Software Defect And Operational Profile Modeling International Series In Software Engineering

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International Conference on Wireless, Intelligent, and Distributed Environment for Communication - Isaac Woungang 2018-04-17
This book presents the proceedings of the International Conference on Wireless Intelligent and Distributed Environment for Communication (WIDECOM 2018), organized by SRM University, NCR Campus, New Delhi, India, February 16-18, 2018. The conference focuses on challenges with respect to the dependability of integrated applications and intelligence-driven security threats against the platforms supporting these applications. The WIDECOM 2018 proceedings features papers addressing issues related to the new dependability paradigms, design, control, and management of next generation networks, performance of dependable network computing and mobile systems, protocols that deal with network computing, mobile/ubiquitous systems, cloud systems, and Internet of Things (IoT) systems. The proceeding is a valuable reference for researchers, instructors, students, scientists, engineers, managers, and industry practitioners, in industry, in the aforementioned areas. The book's structure and content is organized in such a manner that makes it useful at a variety of learning levels. Presents the proceedings of the International Conference on Wireless Intelligent and Distributed Environment for Communication (WIDECOM 2018), organized by SRM University, NCR Campus, New Delhi, India, February 16-18, 2018; Includes an array of topics related to new dependability paradigms, design, control, and management of next generation networks, performance of dependable network computing and mobile systems, protocols that deal with network computing, mobile/ubiquitous systems, cloud systems, and Internet of Things (IoT) systems; Addresses issues related to the design and performance of dependable network computing and systems and to the security of these systems.
Software Defect and Operational Profile Modeling - Kai-Yuan Cai 2012-12-06
also in: THE KLUWER INTERNATIONAL SERIES ON ASIAN STUDIES IN COMPUTER AND INFORMATION SCIENCE, Volume 1
Machine Learning in Cyber Trust - Jeffrey J. P. Tsai 2009-04-05
Many networked computer systems are far too vulnerable to cyber attacks that can inhibit their functioning, corrupt important data, or expose private information. Not surprisingly, the field of cyber-based systems is a fertile ground where many tasks can be formulated as learning problems and approached in terms of machine learning algorithms. This book contains original materials by leading researchers in the area and covers applications of different machine learning methods in the reliability, security, performance, and privacy issues of cyber space. It enables readers to discover what types of learning methods are at their disposal, summarizing the state-of-the-practice in this significant area, and giving a classification of existing work. Those working in the field of cyber-based systems, including industrial managers, researchers, engineers, and graduate and senior undergraduate students will find this an indispensable guide in creating systems resistant to and tolerant of cyber attacks.
Making Globally Distributed Software Development a Success Story - Qing Wang 2008-05-06
This volume contains papers presented at the International Conference on Software Process (ICSP 2008) held in Leipzig, Germany, during May 10-11, 2008. ICSP 2008 was the second conference of the ICSP series. The theme of ICSP 2008 was "Making Globally Distributed Software Development a Success Story. " Software developers work in a dynamic context of frequently changing technologies and with limited resources. Globally distributed development teams are under ev- increasing pressure to deliver their products more quickly and with higher levels of qu- ity. At the same time, global competition is forcing software development organizations to cut costs by rationalizing processes, outsourcing part of or all development activities, reusing existing software in new or modified applications, and evolving existing systems to meet new needs, while still minimizing the risk of projects failing to deliver. To address these difficulties, new and modified processes are emerging, including agile methods and plan-based product line development. Open Source, COTS, and com- nity-developed software are becoming more and more popular. Outsourcing coupled with 24/7 development demands well-defined processes to support the coordination of organizationally—and geographically—separated teams. The accepted papers present completed research or advanced work-in-progress in all areas of software and systems development process including: agile software pr- esses, CMMI, novel techniques for software process representation and analysis; process tools and metrics; and the simulation and modeling of software processes. Contributions reflecting real-world experience, or derived directly from industrial or open-source software development and evolution, were particularly welcome.
Early Software Reliability Prediction - Ajeet Kumar Pandey 2013-07-12
The development of software system with acceptable level of reliability and quality within available time frame and budget becomes a challenging objective. This objective could be achieved to some extent through early prediction of number of faults present in the software, which reduces the cost of development as it provides an opportunity to make early corrections during development process. The book presents an early software reliability prediction model that will help to grow the reliability of the software systems by monitoring it in each development phase, i.e. from requirement phase to testing phase. Different approaches are discussed in this book to tackle this challenging issue. An important approach presented in this book is a model to classify the modules into two categories (a) fault-prone and (b) not fault-prone. The methods presented in this book for assessing expected number of faults present in the software, assessing expected number of faults present at the end of each phase and classification of software modules in fault-prone or no fault-prone category are easy to understand, develop and use for any practitioner. The practitioners are expected to gain more information about their development process and product reliability, which can help to optimize the resources used.
Recent Advancements in Software Reliability Assurance - Adarsh Anand 2019-04-08
The aim of this book is to provide a platform to academicians, practitioners, and researchers to understand current and future trends in software reliability growth modeling. Emphasis will be on qualitative work relevant to the theme with particular importance given to mathematical modeling for software reliability and various methods and applications of multi attributed decision making in governing the software performance. Presents software quality and security models Offers reliability analysis, assurance techniques for software systems Covers methodologies, tools, and practical applications of software reliability modeling and testing resources Includes robust reliability design techniques, diagnostic, and decision support Discusses stochastic modelling for software systems
Automated Biometrics - David D. Zhang 2013-11-11
Biometrics-based authentication and identification are emerging as the most reliable method to authenticate and identify individuals. Biometrics requires that the person to be identified be physically present at the point-of-identification and relies on `something which you are or you do' to provide better security, increased efficiency, and improved accuracy. Automated biometrics deals with physiological or behavioral characteristics such as fingerprints, signature, palmprint, iris, hand, voice and face that can be used to authenticate a person's identity or establish an identity from a database. With rapid progress in electronic

