

Software Engineering David Kung

With 14 chapters written by leading experts and educators, this book covers a wide range of topics from teaching philosophy and curriculum development to symbolic and algebraic manipulation and automated geometric reasoning, and to the design and implementation of educational software and integrated teaching and learning environments. The book may serve as a useful reference for researchers, educators, and other professionals interested in developing, using, and practising methodologies and software tools of symbolic computation for education from the secondary to the undergraduate level.

Object-oriented programming increases software reusability, extensibility, interoperability, and reliability. Software testing is necessary to realize these benefits. Software testing aims to uncover as many programming errors as possible at a minimum cost. A major challenge to the software engineering community remains how to reduce the cost and improve the quality of software testing. The requirements for testing object-oriented programs differ from those for testing conventional programs. Testing Object-Oriented Software illustrates these differences and discusses object-oriented software testing problems, focusing on the difficulties and challenges testers face. The book provides a general framework for class- and system-level testing and examines object-oriented design criteria and high testability metrics. It offers object-oriented testing techniques, ideas and methods for unit testing, and object-oriented program integration-testing strategy. Readers are shown how they can drastically reduce regression test costs, presented with steps for object-oriented testing, and introduced to object-oriented test tools and systems. In addition to software testing problems, the text covers various test methods developers can use during the design phase to generate programs with good testability. The book's intended audience includes object-oriented program testers, program developers, software project managers, and researchers working with object-oriented testing.

"Sleep is one of the most important but least understood aspects of our life, wellness, and longevity ... An explosion of scientific discoveries in the last twenty years has shed new light on this fundamental aspect of our lives. Now ... neuroscientist and sleep expert Matthew Walker gives us a new understanding of the vital importance of sleep and dreaming"--Amazon.com.

Readers of all levels stand to benefit from this book's coverage of SUSE's ability to play MP3s and DVDs, burn CDs, perform office tasks and data backups, and offer a secure operating system environment. Whether it is a reader evaluating SUSE for deployment in a corporate environment, or a student interested in foregoing expensive licensing arrangements, this book serves as an invaluable guide to the Linux platform. Having solidified its position as Europe's most popular variant SUSE Linux continues to grow in popularity within the U.S. market. SUSE is an increasingly viable alternative to the Windows platform on both the desktop and server level.

Object-oriented programming increases software reusability, extensibility, interoperability, and reliability. Software testing is necessary to realize these benefits by uncovering as many programming errors as possible at a minimum cost. A major challenge to the software engineering community remains how to reduce the cost while improving the quality of software testing. The requirements for testing object-oriented programs differ from those for testing conventional programs. Testing Object-Oriented Software illustrates these differences and discusses object-oriented software testing problems, focusing on the difficulties and challenges testers face. The text contains of nineteen reprinted papers providing a general framework for class- and system-level testing and examines object-oriented design criteria and high testability metrics. It offers object-oriented testing techniques, ideas and methods for unit testing, and object-oriented program integration-testing strategy. Readers are shown how to drastically reduce regression test costs, presented with steps for object-oriented testing, and introduced to object-oriented test tools and systems. The book's intended audience includes object-oriented program testers, program developers, software project managers, and researchers working with object-oriented testing.

The four-volume set LNCS 3480-3483 constitutes the refereed proceedings of the International Conference on Computational Science and Its Applications, ICCSA 2005, held in Singapore in May 2005. The four volumes present a total of 540 papers selected from around 2700 submissions. The papers span the whole range of computational science, comprising advanced applications in virtually all sciences making use of computational techniques as well as foundations, techniques, and methodologies from computer science and mathematics, such as high performance computing and communication, networking, optimization, information systems and technologies, scientific visualization, graphics, image processing, data analysis, simulation and modelling, software systems, algorithms, security, multimedia etc.

This book constitutes the refereed proceedings of the International Conference on Multiscore Software Engineering, Performance, and Tools, MUSEPAT 2013, held in Saint Petersburg, Russia, in August 2013. The 9 revised papers were carefully reviewed and selected from 25 submissions. The accepted papers are organized into three main sessions and cover topics such as software engineering for multicore systems; specification, modeling and design; programing models, languages, compiler techniques and development tools; verification, testing, analysis, debugging and performance tuning, security testing; software maintenance and evolution; multicore software issues in scientific computing, embedded and mobile systems; energy-efficient computing as well as experience reports.

