Requirements Engineering Klaus Pohl

Requirements Engineering Fundamentals, 2nd EditionComputational Intelligence Techniques and Their Applications to Software Engineering ProblemsThe Art of Business ValueRequirements Engineering: an OverviewUser-Centered DesignRequirements Engineering: Foundation for Software QualityRequirements Engineering: Foundation for Software QualitySoftware Product-Family EngineeringModel-Based Engineering of Embedded SystemsProcess-centered Requirements EngineeringSoftware Product Line EngineeringNon-Functional Requirements in Software EngineeringBasiswissen Requirements Engineering, 3rd EditionThe three dimensions of requirements engineeringBasiswissen Requirements EngineeringBasiswissen Requirements Engineering (iSQI-Reihe)Requirements Engineering FundamentalsRequirements Engineering: Foundation for Software QualityRequirements EngineeringRequirements EngineeringDiscovering RequirementsRequirements Writing for System EngineeringTest EngineeringRequirements Engineering for Software and Systems, Second EditionRequirements Engineering Fundamentals2017 IEEE 4th International Conference on Knowledge Based Engineering and Innovation (KBEI)REQUIREMENTS ENGINEERING: A GOOD PRACTICE GUIDERequirements Engineering Fundamentals, 2nd EditionBasiswissen Requirements Engineering, 1st EditionRequirements EngineeringModeling Software BehaviorThe Essence of Software EngineeringSoftware Product Lines: Going BeyondSeminal Contributions to Information Systems EngineeringSystem Requirements EngineeringAdvanced Information Systems EngineeringInorganic Scintillators for Detector SystemsWriting Better RequirementsMastering the Requirements ProcessRequirements Engineering: Foundation for Software Quality

Requirements Engineering Fundamentals, 2nd Edition

Requirements engineering tasks have become increasingly complex. In order to ensure a high level of knowledge and competency among requirements engineers, the International Requirements Engineering Board (IREB) developed a standardized qualification called the Certified Professional for Requirements Engineering (CPRE). The certification defines the practical skills of a requirements engineer on various training levels. This book is designed for self-study and covers the curriculum for the Certified Professional for Requirements Engineering Foundation Level exam as defined by the IREB. The 2nd edition has been thoroughly revised and is aligned with the curriculum Version 2.2 of the IREB. In addition, some minor corrections to the 1st edition have been included.

Computational Intelligence Techniques and Their Applications to Software Engineering Problems

Testing is usually the most expensive, time-consuming and difficult activity during the development of engineering products and systems. Development testing must be performed to ensure that designs meet requirements for performance, safety, durability, reliability, statutory aspects, etc. Most manufactured items must be tested to ensure that they are correctly made. However, much of the testing that is performed in industry is based upon traditions, standards and procedures that do

not provide the optimum balance of assurance versus cost and time. There is often pressure to reduce testing because of the high costs involved, without appreciation of the effects on performance, reliability. etc. Misperceptions are commonplace, particularly the idea that tests should not stress products in excess of their operating levels. The main reason for this situation seems to be that engineers have not developed a consistent philosophy and methodology for testing. Testing is seldom taught as part of engineering curricula, and there are no books on the subject. Specialist areas are taught, for example fatigue testing to mechanical engineers and digital device testing to electronics engineers. However, a wide range is untaught, particularly multidisciplinary and systems aspects. Testing is not just an engineering issue. Because of the importance and magnitude of the economic and business aspects testing is an issue for management. Testing is perceived as a high cost activity, when it should be considered as a value-adding process. The objective of this book is, therefore, to propose a philosophy of engineering test and to describe the necessary technologies and methods that will provide a foundation for all plans, methods and decisions related to testing of engineered products and systems. The book will help those who must manage and conduct this most difficult and uncertain task. It will also provide a text which can be used as the basis for teaching the principles of testing to all engineering students.

