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Autore	Sahinoglu Mehmet <1951->
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Nota di contenuto	TRUSTWORTHY COMPUTING; CONTENTS; Foreword; Preface; Acknowledgments; 1 Fundamentals of Component and System Reliability and Review of Software Reliability; 1.1 Functions of Importance in Reliability; 1.2 Hazard Rate Functions in Reliability; 1.3 Common Distributions and Random Number Generations; 1.3.1 Uniform (Rectangular) p.d.f; 1.3.2 Triangular p.d.f.; 1.3.3 Negative Exponential p.d.f., Pareto, and Power Functions; 1.3.4 Gamma, Erlang, and Chi-Square p.d.f.'s; 1.3.5 Student's t-Distribution; 1.3.6 Fisher's F-Distribution; 1.3.7 Two- and Three-Parameter (Sahinoglu-Libby) Beta p.d.f.'s 1.3.8 Poisson p.m.f.1.3.9 Bernoulli, Binomial, and Multinomial p.m.f.'s; 1.3.10 Geometric p.m.f.; 1.3.11 Negative Binomial and Pascal p.m.f.'s; 1.3.12 Weibull p.d.f.; 1.3.13 Normal p.d.f.; 1.3.14 Lognormal p.d.f.; 1.3.15 Logistic p.d.f.; 1.3.16 Cauchy p.d.f.; 1.3.17 Hypergeometric p.m. f.; 1.3.18 Extreme Value (Gumbel) p.d.f.'s; 1.3.19 Summary of the Distributions and Relationships Most Commonly Used; 1.4 Life Testing for Component Reliability; 1.4.1 Estimation Methods for Complete Data; 1.4.2 Estimation Methods for Incomplete Data; 1.5 Redundancy in

System Reliability

1.5.1 Series System Reliability1.5.2 Active Parallel Redundancy; 1.5.3 Standby Redundancy; 1.5.4 Other Redundancy Limitations: Common-Mode Failures and Load Sharing; 1.6 Review of Software Reliability Growth Models; 1.6.1 Software Reliability Models in the Time Domain; 1.6.2 Classification of Reliability Growth Models; Appendix 1A: 500 Computer-Generated Random Numbers; References; Exercises; 2 Software Reliability Modeling with Clustered Failure Data and Stochastic Measures to Compare Predictive Accuracy of Failure-Count Models

2.1 Software Reliability Models Using the Compound Poisson Model2.1.1 Notation and Introduction; 2.1.2 Background and Motivation; 2.1.3 Maximum Likelihood Estimation in the Poisson^Geometric Model; 2.1.4 Nonlinear Regression Estimation in the Poisson^Geometric Model; 2.1.5 Calculation of Forecast Quality and Comparison of Methods; 2.1.6 Discussion and Conclusions; 2.2 Stochastic Measures to Compare Failure-Count Reliability Models; 2.2.1 Introduction and Motivation; 2.2.2 Definitions and Notation; 2.2.3 Model, Data, and Computational Formulas; 2.2.4 Prior Distribution Approach

2.2.5 Applications to Data Sets and Computations2.2.6 Discussion and Conclusions; References; Exercises; 3 Quantitative Modeling for Security Risk Assessment; 3.1 Decision Tree Model to Quantify Risk; 3.1.1 Motivation; 3.1.2 Risk Scenarios; 3.1.3 Quantitative Security Meter Model; 3.1.4 Model Application and Results; 3.1.5 Modifying the Quantitative Model for Qualitative Data; 3.1.6 Hybrid Security Meter Model for Both Quantitative and Qualitative Data; 3.1.7 Simulation Study and Conclusions; 3.2 Bayesian Applications for Prioritizing Software Maintenance; 3.2.1 Motivation

3.2.2 Bayesian Rule in Statistics and Applications for Software Maintenance

Sommario/riassunto

""The book itself is a commendable achievement, and it deals with the security and software reliability theory in an integrated fashion with emphasis on practical applications to software engineering and information technology. It is an excellent and unique book and definitely a seminal contribution and first of its kind."" -- C. V. Ramamoorthy Professor Emeritus, Electrical Engineering and Computer Science, University of California-Berkeley, and Senior Research Fellow, ICC Institute, The University of Texas-Austin, IEEE Life Fellow Trustworthy Computing: Analytical and Quantitative Engi