and Internet commerce, there is also a growing need to authenticate the identity of a person for secure transaction processing. Designing an automated biometrics system to handle large population identification, accuracy and reliability of authentication are challenging tasks. Currently, there are over ten different biometrics systems that are either widely used or under development. Some automated biometrics, such as fingerprint identification and speaker verification, have received considerable attention over the past 25 years, and some issues like face recognition and iris-based authentication have been studied extensively resulting in successful development of biometrics systems in commercial applications. However, very few books are exclusively devoted to such issues of automated biometrics. Automated Biometrics: Technologies and Systems systematically introduces the technologies and systems, and explores how to design the corresponding systems with in-depth discussion. The issues addressed in this book are highly relevant to many fundamental concerns of both researchers and practitioners of automated biometrics in computer and system security.

Analytic Methods in Systems and Software Testing - Ron S. Kenett 2018-09-04

A comprehensive treatment of systems and software testing using state of the art methods and tools This book provides valuable insights into state of the art software testing methods and explains, with examples, the statistical and analytic methods used in this field. Numerous examples are used to provide understanding in applying these methods to real-world problems. Leading authorities in applied statistics, computer science, and software engineering present state-of-the-art methods addressing challenges faced by practitioners and researchers involved in system and software testing. Methods include: machine learning, Bayesian methods, graphical models, experimental design, generalized regression, and reliability modeling. Analytic Methods in Systems and Software Testing presents its comprehensive collection of methods in four parts: Part I: Testing Concepts and Methods; Part II: Statistical Models; Part III: Testing Infrastructures; and Part IV: Testing Applications. It seeks to maintain a focus on analytic methods, while at the same time offering a contextual landscape of modern engineering, in order to introduce related statistical and probabilistic models used in this domain. This makes the book an incredibly useful tool, offering interesting insights on challenges in the field for researchers and practitioners alike. Compiles cutting-edge methods and examples of analytical approaches to systems and software testing from leading authorities in applied statistics, computer science, and software engineering Combines methods and examples focused on the analytic aspects of systems and software testing Covers logistic regression, machine learning, Bayesian methods, graphical models, experimental design, generalized regression, and reliability models Written by leading researchers and practitioners in the field, from diverse backgrounds including research, business, government, and consulting Stimulates research at the theoretical and practical level Analytic Methods in Systems and Software Testing is an excellent advanced reference directed toward industrial and academic readers whose work in systems and software development approaches or surpasses existing frontiers of testing and validation procedures. It will also be valuable to post-graduate students in computer science and mathematics.

Engineering Secure Software and Systems - Fabio MASSACCI 2009-03-27

This book constitutes the refereed proceedings of the First International Symposium on Engineering Secure Software and Systems, ESSoS 2009, held in Leuven, Belgium, in February 2009. The 10 revised full papers presented together with 7 industry reports and ideas papers were carefully reviewed and selected from 57 submissions. The papers are organized in topical sections on policy verification and enforcement, model refinement and program transformation, secure system development, attack analysis and prevention, as well as testing and assurance.

Performance Evaluation, Prediction and Visualization of Parallel Systems - Xingfu Wu 2012-12-06

Performance Evaluation, Prediction and Visualization in Parallel Systems presents a comprehensive and systematic discussion of theoretics, methods, techniques and tools for performance evaluation, prediction and visualization of parallel systems. Chapter 1 gives a short overview of performance degradation of parallel systems, and presents a general discussion on the importance of performance evaluation, prediction and visualization of parallel systems. Chapter 2 analyzes and defines several kinds of serial and parallel runtime, points out some of the weaknesses of parallel speedup metrics, and discusses how to improve and generalize them. Chapter 3 describes formal definitions of scalability, addresses the basic metrics affecting the scalability of parallel systems, discusses scalability of parallel systems from three aspects: parallel architecture, parallel algorithm and parallel algorithm-architecture combinations, and analyzes the relations of scalability and speedup. Chapter 4 discusses the methodology of performance measurement, describes the benchmark-oriented performance test and analysis and how to measure speedup and scalability in practice. Chapter 5 analyzes the difficulties in performance prediction, discusses application-oriented and architecture-oriented performance prediction and how to predict speedup and scalability in practice. Chapter 6 discusses performance visualization techniques and tools for parallel systems from three stages: performance data collection, performance data filtering and performance data visualization, and classifies the existing performance visualization tools. Chapter 7 describes parallel compiling-based, search-based and knowledge-based performance debugging, which assists programmers to optimize the strategy or algorithm in their parallel programs, and presents visual programming-based performance debugging to help programmers identify the location and cause of the performance problem. It also provides concrete suggestions on how to modify their parallel program to improve the performance. Chapter 8 gives an overview of current interconnection networks for parallel systems, analyzes the scalability of interconnection networks, and discusses how to measure and improve network performances. Performance Evaluation, Prediction and Visualization in Parallel Systems serves as an excellent reference for researchers, and may be used as a text for advanced courses on the topic.

