive engineering, civil engineering, critical infrastructures, electrical and electronic engineering, energy production and distribution, environmental engineering, information technology and telecommunications, insurance and finance, manufacturing, marine transport, mechanical engineering, security and protection, and policy making.

The 18th European Symposium on Computer Aided Process Engineering contains papers presented at the 18th European Symposium of Computer Aided Process Engineering (ESCAPE 18) held in Lyon, France, from 1-4 June 2008. The ESCAPE series brings the latest innovations and achievements by leading professionals from the industrial and academic communities. The series serves as a forum for engineers, scientists, researchers, managers and students from academia and industry to:

- present new computer aided methods, algorithms, techniques related to process and product engineering,
- discuss innovative concepts, new challenges, needs and trends in the area of

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CAPE. This research area bridges fundamental sciences (physics, chemistry, thermodynamics, applied mathematics and computer sciences) with the various aspects of process and product engineering. The special theme for ESCAPE-18 is CAPE for the Users! CAPE systems are to be put in the hands of end users who need functionality and assistance beyond the scientific and technological capacities which are at the core of the systems. The four main topics are: - off-line systems for synthesis and design, - on-line systems for control and operation, - computational and numerical solutions strategies, - integrated and multi-scale modelling and simulation, Two general topics address the impact of CAPE tools and methods on Society and Education. * CD-ROM that accompanies the book contains all research papers and contributions * International in scope with guest speeches and keynote talks from leaders in science and industry * Presents papers covering the latest research, key top areas and developments in Computer Aided Process Engineering

"Risk Assessment of Power Systems closes the gap between risk theory and real-world application. As a leading authority in power system risk evaluation for more than fifteen years and the author of a considerable number of papers and more than fifty technical reports on power system risk and reliability evaluation, Wenyan Li is uniquely qualified to

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present this material. Following the models and methods developed from the author's hands-on experience, readers learn how to evaluate power system risk in planning, design, operations, and maintenance activities to keep risk at targeted levels."--BOOK JACKET.

Safety and Reliability of Complex Engineered Systems contains the Proceedings of the 25th European Safety and Reliability Conference, ESREL 2015, held 7-10 September 2015 in Zurich, Switzerland. It includes about 570 papers accepted for presentation at the conference. These contributions focus on theories and methods in the area of risk, safety and

Coverage in this proceedings volume includes robust multilevel and hierarchical preconditioning methods, applications for large scale computations and optimization of coupled engineering problems, and applications of metaheuristics to large-scale problems.

Given that for centuries, the standard tool to understand diseases in tissues was the microscope and that its major limitation was that only excised tissue could be used, recent technology now permits the examination of diseased tissue in vivo. Optical coherence tomography (OCT) has promising potential when applied to coronary artery disease. OCT has the capability to identify coronary plaque and to distinguish between plaques that are stable and unstable. If the plaques are stable then

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OCT can direct percutaneous intervention (angioplasty or stenting). Optical coherence tomography is a light-based imaging technology that allows for very high resolution imaging in biological tissues. It has been first applied in ophthalmology, where it soon became the golden standard for the assessment of (epi-) retinal processes. The unique imaging capabilities have raised the interest of researchers and clinicians in the field of cardiovascular disease, since OCT offers unique possibilities to study atherosclerosis pathophysiology in vivo. With over 1.1M Americans having a heart attack this year because of unstable plaque rupture, OCT may have an increasingly important role in the early diagnosis of coronary artery disease. This unique publication offers the reader the basic background to OCT and its role in the diagnosis and management of coronary artery disease. The Handbook of Optical Coherence Tomography in Cardiovascular Research introduces the cardiovascular application of this technology. Clinicians, biologists, engineers and physicist are discussing different aspects of cardiovascular OCT application in a multidisciplinary approach. The handbook offers the readership a concise overview on the current state of the art of vascular OCT imaging and sheds light on a variety of exciting new developments. The physics, technical principles of OCT and its application in a broad spectrum of cardiovascular research areas are summarized by highly recognized specialists. The potential of OCT in peripheral and coronary arteries and in developmental cardiology are described. Each research area is introduced by a clinical expert in the field followed by

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discussion of different aspects from an engineering, biomedical and clinical perspective. Specifically, the current capabilities for plaque characterization, detection of vulnerable plaque, guidance of interventional procedures, Doppler-assessment, and molecular contrast imaging are being described. The Handbook of Optical Coherence Tomography in Cardiovascular Research targets researchers and clinicians involved in the field of atherosclerosis. The summary of basic physics, engineering solutions, pre-clinical and clinical application covers all relevant aspects and will be a valuable reference source.

The Army Research Laboratory (ARL) is the corporate laboratory for the U.S. army, which bridges scientific and military communities. The ARL is critical in maintaining the United States' dominant military power through its advanced research and analysis capabilities. The National Academies of Sciences, Engineering, and Medicine's Army Research Laboratory Technical Assessment Board (ARLTAB) conducts biennial assessments of the scientific and technical quality of the facilities. These assessments are necessary to ensure that the ARL's resources and quality of programs are maximized. 2017-2018 Assessment of the Army Research Laboratory includes findings and recommendations regarding the quality of the ARL's research, development, and analysis programs. The report of the assessment is subdivided by the ARL's Science and Technology campaigns, including Materials Research, Sciences for Lethality and Protection, Information Sciences, Computational Sciences, Sciences

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for Maneuver, Human Sciences, and Analysis and Assessment. This biennial report summarizes the findings for the 2017-2018 period.

Risk, Reliability and Safety contains papers describing innovations in theory and practice contributed to the scientific programme of the European Safety and Reliability conference (ESREL 2016), held at the University of Strathclyde in Glasgow, Scotland (25—29 September 2016). Authors include scientists, academics, practitioners, regulators and other key individuals with expertise and experience relevant to specific areas.