Printed in full color. Faced with a software project of epic proportions? Tired of over-committing and under-delivering? Enter the dojo of the agile samurai, where agile expert Jonathan Rasmusson shows you how to kick-start, execute, and deliver your agile projects. Combining cutting-edge tools with classic agile practices, The Agile Samurai gives you everything you need to deliver something of value every week and make rolling your software into production a non-event. Get ready to kick some software project butt. By learning the ways of the agile samurai you will discover: how to create plans and schedules your customer and your team can believe in what characteristics make a good agile team and how to form your own how to gather requirements in a fraction of the time using agile user stories what to do when you discover your schedule is wrong, and how to look like a pro correcting it how to execute fiercely by leveraging the power of agile software engineering practices By the end of this book you will know everything you need to set up, execute, and successfully deliver agile projects, and have fun along the way. If you're a project lead, this book gives you the tools to set up and lead your agile project from start to finish. If you are an analyst, programmer, tester, usability designer, or project manager, this book gives you the insight and foundation necessary to become a valuable agile team member. The Agile Samurai slices away the fluff and theory that make other books less-than-agile. It's packed with best practices, war stories, plenty of humor and hands-on tutorial exercises that will get you doing the right things, the right way. This book will make a difference.

Following on from his ultra noir trilogy - Small Crimes, Pariah and Killer - is Outsourced, Zeltserman's most commercial book to date. A classic heist thriller pitched somewhere between Ocean's Eleven and Dog Day Afternoon, it's the story of a group of software engineers who lose their jobs due to an industry push to outsourcing. Desperate, and seeing their middle class lives crumbling apart, they come up with a brilliant plan to use their computing skills to rob a bank. But not even a systems analyst can foresee every eventuality, so the group falls foul of the Russian Mafia. Movie rights have already been sold to Outsourced. The film will be produced by the team behind the hugely successful Resident Evil films.

Object-Oriented Software Engineering: An Agile Unified Methodology McGraw-Hill Higher Education

This book compiles contributions from renowned researchers covering all aspects of conceptual modeling, on the occasion of Arne Sølvberg's 67th birthday. Friends of this pioneer in information systems modeling contribute their latest research results from such fields as data modeling, goal-oriented modeling, agent-oriented modeling, and process-oriented modeling. The book reflects the most important recent developments and application areas of conceptual modeling, and highlights trends in conceptual modeling for the next decade.

Teaching fundamental design concepts and the challenges of emerging technology, this textbook prepares students for a career designing the computer systems of the future. In-depth coverage of complexity, power, reliability and performance, coupled with treatment of parallelism at all levels, including ILP and TLP, provides the state-of-the-art training that students need. The whole gamut of parallel architecture design options is explained, from core microarchitecture to chip multiprocessors to large-scale multiprocessor systems. All the chapters are self-contained, yet concise enough that the material can be taught in a single semester, making it perfect for use in senior undergraduate and graduate computer architecture courses. The book is also teeming with practical examples to aid the learning process, showing concrete applications of definitions. With simple models and codes used throughout, all material is made open to a broad range of computer engineering/science students with only a basic knowledge of hardware and software.

This book outlines a set of issues that are critical to all of parallel architecture--communication latency, communication bandwidth, and coordination of cooperative work (across modern designs). It describes the set of techniques available in hardware and in software to address each issues and explore how the various techniques interact.

A superior primer on software testing and quality assurance, from integration to execution and automation This important new work fills the pressing need for a user-friendly text that aims to provide software engineers, software quality professionals, software developers, and students with the fundamental developments in testing theory and common testing practices. Software Testing and Quality Assurance: Theory and Practice equips readers with a solid understanding of: Practices that support the production of quality software Software testing techniques Life-cycle models for requirements, defects, test cases, and test results Process models for units, integration, system, and acceptance testing How to build test teams, including recruiting and retaining test engineers Quality Models, Capability Maturity Model, Testing Maturity Model, and Test Process Improvement Model Expertly balancing theory with practice, and complemented with an abundance of pedagogical tools, including test questions, examples, teaching suggestions, and chapter summaries, this book is a valuable, self-contained tool for professionals and an ideal introductory text for courses in software testing, quality assurance, and software engineering.

Object-Oriented Software Engineering: An Agile Unified Methodology by David Kung presents a step-by-step methodology that integrates modeling and design, UML, patterns, test-driven development, quality assurance, configuration management, and agile principles throughout the life cycle. The overall approach is casual and easy to follow, with many practical examples that show the theory at work. The author uses his experiences as well as real-world stories to help the reader understand software design principles, patterns, and other software engineering concepts. The book also provides stimulating exercises that go far beyond the type of question that can be answered by simply copying portions of the text.