Reliability Modeling With Computer And Maintenance Applications - Nakamura Syouji 2017-06-07

The development of Reliability and Maintenance theory and applications has become major concerns of engineers and managers engaged in order to design and product systems that are highly reliable. This book aims to cover the ongoing research topics in computer system, reliability analysis, reliability applications and maintenance policies, so as to provide awareness for those who engage systems design, being students, technicians, or research engineers, as a reference guidebook.

Encyclopedia of Software Engineering Three-Volume Set (Print) - Phillip A. Laplante 2010-11-22

Software engineering requires specialized knowledge of a broad spectrum of topics, including the construction of software and the platforms, applications, and environments in which the software operates as well as an understanding of the people who build and use the software. Offering an authoritative perspective, the two volumes of the Encyclopedia of Software Engineering cover the entire multidisciplinary scope of this important field. More than 200 expert contributors and reviewers from industry and academia across 21 countries provide easy-to-read entries that cover software requirements, design, construction, testing, maintenance, configuration management, quality control, and software engineering management tools and methods. Editor Phillip A. Laplante uses the most universally recognized definition of the areas of relevance to software engineering, the Software Engineering Body of Knowledge (SWEBOK®), as a template for organizing the material. Also available in an electronic format, this encyclopedia supplies software engineering students, IT professionals, researchers, managers, and scholars with unrivaled coverage of the topics that encompass this ever-changing field. Also Available Online This Taylor & Francis encyclopedia is also available through online subscription, offering a variety of extra benefits for researchers, students, and librarians, including: Citation tracking and alerts Active reference linking Saved searches and marked lists HTML and PDF format options Contact Taylor and Francis for more information or to inquire about subscription options and print/online combination packages. US: (Tel) 1.888.318.2367; (E-mail) e-reference@taylorandfrancis.com International: (Tel) +44 (0) 20 7017 6062; (E-mail) online.sales@tandf.co.uk

Robust Model-Based Fault Diagnosis for Dynamic Systems - Jie Chen 2012-12-06

There is an increasing demand for dynamic systems to become more safe and reliable. This requirement extends beyond the normally accepted safety-critical systems of nuclear reactors and aircraft where safety is paramount important, to systems such as autonomous vehicles and fast railways where the system availability is vital. It is clear that fault diagnosis (including fault detection and isolation, FDI) has been becoming an important subject in modern control theory and practice. For example, the number of papers on FDI presented in many control-related conferences has been increasing steadily. The subject of fault

detection and isolation continues to mature to an established field of research in control engineering. A large amount of knowledge on model-based fault diagnosis has been ac cumulated through the literature since the beginning of the 1970s. However, publications are scattered over many papers and a few edited books. Up to the end of 1997, there is no any book which presents the subject in an unified framework. The consequence of this is the lack of "common language", dif ferent researchers use different terminology. This problem has obstructed the progress of model-based FDI techniques and has been causing great concern in research community. Many survey papers have been published to tackle this problem. However, a book which presents the materials in a unified format and provides a comprehensive foundation of model-based FDI is urgently needed.

Intelligent Systems and Applications - Kohei Arai 2021-08-02

This book presents Proceedings of the 2021 Intelligent Systems Conference which is a remarkable collection of chapters covering a wider range of topics in areas of intelligent systems and artificial intelligence and their applications to the real world. The conference attracted a total of 496 submissions from many academic pioneering researchers, scientists, industrial engineers, and students from all around the world. These submissions underwent a double-blind peer-review process. Of the total submissions, 180 submissions have been selected to be included in these proceedings. As we witness exponential growth of computational intelligence in several directions and use of intelligent systems in everyday applications, this book is an ideal resource for reporting latest innovations and future of AI. The chapters include theory and application on all aspects of artificial intelligence, from classical to intelligent scope. We hope that readers find the book interesting and valuable; it provides the state-of-the-art intelligent methods and techniques for solving real-world problems along with a vision of the future research.

Common Waveform Analysis - Yuchuan Wei 2012-12-06

Common Waveform Analysis, which will be of interest to both electrical engineers and mathematicians, applies the classic Fourier analysis to common waveforms. The following questions are answered: Can a signal be considered a superposition of common waveforms with different frequencies? How can a signal be decomposed into a series of common waveforms? How can a signal best be approximated using finite common waveforms? How can a combination of common waveforms that equals a given signal at N uniform points be found? Can common waveforms be used in techniques that have traditionally been based on sine-cosine functions? Common Waveform Analysis represents the most advanced research available to research scientists and scholars working in fields related to the area.