The Art of Business Value

Requirements Engineering: an Overview

Learn how to create good requirements when designing hardware and software systems. While this book emphasizes writing traditional “shall” statements, it also provides guidance on use case design and creating user stories in support of agile methodologies. The book surveys modeling techniques and various tools that support requirements collection and analysis. You’ll learn to manage requirements, including discussions of document types and digital approaches using spreadsheets, generic databases, and dedicated requirements tools. Good, clear examples are presented, many related to real-world work the author has done during his career. Requirements Writing for System Engineeringantages of different requirements approaches and implement them correctly as your needs evolve. Unlike most requirements books, Requirements Writing for System Engineering teaches writing both hardware and software requirements because many projects include both areas. To exemplify this approach, two example projects are developed throughout the book, one focusing on hardware and the other on software. This book Presents many techniques for capturing requirements. Demonstrates gap analysis to find missing requirements. Shows how to address both software and hardware, as most projects involve both. Provides extensive examples of “shall” statements, user stories, and use cases. Explains how to supplement or replace traditional requirement statements with user stories and use cases that work well in agile development environments What You Will Learn Understand the 14 techniques for capturing all requirements. Address software and hardware needs; because most projects involve both. Ensure all statements meet the 16 attributes of a good requirement. Differentiate the 19 different functional types of requirement, and the 31 non-functional types. Write

requirements properly based on extensive examples of good ‘shall’ statements, user stories, and use cases. Employ modeling techniques to mitigate the imprecision of words. Audience Writing Requirements teaches you to write requirements the correct way. It is targeted at the requirements engineer who wants to improve and master his craft. This is also an excellent book from which to teach requirements engineering at the university level. Government organizations at all levels, from Federal to local levels, can use this book to ensure they begin all development projects correctly. As well, contractor companies supporting government development are also excellent audiences for this book.

User-Centered Design

This book contains the proceedings of the 5th International Workshop on Product Family Engineering, PFE-5. This workshop was held in Siena, Italy, November 4–6, 2003. This workshop was the fifth in the series, with the same subject, software product family engineering. These workshops have been held initially irregularly about every 18 months since 1996. Since 1999 the workshop has been held every second year in the fall. The proceedings of the second, third and fourth workshops were published as Springer LNCS volumes 1429, 1951 and 2290. The workshops were organized within co-operation projects of European industry. The first two were organized by ARES (Esprit IV 20.477) 1995–1999; this project had 3 industrial and 3 academic partners, and studied software architectures for product families. Some of the partners continued in the ITEA project if99005 ESAPS (1999–2001). ITEA is the software development programme (?! 2023) within the European Eureka initiative. ITEA projects last for 2 years, and ESAPS was succeeded by CAFÉ (ITEA if00004) for 2001–2003 and FAMILIES (ITEA if02009). This fifth workshop was initially prepared within CAFÉ and the preparation continued in FAMILIES. As usual Henk Obbink was the workshop chair, and Linda Northrop and Sergio Bandinelli were the co-chairs.

Requirements Engineering: Foundation for Software Quality

Requirements engineering is the process of eliciting individual stakeholder requirements and needs and developing them into detailed, agreed requirements documented and specified in such a way that they can serve as the basis for all other system development activities. In this textbook, Klaus Pohl provides a comprehensive and well-structured introduction to the fundamentals, principles, and techniques of requirements engineering. He presents approved techniques for eliciting, negotiating and documenting as well as validating, and managing requirements for software-intensive systems. The various aspects of the process and the techniques are illustrated using numerous examples based on his extensive teaching experience and his work in industrial collaborations. His presentation aims at professionals, students, and lecturers in systems and software engineering or business applications development. Professionals such as project managers, software architects, systems analysts, and software engineers will benefit in their daily work from the didactically well-presented combination of validated procedures and industrial experience. Students and lecturers will appreciate the comprehensive description of sound fundamentals, principles, and techniques, which is completed by a huge commented list of references for further reading. Lecturers will find additional teaching material on the book’s website,

www.requirements-book.com.

Requirements Engineering: Foundation for Software Quality

As requirements engineering continues to be recognized as the key to on-time and on-budget delivery of software and systems projects, many engineering programs have made requirements engineering mandatory in their curriculum. In addition, the wealth of new software tools that have recently emerged is empowering practicing engineers to improve their requirements engineering habits. However, these tools are not easy to use without appropriate training. Filling this need, Requirements Engineering for Software and Systems, Second Edition has been vastly updated and expanded to include about 30 percent new material. In addition to new exercises and updated references in every chapter, this edition updates all chapters with the latest applied research and industry practices. It also presents new material derived from the experiences of professors who have used the text in their classrooms. Improvements to this edition include: An expanded introductory chapter with extensive discussions on requirements analysis, agreement, and consolidation An expanded chapter on requirements engineering for Agile methodologies An expanded chapter on formal methods with new examples An expanded section on requirements traceability An updated and expanded section on requirements engineering tools New exercises including ones suitable for research projects Following in the footsteps of its bestselling predecessor, the text illustrates key ideas associated with requirements engineering using extensive case studies and three common example systems: an airline baggage handling system, a point-of-sale system for a large pet store chain, and a system for a smart home. This edition also includes an example of a wet well pumping system for a wastewater treatment station. With a focus on software-intensive systems, but highly applicable to non-software systems, this text provides a probing and comprehensive review of recent developments in requirements engineering in high integrity systems.