Data Engineering has become a necessary and critical activity for business, engineering, and scientific organizations as the move to service oriented architecture and web services moves into full swing. Notably, the US Department of Defense is mandating that all of its agencies and contractors assume a defining presence on the Net-centric Global Information Grid. This book provides the first practical approach to data engineering and modeling, which supports interoperability with consumers of the data in a service- oriented architectures (SOAs). Although XML (eXtensible Modeling Language) is the lingua franca for such interoperability, it is not sufficient on its own. The approach in this book addresses critical objectives such as creating a single representation for multiple applications, designing models capable of supporting dynamic processes, and harmonizing legacy data models for web-based co-existence. The approach is based on the System Entity Structure (SES) which is a well-defined structure, methodology, and practical tool with all of the functionality of UML (Unified Modeling Language) and few of the drawbacks. The SES originated in the formal representation of hierarchical simulation models. So it provides an axiomatic formalism that enables automating the development of XML dtDs and schemas, composition and decomposition of large data models, and analysis of commonality among structures. Zeigler and Hammond include a range of features to benefit their readers. Natural language, graphical and XML forms of SES specification are employed to allow mapping of legacy meta-data. Real world examples and case studies provide insight into data engineering and test evaluation in various application domains. Comparative information is provided on concepts of ontologies, modeling and simulation, introductory linguistic background, and support options enable programmers to work with advanced tools in the area. The website of the Arizona Center for Integrative Modeling and Simulation, co-founded by Zeigler in 2001, provides links to downloadable software to accompany the book. The only practical guide to integrating XML and web services in data engineering Introduces linguistic levels of interoperability for effective information exchange Covers the interoperability standards mandated by national and international agencies Complements Zeigler's classic THEORY OF MODELING AND

SIMULATION

This book constitutes the proceedings of the 5th European Software Engineering Conference, ESEC '95, held in Sitges near Barcelona, Spain, in September 1995. The ESEC conferences are the premier European platform for the discussion of academic research and industrial use of software engineering technology. The 29 revised full papers were carefully selected from more than 150 submissions and address all current aspects of relevance. Among the topics covered are business process (re-)engineering, real-time, software metrics, concurrency, version and configuration management, formal methods, design process, program analysis, software quality, and object-oriented software development.

Named one of Entertainment Weekly's 12 biggest music memoirs this fall. "An artful and wildly enthralling path for Bowie fans in particular and book lovers in general." —Publishers Weekly (starred review) "The only art I'll ever study is stuff that I can steal from." ?David Bowie Three years before David Bowie died, he shared a list of 100 books that changed his life. His choices span fiction and nonfiction, literary and irreverent, and include timeless classics alongside eyebrow-raising obscurities. In 100 short essays, music journalist John O'Connell studies each book on Bowie's list and contextualizes it in the artist's life and work. How did the power imbued in a single suit of armor in The Iliad impact a man who loved costumes, shifting identity, and the siren song of the alter-ego? How did The Gnostic Gospels inform Bowie's own hazy personal cosmology? How did the poems of T.S. Eliot and Frank O'Hara, the fiction of Vladimir Nabokov and Anthony Burgess, the comics of The Beano and The Viz, and the groundbreaking politics of James Baldwin influence Bowie's lyrics, his sound, his artistic outlook? How did the 100 books on this list influence one of the most influential artists of a generation? Heartfelt, analytical, and totally original, Bowie's Bookshelf is one part epic reading guide and one part biography of a music legend.

The five-volume set LNCS 3980-3984 constitutes the refereed proceedings of the International Conference on Computational Science and Its Applications, ICCSA 2006. The volumes present a total of 664 papers organized according to the five major conference themes: computational methods, algorithms and applications high performance technical computing and networks advanced and emerging applications geometric modelling, graphics and visualization information systems and information technologies. This is Part IV.

This book presents a selection of subjects which the authors deem to be important for information systems engineers. The book is intended for introductory teaching. We have tried to write the book in such a way that students with only fragmented knowledge of computers are able to read the book without too many difficulties. Students who have had only an introductory course in computer programming should be able to read most of the book. We have tried to achieve simplicity without compromising on depth in our discussions of the various aspects of information systems engineering. So it is our hope that also those who have deeper knowledge in computing may find pleasure in reading parts of the book. The writing of a textbook is a major undertaking for its authors. One is quite often forced to reexamine truisms in the subject area, and must be prepared to reevaluate one's opinions and priorities as one learns more. In particular this is so in new fields, where formalisms have been scarcely used, and where consensus has not yet emerged either on what constitutes the subject area or on how practical problems within the field shall be approached. Contemporary practice in computer applications is confronted with an increasingly complex world, both in a technical sense and in the complexity of problems that are solved by computer.