Data Management and Internet Computing for Image/Pattern Analysis - David D. Zhang 2012-12-06

Data Management and Internet Computing for Image/Pattern Analysis focuses on the data management issues and Internet computing aspect of image processing and pattern recognition research. The book presents a comprehensive overview of the state of the art, providing detailed case studies that emphasize how image and pattern (IAP) data are distributed and exchanged on sequential and parallel machines, and how the data communication patterns in low- and higher-level IAP computing differ from general numerical computation, what problems they cause and what opportunities they provide. The studies also describe how the images and matrices should be stored, accessed and distributed on different types of machines connected to the Internet, and how Internet resource sharing and data transmission change traditional IAP computing. Data Management and Internet Computing for Image/Pattern Analysis is divided into three parts: the first part describes several software approaches to IAP computing, citing several representative data communication patterns and related algorithms; the second part introduces hardware and Internet resource sharing in which a wide range of computer architectures are described and memory management issues are discussed; and the third part presents applications ranging from image coding, restoration and progressive transmission. Data Management and Internet Computing for Image/Pattern Analysis is an excellent reference for researchers and may be used as a text for advanced courses in image processing and pattern recognition.

Handbook of Reliability Engineering - Hoang Pham 2006-04-18

An effective reliability programme is an essential component of every product's design, testing and efficient production. From the failure analysis of a microelectronic device to software fault tolerance and from the accelerated life testing of mechanical components to hardware verification, a common underlying philosophy of reliability applies. Defining both fundamental and applied work across the entire systems reliability arena, this state-of-the-art reference presents methodologies for quality, maintainability and dependability. Featuring: Contributions from 60 leading reliability experts in academia and industry giving comprehensive and authoritative coverage. A distinguished international Editorial Board ensuring clarity and precision throughout. Extensive references to the theoretical foundations, recent research and future directions described in each chapter. Comprehensive subject index providing maximum utility to the reader. Applications and examples across all branches of engineering including IT, power, automotive and aerospace sectors. The handbook's cross-disciplinary scope will ensure that it serves as an indispensable tool for researchers in industrial, electrical, electronics, computer, civil, mechanical and systems engineering. It will also aid professional engineers to find creative reliability solutions and management to evaluate systems reliability and to improve processes. For student research projects it will be the ideal starting point whether addressing basic questions in communications and electronics or learning advanced applications in micro-electro-mechanical systems (MEMS), manufacturing and high-assurance engineering systems.

Proceedings of the XVII International symposium Symorg 2020 - Dušan Starčević 2020-06-30

Ever since 1989, the Faculty of Organizational Sciences, University of Belgrade, has been the host of SymOrg, an event that promotes scientific disciplines of organizing and managing a business. Traditionally, the Symposium has been an opportunity for its participants to share and exchange both academic and practical knowledge and experience in a pleasant and creative atmosphere. This time, however, due the challenging situation regarding the COVID-19 pandemic, we have decided that all the essential activities planned for the International Symposium SymOrg 2020 should be carried out online between the 7th and the 9th of September 2020. We are very pleased that the topic of SymOrg 2020, “Business and Artificial Intelligence”, attracted researchers from different institutions, both in Serbia and abroad. Why is artificial intelligence a disruptive technology? Simply because “it significantly alters the way consumers, industries, or businesses operate.” According to the European Commission document titled Artificial Intelligence for Europe 2018, AI is a key disruptive technology that has just begun to reshape the world. The Government of the Republic of Serbia has also recognized the importance of AI for the further development of its economy and society and has prepared an AI Development Strategy for the period between 2020 and 2025. The first step has already been made: the Science Fund of the Republic of Serbia, after a public call, has selected and financed twelve AI projects. This year, more than 200 scholars and practitioners authored and co-authored the 94 scientific and research papers that had been accepted for publication in the Proceedings. All the contributions to the Proceedings are classified into the following 11 sections: Information Systems and Technologies in the Era of Digital Transformation Smart Business Models and Processes Entrepreneurship, Innovation and Sustainable Development Smart Environment for Marketing and Communications Digital Human Resource Management Smart E-Business Quality 4.0 and International Standards Application of Artificial Intelligence in Project Management Digital and Lean Operations Management Transformation of Financial Services Methods and Applications of Data Science in Business and Society We are very grateful to our distinguished keynote speakers: Prof. Moshe Vardi, Rice University, USA, Prof. Blaž Zupan, University of Ljubljana, Slovenia, Prof. Vladan Devedžić, University of Belgrade, Serbia, Milica Đurić-Jovičić, PhD, Director, Science Fund of the Republic of Serbia, and Harri Ketamo, PhD, Founder & Chairman of HeadAI ltd., Finland. Also, special thanks to Prof. Dragan Vukmirović, University of Belgrade, Serbia and Prof. Zoran Ševarac, University of Belgrade, Serbia for organizing workshops in fields of Data Science and Machine Learning and to Prof. Rade Matić, Belgrade Business and Arts Academy of Applied Studies and Milan Dobrota, PhD, CEO at Agremo, Serbia, for their valuable contribution in presenting Serbian experiences in the field of AI. The Faculty of Organizational Sciences would to express its gratitude to the Ministry of Education, Science and Technological Development and all the individuals who have supported and contributed to the organization of the Symposium. We are particularly grateful to the contributors and reviewers who made this issue possible. But above all, we are especially thankful to the authors and presenters for making the SymOrg 2020 a success!