Software Product-Family Engineering

In 2013, the International Conference on Advance Information Systems Engineering (CAiSE) turns 25. Initially launched in 1989, for all these years the conference has provided a broad forum for researchers working in the area of Information Systems Engineering. To reflect on the work done so far and to examine prospects for future work, the CAiSE Steering Committee decided to present a selection of seminal papers published for the conference during these years and to ask their authors, all prominent researchers in the field, to comment on their work and how it has developed over the years. The scope of the papers selected covers a broad range of topics related to modeling and designing information systems, collecting and managing requirements, and with special attention to how information systems are engineered towards their final development and deployment as software components. With this approach, the book provides not only a historical analysis on how information systems engineering evolved over the years, but also a fascinating social network analysis of the research community. Additionally, many inspiring ideas for future research and new perspectives in this area are sparked by the intriguing comments of the renowned authors.

Model-Based Engineering of Embedded Systems

Non-Functional Requirements in Software Engineering presents a systematic and pragmatic approach to `building quality into' software systems. Systems must exhibit software quality attributes, such as accuracy, performance, security and modifiability. However, such non-functional requirements (NFRs) are difficult to address in many projects, even though there are many techniques to meet functional requirements in order to provide desired functionality. This is particularly true since the NFRs for each system typically interact with each other, have a broad impact on the system and may be subjective. To enable developers to systematically deal with a system's diverse NFRs, this book presents the NFR Framework. Structured graphical facilities are offered for stating NFRs and managing them by refining and inter-relating NFRs, justifying decisions, and determining their impact. Since NFRs might not be absolutely achieved, they may simply be satisfied sufficiently (`satisficed'). To reflect this, NFRs are represented as `softgoals', whose interdependencies, such as tradeoffs and synergy, are captured in graphs. The impact of decisions is qualitatively propagated through the graph to determine how well a chosen target system satisfices its NFRs. Throughout development, developers direct the process, using their expertise while being aided by catalogues of knowledge about NFRs, development techniques and tradeoffs, which can all be explored, reused and customized. Non-Functional Requirements in Software Engineering demonstrates the applicability of the NFR Framework to a variety of NFRs, domains, system characteristics and application areas. This will help readers apply the Framework to NFRs and domains of particular interest to them. Detailed treatments of particular NFRs - accuracy, security and performance requirements - along with treatments of NFRs for information systems are presented as specializations of the NFR Framework. Case studies of NFRs for a variety of information systems include credit card and administrative systems. The use of the Framework for particular application areas is illustrated for software architecture as well as enterprise modelling. Feedback from domain experts in industry and government provides an initial evaluation of the Framework and some case studies. Drawing on research results from several theses and refereed papers, this book's presentation, terminology and graphical notation have been integrated and illustrated with many figures. Non-Functional Requirements in Software Engineering is an excellent resource for software engineering practitioners, researchers and students.

Process-centered Requirements Engineering

Written for those who want to develop their knowledge of requirements engineering process, whether practitioners or students. Using the latest research and driven by practical experience from industry, Requirements Engineering gives useful hints to practitioners on how to write and structure requirements. It explains the importance of Systems Engineering and the creation of effective solutions to problems. It describes the underlying representations used in system modeling and introduces the UML2, and considers the relationship between requirements and modeling. Covering a generic multi-layer requirements process, the book discusses the key elements of effective requirements management. The latest version of DOORS (Version 7) - a software tool which serves as an enabler of a requirements management process - is also introduced to the reader here. Additional material

and links are available at: http://www.requirementsengineering.info

Software Product Line Engineering

Non-Functional Requirements in Software Engineering

This book constitutes the refereed proceedings of the 17th International Working Conference on Requirements Engineering: Foundation for Software Quality, REFSQ 2011, held in Essen, Germany, in March 2011. The 10 revised full papers and the 9 short papers presented were carefully reviewed and selected from 59 submissions. The papers are organized in seven topical sections on security and sustainability; process improvement and requirements in context; elicitation; models; services; embedded and real-time systems; and prioritization and traceability.