The orderly Sweet-Williams are dismayed at their son's fondness for the messy pastime of gardening.

Programming has become a significant part of connecting theoretical development and scientific application computation. Computer programs and processes that take into account the goals and needs of the user meet with the greatest success, so it behooves software engineers to consider the human element inherent in every line of code they write. Research Anthology on Recent Trends, Tools, and Implications of Computer Programming is a vital reference source that examines the latest scholarly material on trends, techniques, and uses of various programming applications and examines the benefits and challenges of these computational developments. Highlighting a range of topics such as coding standards, software engineering, and computer systems development, this multi-volume book is ideally designed for programmers, computer scientists, software developers, analysts, security experts, IoT software programmers, computer and software engineers, students, professionals, and researchers.

Offering a fundamental basis in kernel-based learning theory, this book covers both statistical and algebraic principles. It provides over 30 major theorems for kernel-based supervised and unsupervised learning models. The first of the theorems establishes a condition, arguably necessary and sufficient, for the kernelization of learning models. In addition, several other theorems are devoted to proving mathematical equivalence between seemingly unrelated models. With over 25 closed-form and iterative algorithms, the book provides a step-by-step guide to algorithmic procedures and analysing which factors to consider in tackling a given problem, enabling readers to improve specifically designed learning algorithms, build models for new applications and develop efficient techniques suitable for green machine learning technologies. Numerous real-world examples and over 200 problems, several of which are Matlab-based simulation exercises, make this an essential resource for graduate students and professionals in computer science, electrical and biomedical engineering. Solutions to problems are provided online for instructors.

The constantly evolving technological infrastructure of the modern world presents a great challenge of developing software systems with increasing size, complexity, and functionality. The software engineering field has seen changes and innovations to meet these and other continuously growing challenges by developing and implementing useful software engineering methodologies. Among the more recent advances are those made in the context of software portability, formal verification techniques, software measurement, and software reuse. However, despite the introduction of some important and useful paradigms in the software engineering discipline, their technological transfer on a larger scale has been extremely gradual and limited. For example, many software development organizations may not have a

well-defined software assurance team, which can be considered as a key ingredient in the development of a high-quality and dependable software product. Recently, the software engineering field has observed an increased integration or fusion with the computational intelligence (CI) field, which is comprised of primarily the mature technologies of fuzzy logic, neural networks, genetic algorithms, genetic programming, and rough sets. Hybrid systems that combine two or more of these individual technologies are also categorized under the CI umbrella. Software engineering is unlike the other well-founded engineering disciplines, primarily due to its human component (designers, developers, testers, etc.) factor. The highly non-mechanical and intuitive nature of the human factor characterizes many of the problems associated with software engineering, including those observed in development effort estimation, software quality and reliability prediction, software design, and software testing.

Extensively class-tested, this textbook takes an innovative approach to software testing: it defines testing as the process of applying a few well-defined, general-purpose test criteria to a structure or model of the software. It incorporates the latest innovations in testing, including techniques to test modern types of software such as OO, web applications, and embedded software. The book contains numerous examples throughout. An instructor's solution manual, PowerPoint slides, sample syllabi, additional examples and updates, testing tools for students, and example software programs in Java are available on an extensive website.

Component-based software development (CBD) is an emerging discipline that promises to take software engineering into a new era. Building on the achievements of object-oriented software construction, CBD aims to deliver software engineering from a cottage industry into an industrial age for Information Technology, wherein software can be assembled from components, in the manner that hardware systems are currently constructed from kits of parts. This volume provides a survey of the current state of CBD, as reflected by activities that have been taking place recently under the banner of CBD, with a view to giving pointers to future trends. The contributions report case studies - self-contained, fixed-term investigations with a finite set of clearly defined objectives and measurable outcomes - on a sample of the myriad aspects of CBD. The book includes chapters dealing with COTS (commercial off-the-shelf) components; methodologies for CBD; compositionality, i.e. how to calculate or predict properties of a composite from those of its constituents; component software testing; and grid computing.

UML (the Unified Modeling Language), design patterns, and software component technologies are three new advances that help software engineers create more efficient and effective software designs. Now Eric Braude pulls these three advances together into one unified presentation: A helpful project threaded throughout the book enables readers to apply what they are learning. Presents a modern and applied approach to software design. Numerous design patterns with detailed explanations provide essential tools for technical and professional growth. Includes extensive discussion of UML with many UML examples.