Strategic Engineering for Cloud Computing and Big Data Analytics - Amin Hosseinian-Far 2017-02-13

This book demonstrates the use of a wide range of strategic engineering

concepts, theories and applied case studies to improve the safety, security and sustainability of complex and large-scale engineering and computer systems. It first details the concepts of system design, life cycle, impact assessment and security to show how these ideas can be brought to bear on the modeling, analysis and design of information systems with a focused view on cloud-computing systems and big data analytics. This informative book is a valuable resource for graduate students, researchers and industry-based practitioners working in engineering, information and business systems as well as strategy.

Machine Learning Applications In Software Engineering - Du Zhang 2005-02-21

Machine learning deals with the issue of how to build computer programs that improve their performance at some tasks through experience. Machine learning algorithms have proven to be of great practical value in a variety of application domains. Not surprisingly, the field of software engineering turns out to be a fertile ground where many software development and maintenance tasks could be formulated as learning problems and approached in terms of learning algorithms. This book deals with the subject of machine learning applications in software engineering. It provides an overview of machine learning, summarizes the state-of-the-practice in this niche area, gives a classification of the existing work, and offers some application guidelines. Also included in the book is a collection of previously published papers in this research area.

Handbook of Research on Emerging Advancements and Technologies in Software Engineering - Ghani, Imran 2014-04-30

Advanced approaches to software engineering and design are capable of solving complex computational problems and achieving standards of performance that were unheard of only decades ago. Handbook of Research on Emerging Advancements and Technologies in Software Engineering presents a comprehensive investigation of the most recent discoveries in software engineering research and practice, with studies in software design, development, implementation, testing, analysis, and evolution. Software designers, architects, and technologists, as well as students and educators, will find this book to be a vital and in-depth examination of the latest notable developments within the software engineering community.

Fuzzy Cognitive Maps - Michael Glykas 2010-09-07

This important edited volume is the first such book ever published on fuzzy cognitive maps (FCMs). Professor Michael Glykas has done an exceptional job in bringing together and editing its seventeen chapters. The volume appears nearly a quarter century after my original article “Fuzzy Cognitive Maps” appeared in the International Journal of Man-Machine Studies in 1986. The volume accordingly reflects many years of research effort in the development of FCM theory and applications—and portends many more decades of FCM research and applications to come. FCMs are fuzzy feedback models of causality. They combine aspects of fuzzy logic, neural networks, semantic networks, expert systems, and nonlinear dynamical systems. That rich structure endows FCMs with their own complexity and lets them apply to a wide range of problems in engineering and in the soft and hard sciences. Their partial edge connections allow a user to directly represent causality as a matter of degree and to learn new edge strengths from training data. Their directed graph structure allows forward or what-if inferencing. FCM cycles or feedback paths allow for complex nonlinear dynamics. Control of FCM nonlinear dynamics can in many cases let the user encode and decode concept patterns as fixed-point attractors or limit cycles or perhaps as more exotic dynamical equilibria. These global equilibrium patterns are often “hidden” in the nonlinear dynamics. The user will not likely see these global patterns by simply inspecting the local causal edges or nodes of large FCMs.

Advances in Software Engineering - Dominik Ślęzak 2009-11-18

As future generation information technology (FGIT) becomes specialized and fr- mented, it is easy to lose sight that many topics in FGIT have common threads and, because of this, advances in one discipline may be transmitted to others. Presentation of recent results obtained in different disciplines encourages this interchange for the advancement of FGIT as a whole. Of particular interest are hybrid solutions that c- bine ideas taken from multiple disciplines in order to achieve something more signi- cant than the sum of the individual parts. Through such hybrid philosophy, a new principle can be discovered, which has the propensity to propagate throughout mul- faceted disciplines. FGIT 2009 was the first mega-conference that attempted to follow the above idea of hybridization in FGIT in a form of multiple events related to particular disciplines of IT, conducted by separate scientific committees, but coordinated in order to expose the most important contributions. It included the following international conferences: Advanced Software Engineering and Its Applications (ASEA), Bio-Science and Bio- Technology (BSBT), Control and Automation (CA), Database Theory and Appli- tion (DTA), Disaster Recovery and Business Continuity (DRBC; published indepe- ently), Future Generation Communication and Networking (FGCN) that was c-bined with Advanced Communication and Networking (ACN), Grid and Distributed Computing (GDC), Multimedia, Computer Graphics and Broadcasting (MulGraB), Security Technology (SecTech), Signal Processing, Image Processing and Pattern Recognition (SIP), and u- and e-Service, Science and Technology (UNESST).