Basiswissen Requirements Engineering, 3rd Edition

The three dimensions of requirements engineering

Basiswissen Requirements Engineering

A common problem with most texts on requirements specifications is that they emphasize structural models to the near exclusion of behavioral models—focusing on what the software is, rather than what it does. If they do cover behavioral models, the coverage is brief and usually focused on a single model. Modeling Software Behavior: A Craftsman’s Approach provides detailed treatment of various models of software behavior that support early analysis, comprehension, and model-based testing. Based on the popular and continually evolving course on requirements specification models taught by the author at universities and corporate environments, the text covers six behavioral models—providing the background behind these models and the required mathematics. As evidence of models at work, the author introduces eleven continuing examples. Five of these examples are illustrated with the six models, allowing readers to easily compare the expressive power of the various models. The examples chosen reflect a wide variety of behavioral issues. Providing complete coverage that includes flowcharts, decision tables, finite state machines, two variations of Petri Nets, and StateCharts, this book will help students develop the understanding of the expressive capabilities and limitations of models of system behavior needed to make informed and appropriate choices among different models when confronted with new challenges.

Basiswissen Requirements Engineering (iSQI-Reihe)

Thelasttwodecadeshaveseenaspectacularincreaseofinterestforinorganic scintillators. Thishasbeentoalargepartaconsequenceofthevisibilitygiven to this ?eld by several large crystal-based detectors in particle physics. To answer the very challenging requirements for these experiments (huge data rates, linearity of

response over a large dynamic range, harsh radiation en- ronment, impressive crystal quantities to be produced in a short time period andatana?ordablecost,etc. . .)ane?ortofcoordination was needed. S- eral groups of experts working in di?erent aspects of material science have combinedtheire?ortsininternationalandmultidisciplinarycollaborationsto better understand the fundamental mechanisms underlying the scintillation processanditse?ciency. Similarly,thestabilityofthescintillationproperties andtheroleofcolorcentershasbeenextensivelystudiedtodevelop radiation hard scintillators. Dedicated conferences on inorganic scintillators have seen an increasing participation from di?erent communities of users outside the domain of high-energy physics. This includes nuclear physics, astrophysics, security systems, industrial applications, and medical imaging. This last - main in particular is growing very fast since a few years at the point that the volume of scintillating crystals to be produced for positron emission tom- raphy (PET) is going to exceed the one for high-energy physics. As more and more crystal producers are also attending these conferences, a very fruitful synergy was progressively built up among scienti?c experts, technologists, and end users. This aspect of a multidisciplinary collaboration is essential to helppeopledesignandbuilddetectorsofever-increasingperformancethrough the choice, optimization or development of the best scintillator, and a th- ough investigation of the technologies to produce the crystals of the highest quality.

Requirements Engineering Fundamentals

This book constitutes the refereed proceedings of the 29th International Conference on Advanced Information Systems Engineering, CAiSE 2017, held in Essen, Germany, in June 2017. The 37 papers presented together with 3 keynote papers in this volume were carefully reviewed and selected from 175 submissions. The papers are organized in topical sections on information systems architecture; business process alignment; user knowledge discovery; business process performance; big data exploration; process variability management; information systems transformation and evolution; business process modeling readability; business process adaption; data mining; process discovery; business process modeling notation.

Requirements Engineering: Foundation for Software Quality

- Offizielles Lehrbuch zum "Certified Professional for Requirements Engineering - Foundation Level"--Geschrieben von Mitgliedern des IREB-Boards und Autoren des Lehrplans- sehr renommiertes Autorenteam.

Requirements Engineering

Looks at the application design process, describing how to create user-friendly applications.

Requirements Engineering

In practice, requirements engineering tasks become more and more complex. In

order to ensure a high level of knowledge and training, the International Requirements Engineering Board (IREB) worked out the training concept “Certified Professional for Requirements Engineering”, which defines a requirements engineer’s practical skills on different training levels. The book covers the different subjects of the curriculum for the “Certified Professional for Requirements Engineering” (CPRE) defined by the International Requirements Engineering Board (IREB). It supports its readers in preparing for the test to achieve the “Foundation Level” of the CPRE.