(Technical Reference). More than simply the book of the award-winning DVD set, *Art & Science of Sound Recording*, the Book takes legendary engineer, producer, and artist Alan Parsons' approaches to sound recording to the next level. In book form, Parsons has the space to include more technical background information, more detailed diagrams, plus a complete set of course notes on each of the 24 topics, from "The Brief History of Recording" to the now-classic "Dealing with Disasters." Written with the DVD's coproducer, musician, and author Julian Colbeck, ASSR, the Book offers readers a classic "big picture" view of modern recording technology in conjunction with an almost encyclopedic list of specific techniques, processes, and equipment. For all its heft and authority authored by a man trained at London's famed Abbey Road studios in the 1970s ASSR, the Book is also written in plain English and is packed with priceless anecdotes from Alan Parsons' own career working with the Beatles, Pink Floyd, and countless others. Not just informative, but also highly entertaining and inspirational, ASSR, the Book is the perfect platform on which to build expertise in the art and science of sound recording.

This book contains the refereed proceedings of the 16th International Conference on Agile Software Development, XP 2015, held in Helsinki, Finland, in May 2015. While agile development has already become mainstream in industry, this field is still constantly evolving and continues to spur an enormous interest both in industry and academia. The XP conference series has always played, and continues to play, an important role in connecting the academic and practitioner communities, providing a forum for both formal and informal sharing and development of ideas, experiences, and opinions. The theme of XP 2015 "Delivering Value: Moving from Cyclic to Continuous Value Delivery" reflects the modern trend towards organizations that are simultaneously very efficient and flexible in software development and delivery. The 15 full and 7 short papers accepted for XP 2015 were selected from 44 submissions. All of the submitted papers went through a rigorous peer-review process. Additionally, 11 experience reports were selected from 45 proposals, and in each case the authors were shepherded by an experienced researcher.

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

This book contains a collection of thoroughly refereed papers presented at the 5th International Conference on Evaluation of Novel Approaches to Software Engineering, ENASE 2010, held in Athens, Greece, in July 2010. The 19 revised and extended full papers were carefully selected from 70 submissions. They cover a wide range of topics, such as quality and metrics; service and Web engineering; process engineering; patterns, reuse and open source; process improvement; aspect-oriented engineering; and requirements engineering.

Multicore and GPU Programming offers broad coverage of the key parallel computing skillsets: multicore CPU programming and manycore "massively parallel" computing. Using threads, OpenMP, MPI, and CUDA, it teaches the design and development of software capable of taking advantage of today's computing platforms incorporating CPU and GPU hardware and explains how to transition from sequential programming to a parallel computing paradigm. Presenting material refined over more than a decade of teaching parallel computing, author Gerassimos Barlas minimizes the challenge with multiple examples, extensive case studies, and full source code. Using this book, you can develop programs that run over distributed memory machines using MPI, create multi-threaded applications with either libraries or directives, write optimized applications that balance the workload between available computing resources, and profile and debug programs targeting multicore machines. Comprehensive coverage of all major multicore programming tools, including threads, OpenMP, MPI, and CUDA Demonstrates parallel programming design patterns and examples of how different tools and paradigms can be integrated for superior performance Particular focus on the emerging area of divisible load theory and its impact on load balancing and distributed systems Download source code, examples, and instructor support materials on the book's companion website

Spacecraft depend on electronic components that must perform reliably over missions measured in years and decades. Space radiation is a primary source of degradation, reliability issues, and potentially failure for these electronic components. Although simulation and modeling are valuable for understanding the radiation risk to microelectronics, there is no substitute for testing, and an increased use of commercial-off-the-shelf parts in spacecraft may actually increase requirements for testing, as opposed to simulation and modeling. Testing at the Speed of Light evaluates the nation's current capabilities and future needs for testing the effects of space radiation on microelectronics to ensure mission success and makes recommendations on how to provide effective stewardship of the necessary radiation test infrastructure for the foreseeable future.