Intelligent Building Systems - Albert Ting-pat So 2012-12-06

Intelligent building is the future of our building industry; all commercial, residential, industrial and institutional buildings will be designed towards the goal of `intelligent buildings'. The most important aspect of an intelligent building is the building systems, such as electrical services, heating, ventilation and air-conditioning systems, vertical transportation systems, and life safety systems, which must operate intelligently and efficiently to enhance the activities of the occupants. Intelligent Building Systems explains what already exists in a modern intelligent building and describes what is currently being developed by researchers to improve human comfort, working efficiency and energy performance for buildings in the 21st century. Intelligent Building Systems is divided into three parts. The first part gives a quick review of the structure, terminology, layout and operating principles of most standard modern building systems. The second part introduces the background material necessary to understand intelligent building systems, including information on electronics technology, fundamental mathematics, and techniques in artificial intelligence and signal processing. These first two parts are the foundation for the final part, which consists of research works carried out by the authors and other researchers in the application of artificial intelligence to building systems. The technologies presented will encourage readers to envision new and innovative ideas on possible future applications. Intelligent Building Systems is relevant to practitioners and researchers in the area of architectural science and engineering, electrical and mechanical services and intelligent buildings. It may also be used as a text for advanced courses on the topic.

Software Defect and Operational Profile Modeling - Kai-Yuan Cai 1998-08-31

Software Defect and Operational Profile Modeling presents a systematic discussion of three important questions in software reliability engineering: how to estimate the number of software defects; how to model software operational profiles; and how to estimate software failure rate and quantify software correctness when testing reveals no failures. Researchers will find that this book presents a reasonable summary of related topics and contains a modest amount of original and new research results. Practitioners will find that this book is a readable reference. Methods are systematically formulated and carefully examined. Advantages and disadvantages of the discussed methods are analyzed. Students will find this book serves as supplementary reading in a software (reliability) engineering course. Problems included in the Remarks and Problems section of each chapter can be used for the classroom purpose.

Automated Software Testing - Ajay Kumar Jena 2020-02-03

This book covers both theory and applications in the automation of software testing tools and techniques for various types of software (e.g. object-oriented, aspect-oriented, and web-based software). When software fails, it is most often due to lack of proper and thorough testing, an aspect that is even more acute for object-oriented, aspect-oriented, and web-based software. Further, since it is more difficult to test distributed and service-oriented architecture-based applications, there is a pressing need to discuss the latest developments in automated software testing. This book discusses the most relevant issues, models, tools, challenges, and applications in automated software testing. Further, it brings together academic researchers, scientists, and engineers from a wide range of industrial application areas, who present their latest findings and identify future challenges in this fledging research area.

Testing Object-oriented Systems - Robert Binder 2000

More than ever, mission-critical and business-critical applications depend on object-oriented (OO) software. Testing techniques tailored to the unique challenges of OO technology are necessary to achieve high reliability and quality. "Testing Object-Oriented Systems: Models, Patterns, and Tools" is an authoritative guide to designing and automating test suites for OO applications. This comprehensive book

explains why testing must be model-based and provides in-depth coverage of techniques to develop testable models from state machines, combinational logic, and the Unified Modeling Language (UML). It introduces the test design pattern and presents 37 patterns that explain how to design responsibility-based test suites, how to tailor integration and regression testing for OO code, how to test reusable components and frameworks, and how to develop highly effective test suites from use cases. Effective testing must be automated and must leverage object technology. The author describes how to design and code specification-based assertions to offset testability losses due to inheritance and polymorphism. Fifteen micro-patterns present oracle strategies--practical solutions for one of the hardest problems in test design. Seventeen design patterns explain how to automate your test suites with a coherent OO test harness framework. The author provides thorough coverage of testing issues such as: The bug hazards of OO programming and differences from testing procedural code How to design responsibility-based tests for classes, clusters, and subsystems using class invariants, interface data flow models, hierarchic state machines, class associations, and scenario analysis How to support reuse by effective testing of abstract classes, generic classes, components, and frameworks How to choose an integration strategy that supports iterative and incremental development How to achieve comprehensive system testing with testable use cases How to choose a regression test approach How to develop expected test results and evaluate the post-test state of an object How to automate testing with assertions, OO test drivers, stubs, and test frameworks Real-world experience, world-class best practices, and the latest research in object-oriented testing are included. Practical examples illustrate test design and test automation for Ada 95, C++, Eiffel, Java, Objective-C, and Smalltalk. The UML is used throughout, but the test design patterns apply to systems developed with any OO language or methodology. 0201809389B04062001

Nonlinear Control Systems and Power System Dynamics - Qiang Lu 2013-04-17

Nonlinear Control Systems and Power System Dynamics presents a comprehensive description of nonlinear control of electric power systems using nonlinear control theory, which is developed by the differential geometric approach and nonlinear robust control method. This book explains in detail the concepts, theorems and algorithms in nonlinear control theory, illustrated by step-by-step examples. In addition, all the mathematical formulation involved in deriving the nonlinear control laws of power systems are sufficiently presented. Considerations and cautions involved in applying nonlinear control theory to practical engineering control designs are discussed and special attention is given to the implementation of nonlinear control laws using microprocessors. Nonlinear Control Systems and Power System Dynamics serves as a text for advanced level courses and is an excellent reference for engineers and researchers who are interested in the application of modern nonlinear control theory to practical engineering control designs.