Discovering Requirements

This volume constitutes the refereed proceedings of the 14th International Software Product Line Conference, SPLC 2010, held on Jeju Island, South Korea, in September 2010.

Requirements Writing for System Engineering

Test Engineering

Requirements engineering tasks have become increasingly complex. In order to ensure a high level of knowledge and competency among requirements engineers, the International Requirements Engineering Board (IREB) developed a standardized qualification called the Certified Professional for Requirements Engineering (CPRE). The certification defines the practical skills of a requirements engineer on various training levels. This book is designed for self-study and covers the curriculum for the Certified Professional for Requirements Engineering Foundation Level exam as defined by the IREB. **The 2nd edition** has been thoroughly revised and is aligned with the curriculum Version 2.2 of the IREB. In addition, some minor corrections to the 1st edition have been included. **About IREB:** The mission of the IREB is to contribute to the standardization of further education in the fields of business analysis and requirements engineering by providing syllabi and examinations, thereby achieving a higher level of applied requirements engineering. The IRE Board is comprised of a balanced mix of independent, internationally recognized experts in the fields of economy, consulting, research, and science. The IREB is a non-profit corporation. For more information visit www.certified-re.com

Requirements Engineering for Software and Systems, Second Edition

Writing Better Requirements" specifically focuses on how to uncover and clearly express requirements for software and systems. The authors write from the perspective that users own requirements, therefore users must be able to understand them. This elementary perspective yields a straightforward, easily-digested approach.

Requirements Engineering Fundamentals

Essential comprehensive coverage of the fundamentals of requirements

engineering Requirements engineering (RE) deals with the variety of prerequisites that must be met by a software system within an organization in order for that system to produce stellar results. With that explanation in mind, this must-have book presents a disciplined approach to the engineering of high-quality requirements. Serving as a helpful introduction to the fundamental concepts and principles of requirements engineering, this guide offers a comprehensive review of the aim, scope, and role of requirements engineering as well as best practices and flaws to avoid. Shares state-of-the-art techniques for domain analysis, requirements elicitation, risk analysis, conflict management, and more Features in-depth treatment of system modeling in the specific context of engineering requirements Presents various forms of reasoning about models for requirements quality assurance Discusses the transitions from requirements to software specifications to software architecture In addition, case studies are included that complement the many examples provided in the book in order to show you how the described method and techniques are applied in practical situations.

2017 IEEE 4th International Conference on Knowledge Based Engineering and Innovation (KBEI)

REQUIREMENTS ENGINEERING: A GOOD PRACTICE GUIDE

Software product line engineering has proven to be the methodology for developing a diversity of software products and software intensive systems at lower costs, in shorter time, and with higher quality. In this book, Pohl and his co-authors present a framework for software product line engineering which they have developed based on their academic as well as industrial experience gained in projects over the last eight years. They do not only detail the technical aspect of the development, but also an integrated view of the business, organisation and process aspects are given. In addition, they explicitly point out the key differences of software product line engineering compared to traditional single software system development, as the need for two distinct development processes for domain and application engineering respectively, or the need to define and manage variability.

Requirements Engineering Fundamentals, 2nd Edition

Embedded systems have long become essential in application areas in which human control is impossible or infeasible. The development of modern embedded systems is becoming increasingly difficult and challenging because of their overall system complexity, their tighter and cross-functional integration, the increasing requirements concerning safety and real-time behavior, and the need to reduce development and operation costs. This book provides a comprehensive overview of the Software Platform Embedded Systems (SPES) modeling framework and demonstrates its applicability in embedded system development in various industry domains such as automation, automotive, avionics, energy, and healthcare. In SPES 2020, twenty-one partners from academia and industry have joined forces in order to develop and evaluate in different industrial domains a modeling framework that reflects the current state of the art in embedded systems

engineering. The content of this book is structured in four parts. Part I “Starting Point” discusses the status quo of embedded systems development and model-based engineering, and summarizes the key requirements faced when developing embedded systems in different application domains. Part II “The SPES Modeling Framework” describes the SPES modeling framework. Part III “Application and Evaluation of the SPES Modeling Framework” reports on the validation steps taken to ensure that the framework met the requirements discussed in Part I. Finally, Part IV “Impact of the SPES Modeling Framework” summarizes the results achieved and provides an outlook on future work. The book is mainly aimed at professionals and practitioners who deal with the development of embedded systems on a daily basis. Researchers in academia and industry may use it as a compendium for the requirements and state-of-the-art solution concepts for embedded systems development.