Papers include domain specific applications as well as general modelling methods. Papers cover evaluation of contemporary solutions, exploration of future challenges, and exposition of concepts, methods and processes.

Topics include human factors, occupational health and safety, dynamic and systems reliability modelling, maintenance optimisation, uncertainty analysis, resilience assessment, risk and crisis management.

The application of quantitative reliability evaluation in electric power systems has now evolved to the point at which most utilities use these techniques in one or more areas of their planning, design, and operation. Most of the techniques in use are based on analytical models and resulting analytical evaluation procedures.

Improvements in and availability of high-speed digital computers have created the opportunity to analyze many of these problems using stochastic simulation methods and over the last decade there has been increased interest in and use made of Monte Carlo simulation in quantitative power system reliability assessment. Monte

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Carlo simulation is not a new concept and recorded applications have existed for at least 50 yr. However, localized high-speed computers with large-capacity storage have made Monte Carlo simulation an available and sometimes preferable option for many power system reliability applications. Monte Carlo simulation is also an integral part of a modern undergraduate or graduate course on reliability evaluation of general engineering systems or specialized areas such as electric power systems. It is hoped that this textbook will help formalize the many existing applications of Monte Carlo simulation and assist in their integration in teaching programs. This book presents the basic concepts associated with Monte Carlo simulation.

The "Eddy Covariance Method for Scientific, Industrial, Agricultural and Regulatory Applications: A Field Book on Measuring Ecosystem Gas Exchange and Areal Emission Rates" book has been created to familiarize the reader with the general theoretical principles, requirements, applications, and planning and processing steps of the eddy covariance method. It is intended to assist readers in furthering their understanding of the method, and provide references such as micrometeorology textbooks, networking guidelines and journal papers. In particular, it is designed to help scientific, industrial, agricultural, and regulatory research projects and monitoring programs with field deployment of the eddy covariance method in applications beyond micrometeorology. Some of the topics covered in "Eddy Covariance Method for Scientific, Industrial, Agricultural and Regulatory

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Applications include: Overview of eddy covariance principles Planning and design of an eddy covariance experiment Implementation of an eddy covariance experiment Processing eddy covariance data Alternative flux methods Useful resources, training and knowledge base Example of planning, design and implementation of a complete eddy covariance station

Developments in Renewable Energies Offshore contains the papers presented at the 4th International Conference on Renewable Energies Offshore (RENEW 2020, Lisbon, Portugal, 12 - 15 October 2020). The book covers a wide range of topics, including: resource assessment; wind energy; wave energy; tidal energy; ocean energy devices; multiuse platforms; PTO design; grid connection; economic assessment; materials and structural design; installation planning and maintenance planning. The book will be invaluable to professionals and academics involved or interested in Offshore Engineering, and Renewable and Wind Energy.

The groundbreaking book that details the fundamentals of reliability modeling and evaluation and introduces new and future technologies Electric Power Grid Reliability Evaluation deals with the effective evaluation of the electric power grid and explores the role that this process plays in the planning and designing of the expansion of the power grid. The book is a guide to the theoretical approaches and processes that underpin the electric power grid and reviews the most current and emerging technologies designed to ensure reliability.

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The authors—noted experts in the field—also present the algorithms that have been developed for analyzing the soundness of the power grid. A comprehensive resource, the book covers probability theory, stochastic processes, and a frequency-based approach in order to provide a theoretical foundation for reliability analysis. Throughout the book, the concepts presented are explained with illustrative examples that connect with power systems. The authors cover generation adequacy methods, and multi-node analysis which includes both multi-area as well as composite power system reliable evaluation. This important book:

- Provides a guide to the basic methods of reliability modeling and evaluation
- Contains a helpful review of the background of power system reliability evaluation
- Includes information on new technology sources that have the potential to create a more reliable power grid
- Addresses renewable energy sources and shows how they affect power outages and blackouts that pose new challenges to the power grid system

Written for engineering students and professionals, Electric Power Grid Reliability Evaluation is an essential book that explores the processes and algorithms for creating a sound and reliable power grid.

DOE/RA.Electric Power SystemsAdvanced
Forecasting Techniques and Optimal Generation
SchedulingCRC Press

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Electric Power Systems: Advanced Forecasting Techniques and Optimal Generation Scheduling helps readers develop their skills in modeling, simulating, and optimizing electric power systems. Carefully balancing theory and practice, it presents novel, cutting-edge developments in forecasting and scheduling. The focus is on understanding and solving pivotal problems in the management of electric power generation systems. Methods for Coping with Uncertainty and Risk in Electric Power Generation Outlining real-world problems, the book begins with an overview of electric power generation systems. Since the ability to cope with uncertainty and risk is crucial for power generating companies, the second part of the book examines the latest methods and models for self-scheduling, load forecasting, short-term electricity price forecasting, and wind power forecasting. Toward Optimal Coordination between Hydro, Thermal, and Wind Power Using case studies, the third part of the book investigates how to achieve the most favorable use of available energy sources. Chapters in this section discuss price-based scheduling for generating companies, optimal scheduling of a hydro producer, hydro-thermal coordination, unit commitment with wind generators, and optimal optimization of multigeneration systems. Written in a pedagogical style that will appeal to graduate students, the book also expands on research results that are useful for

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engineers and researchers. It presents the latest techniques in increasingly important areas of power system operations and planning.

Power system reliability is the focus of intensive study due to its critical role in providing energy supply to modern society. This comprehensive book describes application of some new specific techniques: universal generating function method and its combination with Monte Carlo simulation and with random processes methods, Semi-Markov and Markov reward models and genetic algorithm. The book can be considered as complementary to power system reliability textbooks.

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