Domain Modeling-Based Software Engineering - Ruqian Lu 2012-12-06

Many approaches have been proposed to enhance software productivity and reliability. These approaches typically fall into three categories: the engineering approach, the formal approach, and the knowledge-based approach. The optimal gain in software productivity cannot be obtained if one relies on only one of these approaches. Thus, the integration of different approaches has also become a major area of research. No approach can be said to be perfect if it fails to satisfy the following two criteria. Firstly, a good approach should support the full life cycle of software development. Secondly, a good approach should support the development of large-scale software for real use in many application domains. Such an approach can be referred to as a five-in-one approach. The authors of this book have, for the past eight years, conducted research in knowledge-based software engineering, of which the final goal is to develop a paradigm for software engineering which not only integrates the three approaches mentioned above, but also fulfils the two criteria on which the five-in-one approach is based. Domain Modeling-Based Software Engineering: A Formal Approach explores the results of this research. Domain Modeling-Based Software Engineering: A Formal Approach will be useful to researchers of knowledge-based software engineering, students and instructors of computer science, and software engineers who are working on large-scale projects of software development and want to use knowledge-based development methods in their work.

Achieving Quality in Software - S. Bologna 2013-11-11

Software quality is a generalised statement difficult to agree or disagree with until a precise definition of the concept of "Software Quality" is reached in terms of measurable quantities. Unfortunately, for the software technology the basic question of: • what to measure; • how to measure; • when to measure; • how to deal with the data obtained are still unanswered and are also closely dependant on the field of application. In the past twenty years or more there have been a number of conferences and debates focusing on the concept of Software Quality, which produced no real industrial impact. Recently, however, the implementation of a few generic standards (ISO 9000, IEEE etc.) has produced and improved application of good practice principles at the industrial level. As a graduate in PhYSiCS, I still believe it is a long way before the concept of Software Quality can be defined exactly and measured, if ever. This is way I think the AQuIS series of conferences is important, its object begin to provide a platform for the transfer of technology and know how between Academic, Industrial and Research Institutions, in the field of Software Quality. Their objects are: • to provide a forum for the introduction and discussion of new research breakthroughs in Software Quality; • to provide professional Software Quality engineers with the necessary exposure to the results of current research; • to expose the research community to the problems of practical application of new results.

Fuzzy Logic and Soft Computing - Guoqing Chen 2012-12-06

Fuzzy Logic and Soft Computing contains contributions from world-leading experts from both the academic and industrial communities. The first part of the volume consists of invited papers by international authors describing possibilistic logic in decision analysis, fuzzy dynamic programming in optimization, linguistic modifiers for word computation, and theoretical treatments and applications of fuzzy reasoning. The second part is composed of eleven contributions from Chinese authors focusing on some of the key issues in the fields: stable adaptive fuzzy control systems, partial evaluations and fuzzy reasoning, fuzzy wavelet neural networks, analysis and applications of genetic algorithms, partial repeatability, rough set reduction for data enriching, limits of agents in process calculus, medium logic and its evolution, and factor spaces canes. These contributions are not only theoretically sound and well-formulated, but are also coupled with applicability implications and/or implementation treatments. The domains of applications realized or implied are: decision analysis, word computation, databases and knowledge discovery, power systems, control systems, and multi-destinational routing. Furthermore, the articles contain materials that are an outgrowth of recently conducted research, addressing fundamental and important issues of fuzzy logic and soft computing.

Simple Statistical Methods for Software Engineering - C. Ravindranath Pandian 2015-05-21

Although there are countless books on statistics, few are dedicated to the application of statistical methods to software engineering. Simple Statistical Methods for Software Engineering: Data and Patterns fills that void. Instead of delving into overly complex statistics, the book details simpler solutions that are just as effective and connect with the intuition of problem solvers. Sharing valuable insights into software engineering problems and solutions, the book not only explains the required statistical methods, but also provides many examples, review questions, and case studies that provide the understanding required to apply those methods to real-world problems. After reading this book, practitioners will possess the confidence and understanding to solve day-to-day problems in quality, measurement, performance, and benchmarking. By following the examples and case studies, students will be better prepared able to achieve seamless transition from academic study to industry practices. Includes boxed stories, case studies, and illustrations that demonstrate the nuances behind proper application Supplies historical anecdotes and traces statistical methods to inventors and gurus Applies basic statistical laws in their simplest forms to resolve engineering problems Provides simple techniques for addressing the issues software engineers face The book starts off by reviewing the essential facts about data. Next, it supplies a detailed review and summary of metrics, including development, maintenance, test, and agile metrics. The third section covers the fundamental laws of probability and statistics and the final section presents special data patterns in the form of tailed mathematical distributions. In addition to selecting simpler and more flexible tools, the authors have also simplified several standard techniques to provide you with the set of intellectual tools all software engineers and managers require.