Basiswissen Requirements Engineering, 1st Edition

To discuss through papers, new theoretical developments, techniques and demonstrate the scientific results in the field of Mechatronics, Robotic, Electrical, Computer technology and their application to real world problems

Requirements Engineering

This volume contains the papers accepted for presentation at the 15th Wo- ing Conference on Requirements Engineering: Foundation for Software Quality (REFSQ 2009), held in Amsterdam during June 8-9, 2009. Since 1994, when the ?rstREFSQ tookplace, requirementsengineering (RE) has never ceasedto be a dominantfactor in?uencing the quality of software, s- tems and services. Initially started as a workshop, the REFSQ working conf- ence series has now established itself as one of the leading international forums for discussing RE in its many relations to quality. It seeks reports on novel ideas and techniques that enhance the quality of RE products and processes, as well as re?ections on current research and industrial RE practices. One of the most appreciated characteristics of REFSQ is that of being a highly interactive and structured event. Each session is organized in order to provokediscussion among the presenters of papers, discussants and all the other participants.Typically, after a paper is presented, it is immediately discussed by one or two pre-assigned discussants, then subject to a free discussion involving all participants. At the end of each session, an open discussion of all the papers presented in the session takes place. REFSQ 2009 maintained this tradition.

Modeling Software Behavior

Market_Desc: Software Designers/Developers and Systems Analysts, Managers/Engineers of Organizational Process Improvement Programmers. Special Features: · Reputable and authoritative authors.· Written in a clear and easy to read format, packed full of jargon-free and unthreatening advice.· Structured as FAQs (questions and answers) - an ideal format for busy practitioners.· Cover quotes from leading software gurus. About The Book: Requirements Engineering is a new term for an old problem, in the past known as Systems Analysis (and also Knowledge Elicitation). Requirements constitute the earliest phase of the software

development cycle. Requirements are precise statements that reflect the needs of customers and users of an intended computer system, e.g. a word processor must include a spell-checker, security access is to be given to authorized personnel only, updates to customer information must be made every 10 seconds.Requirements engineering is being recognized as increasingly important - no other aspect of software engineering has enjoyed as much growth in recent years. More and more organizations are either improving their requirements engineering process or thinking about doing so.

The Essence of Software Engineering

This volume contains the papers accepted for presentation at the 15th Wo- ing Conference on Requirements Engineering: Foundation for Software Quality (REFSQ 2009), held in Amsterdam during June 8-9, 2009. Since 1994, when the ?rstREFSQ tookplace, requirementsengineering (RE) has never ceasedto be a dominantfactor in?uencing the quality of software, s- tems and services. Initially started as a workshop, the REFSQ working conf- ence series has now established itself as one of the leading international forums for discussing RE in its many relations to quality. It seeks reports on novel ideas and techniques that enhance the quality of RE products and processes, as well as re?ections on current research and industrial RE practices. One of the most appreciated characteristics of REFSQ is that of being a highly interactive and structured event. Each session is organized in order to provokediscussion among the presenters of papers, discussants and all the other participants.Typically, after a paper is presented, it is immediately discussed by one or two pre-assigned discussants, then subject to a free discussion involving all participants. At the end of each session, an open discussion of all the papers presented in the session takes place. REFSQ 2009 maintained this tradition.