The end of dramatic exponential growth in single-processor performance marks the end of the dominance of the single microprocessor in computing. The era of sequential computing must give way to a new era in which parallelism is at the forefront. Although important scientific and engineering challenges lie ahead, this is an opportune time for innovation in programming systems and computing architectures. We have already begun to see diversity in computer designs to optimize for such considerations as power and throughput. The next generation of discoveries is likely to require advances at both the hardware and software levels of computing systems. There is no guarantee that we can make parallel computing as common and easy to use as yesterday's sequential single-processor computer systems, but unless we aggressively pursue efforts suggested by the recommendations in this book, it will be "game over" for growth in computing performance. If parallel programming and related software efforts fail to become widespread, the development of exciting new applications that drive the computer industry will stall; if such innovation stalls, many other parts of the economy will follow suit. The Future of Computing Performance describes the factors that have led to the future limitations on growth for single processors that are based on complementary metal oxide semiconductor (CMOS) technology. It explores challenges inherent in parallel computing and architecture, including ever-increasing power consumption and the escalated requirements for heat dissipation. The book delineates a research, practice, and education agenda to help overcome these challenges. The Future of Computing Performance will guide researchers, manufacturers, and information technology professionals in the right direction for sustainable growth in computer performance, so that we may all enjoy the next level of benefits to society.

This volume contains the papers presented at the Third International Conference on Object Oriented Information Systems (OOIS'96) which was held at South Bank University, London. The keynote addresses, by Professor Colette Roland and Mr Ian Graham, are also included. The acceptance rate for papers was around 47%. The papers for the Industry Day were invited papers. The keynote paper by Professor Roland analyses the challenges in object modelling, particularly the impact of requirements engineering for conceptual modelling. She suggests innovative research perspectives to enhance and extend object oriented approaches in order to deal with the emerging area of requirements engineering. The keynote paper presented by Mr. Graham focuses on the problems and solutions for adopting use cases. In his paper, Graham illustrates the theoretical issues and practical problems of use cases, and highlights them using examples. The papers included in this volume cover different aspects of object modelling, object oriented software

development, object databases, and interoperability. In the modelling session, Ram, et al. outline an extended object model to tackle the problems of capturing complex requirements of office information systems. Simons' paper concentrates on core object modelling concepts and presents a mathematical theory of class.

Nanotechnology has the potential to play an important role in increasing the sustainability of a wide range of industrial sectors. Nanomaterials could contribute to more sustainable manufacturing through cleaner, less wasteful production processes and can substitute conventional materials, leading to savings in raw materials and energy. Nanotechnology for Sustainable Manufacturing discusses recent progress in the areas of energy and materials efficiency related to resource savings and conservation of raw materials, which are drivers for the application of nanotechnology in the industrial setting. Written by leading experts from Europe, North America, Asia, and Australia, the book provides an innovative perspective by establishing connections between the subject areas associated with nanotechnology and by bridging the academic and industrial research gap. The topics covered include electronics, agrifood, aerospace, pulp and paper manufacturing, batteries, catalysts, solar energy, fuel cells, drinking water, and construction materials. The chapters offer insights into the diverse industries that are currently or likely to be impacted by developments in nanotechnology and nanomaterials. They cover applications such as nanotechnology for alternative energy generation, improving water quality, and novel uses in agriculture and forest products. The book also addresses the use of life-cycle analysis for assessing the sustainability of nanotechnology-based products and processes.

An organized, detailed approach to quantum mechanics, ideal for a two-semester graduate course on the subject.

Written for the novice AI programmer, this text introduces the reader to techniques such as finite state machines, fuzzy logic, neural networks and many others in an easy-to-understand language, supported with code samples throughout the text.

An unparalleled exploration of the mysteries underlying women's sexuality that rivals the culture-shifting Kinsey Report, from two of America's leading research psychologists Do women have sex simply to reproduce or display their affection? When University of Texas at Austin clinical psychologist Cindy M. Meston and evolutionary psychologist David M. Buss joined forces to investigate the underlying sexual motivations of women, what they found astonished them. Through the voices of real women, Meston and Buss reveal the motivations that guide women's sexual decisions and explain the deep-seated psychology and biology that often unwittingly drive women's desires—sometimes in pursuit of health or pleasure, or sometimes for darker, disturbing reasons that a woman may not fully recognize. Drawing on more than a thousand intensive interviews conducted solely for the book, as well as their pioneering research on physiological response and evolutionary emotions, *Why Women Have Sex* uncovers an amazingly complex and nuanced portrait of female sexuality. They delve into the use of sex as a defensive tactic against a mate's infidelity (protection), as a ploy to boost self-confidence (status), as a barter for gifts or household chores (resource acquisition), or as a cure for a migraine headache (medication). *Why Women Have Sex* stands as the richest and deepest psychological understanding of female sexuality yet achieved and promises to inform every woman's (and her partner's) awareness of her relationship to sex and her sexuality.

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