Computational Intelligence in Reliability Engineering - Gregory Levitin 2006-10-25

This volume includes chapters presenting applications of different

metaheuristics in reliability engineering, including ant colony optimization, great deluge algorithm, cross-entropy method and particle swarm optimization. It also presents chapters devoted to cellular automata and support vector machines, and applications of artificial neural networks, a powerful adaptive technique that can be used for learning, prediction and optimization. Several chapters describe aspects of imprecise reliability and applications of fuzzy and vague set theory.

Product-Focused Software Process Improvement - Muhammad Ali Babar 2010-06-11

This book constitutes the refereed proceedings of the 11th International Conference on Product-Focused Software Process Improvement, PROFES 2010, held in Limerick, Ireland, in June 2010. The 28 revised full papers presented together with the abstracts of 2 keynote addresses were carefully reviewed and selected from numerous submissions. The papers are organized in topical sections on software quality assurance; agile software development; software business; software systems; process quality; software measurement; and software process improvement.

Product Focused Software Process Improvement - Frank Bomarius 2004-02-02

This book constitutes the refereed proceedings of the Second International Conference on Product Focused Software Process Improvement, PROFES 2000, held in Oulu, Finland, in June 2000.The 30 revised full papers presented were carefully reviewed and selected from a total of 60 submitted full papers. The book is divided into topical sections on process improvement, empirical software engineering, industrial experiences, methods and tools, software process and modeling, software and process measurement, and organizational learning and experience factory.

Proceedings - International Computer Software & Applications Conference 2002

Quality Of Protection - Dieter Gollmann 2008-05-06

Quality of Protection: Security Measurements and Metrics is an edited volume based on the Quality of Protection Workshop in Milano, Italy (September 2005). This volume discusses how security research can progress towards quality of protection in security comparable to quality of service in networking and software measurements, and metrics in empirical software engineering. Information security in the business setting has matured in the last few decades. Standards such as IS017799, the Common Criteria (ISO15408), and a number of industry certifications and risk analysis methodologies have raised the bar for good security solutions from a business perspective. Designed for a professional audience composed of researchers and practitioners in industry, Quality of Protection: Security Measurements and Metrics is also suitable for advanced-level students in computer science.

Software Reliability Techniques for Real-World Applications - Roger K. Youree 2022-12-23

SOFTWARE RELIABILITY TECHNIQUES FOR REAL-WORLD APPLICATIONS SOFTWARE RELIABILITY TECHNIQUES FOR REAL-WORLD APPLICATIONS Authoritative resource providing step-by-step guidance for producing reliable software to be tailored for specific projects Software Reliability Techniques for Real-World Applications is a practical, up to date, go-to source that can be referenced repeatedly to efficiently prevent software defects, find and correct defects if they occur, and create a higher level of confidence in software products. From content development to software support and maintenance, the author creates a depiction of each phase in a project such as design and coding, operation and maintenance, management, product production, and concept development and describes the activities and products needed for each. Software Reliability Techniques for Real-World Applications introduces clear ways to understand each process of software reliability and explains how it can be managed effectively and reliably. The book is supported by a plethora of detailed examples and systematic approaches, covering analogies between hardware and software reliability to ensure a clear understanding. Overall, this book helps readers create a higher level of confidence in software products. In Software Reliability Techniques for Real-World Applications, readers will find specific information on: Defects, including where defects enter the project system, effects, detection, and causes of defects, and how to handle defects Project phases, including concept development and planning, requirements and interfaces, design and coding, and integration, verification, and validation Roadmap and practical guidelines, including at the start of a project, as a member of an organization, and how to handle troubled projects Techniques, including an introduction to techniques in general, plus techniques by organization (systems engineering, software, and reliability engineering) Software Reliability Techniques for Real-World Applications is a practical text on software reliability, providing over sixty-five different techniques and step-by-step guidance for producing reliable software. It is an essential and complete resource on the subject for software developers, software maintainers, and producers of software.

Informatics, Networking and Intelligent Computing - Jiaxing Zhang 2015-05-06

This proceedings volume contains selected papers presented at the 2014 International Conference on Informatics, Networking and Intelligent Computing, held in Shenzhen, China. Contributions cover the latest developments and advances in the field of Informatics, Networking and Intelligent Computing.

Research Anthology on Usage and Development of Open Source Software - Management Association, Information Resources 2021-06-25

The quick growth of computer technology and development of software caused it to be in a constant state of change and advancement. This advancement in software development meant that there would be many types of software developed in order to excel in usability and efficiency. Among these different types of software was open source software, one that grants permission for users to use, study, change, and distribute it freely. Due to its availability, open source software has quickly become a valuable asset to the world of computer technology and across various disciplines including education, business, and library science. The Research Anthology on Usage and Development of Open Source Software presents comprehensive research on the design and development of open source software as well as the ways in which it is used. The text discusses in depth the way in which this computer software has been made into a collaborative effort for the advancement of software technology. Discussing topics such as ISO standards, big data, fault prediction, open collaboration, and software development, this anthology is essential for computer engineers, software developers, IT specialists and consultants, instructors, librarians, managers, executives, professionals, academicians, researchers, and students.