Software Product Lines: Going Beyond

Seminal Contributions to Information Systems Engineering

Computational Intelligence Techniques and Their Applications to Software Engineering Problems focuses on computational intelligence approaches as applicable in varied areas of software engineering such as software requirement prioritization, cost estimation, reliability assessment, defect prediction, maintainability and quality prediction, size estimation, vulnerability prediction, test case selection and prioritization, and much more. The concepts of expert systems, case-based reasoning, fuzzy logic, genetic algorithms, swarm computing, and rough sets are introduced with their applications in software engineering. The field of knowledge discovery is explored using neural networks and data mining techniques by determining the underlying and hidden patterns in software data sets. Aimed at graduate students and researchers in computer science engineering, software engineering, information technology, this book: Covers various aspects of in-depth solutions of software engineering problems using computational intelligence techniques Discusses the latest evolutionary approaches to preliminary theory of different solve optimization problems under software engineering domain Covers heuristic as well as meta-heuristic algorithms

designed to provide better and optimized solutions Illustrates applications including software requirement prioritization, software cost estimation, reliability assessment, software defect prediction, and more Highlights swarm intelligence-based optimization solutions for software testing and reliability problems

System Requirements Engineering

"This book is not only of practical value. It's also a lot of fun to read." Michael Jackson, The Open University. Do you need to know how to create good requirements? Discovering Requirements offers a set of simple, robust, and effective cognitive tools for building requirements. Using worked examples throughout the text, it shows you how to develop an understanding of any problem, leading to questions such as: What are you trying to achieve? Who is involved, and how? What do those people want? Do they agree? How do you envisage this working? What could go wrong? Why are you making these decisions? What are you assuming? The established author team of Ian Alexander and Ljerka Beus-Dukic answer these and related questions, using a set of complementary techniques, including stakeholder analysis, goal modelling, context modelling, storytelling and scenario modelling, identifying risks and threats, describing rationales, defining terms in a project dictionary, and prioritizing. This easy to read guide is full of carefully-checked tips and tricks. Illustrated with worked examples, checklists, summaries, keywords and exercises, this book will encourage you to move closer to the real problems you're trying to solve. Guest boxes from other experts give you additional hints for your projects. Invaluable for anyone specifying requirements including IT practitioners, engineers, developers, business analysts, test engineers, configuration managers, quality engineers and project managers. A practical sourcebook for lecturers as well as students studying software engineering who want to learn about requirements work in industry. Once you've read this book you will be ready to create good requirements!

Advanced Information Systems Engineering

"Do you really understand what business value is? Information technology can and should deliver business value. But the Agile literature has paid scant attention to what business value means—and how to know whether or not you are delivering it. This problem becomes ever more critical as you push value delivery toward autonomous teams and away from requirements “tossed over the wall” by business stakeholders. An empowered team needs to understand its goal! Playful and thought-provoking, The Art of Business Value explores what business value means, why it matters, and how it should affect your software development and delivery practices. More than any other IT delivery approach, DevOps (and Agile thinking in general) makes business value a central concern. This book examines the role of business value in software and makes a compelling case for why a clear understanding of business value will change the way you deliver software. This book will make you think deeply about not only what it means to deliver value but also the relationship of the IT organization to the rest of the enterprise. It will give you the language to discuss value with the business, methods to cut through bureaucracy and strategies for incorporating Agile teams and culture into the enterprise. Most of all, this book will startle you into new ways of thinking about the cutting-edge of Agile practice and where it may lead."

Inorganic Scintillators for Detector Systems

This open access book includes contributions by leading researchers and industry thought leaders on various topics related to the essence of software engineering and their application in industrial projects. It offers a broad overview of research findings dealing with current practical software engineering issues and also pointers to potential future developments. Celebrating the 20th anniversary of adesso AG, adesso gathered some of the pioneers of software engineering including Manfred Broy, Ivar Jacobson and Carlo Ghezzi at a special symposium, where they presented their thoughts about latest software engineering research and which are part of this book. This way it offers readers a concise overview of the essence of software engineering, providing valuable insights into the latest methodological research findings and adesso’s experience applying these results in real-world projects.

Writing Better Requirements

Mastering the Requirements Process

This book constitutes the refereed proceedings of the 13th International Working Conference on Requirements Engineering: Foundation for Software Quality, REFSQ 2007, held in Trondheim, Norway. It covers goal-driven requirements engineering (RE), products and product-lines, value-based RE and the value of RE, requirements elicitation, requirements specification, industrial experience of RE, and requirements quality and quality requirements.

Requirements Engineering: Foundation for Software Quality

"Mastering the Requirements Process: Getting Requirements Right" sets out an industry-proven process for gathering and verifying requirements, regardless of whether you work in a traditional or agile development environment. In this sweeping update of the bestselling guide, the authors show how to discover precisely what the customer wants and needs, in the most efficient manner possible.