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A Theory of Objects Software Engineering with OBJ Approximation Theory Theory and Practice of Model Transformation Fundamentals of Set and Number Theory Checking Theory and Grammatical Functions in Universal Grammar Modeling Decisions for Artificial Intelligence Theory and Practice of Model Transformations Systems: Theory and Practice Abstract State Machines - Theory and Applications Theory and Models for Cyber Situation Awareness Qualitative Representations Algebraic K-theory: The Homotopy Approach Of Quillen And An Approach From Commutative Algebra Mathematical Knowledge Management Capacity Theory with Local Rationality Theory and Applications of Relational Structures as Knowledge Instruments Theory and Practice of Model Transformations Applications and Theory of Petri Nets 2004 Classics of Moral and Political Theory Spatial Information Theory. Cognitive and Computational Foundations of Geographic Information Science Perspectives of System Informatics Optimality Theory and Pragmatics Modelling Database Dynamics Developments in Language Theory The Situation in Logic Computer Aided Systems Theory – EUROCAST 2017 Grammatical theory Instructional Strategies for Middle and High School Algorithmic Decision Theory KADS Handbook of Philosophical Logic Algebraic K-Theory and Its Applications Specification of Software Systems Theoretical Aspects of Computing - ICTAC 2007 Cosmological Applications of Algebraic Quantum Field Theory in Curved Spacetimes Intelligent Robotics and Applications Asymptotic Approximation in the Three-dimensional Theory of Thin and Thick Elastic Shells Rules on the Web: From Theory to Applications Graph Transformations and Model-Driven Engineering Dynamic Worlds

Grammatical theory Mar 28 2022 This book introduces formal grammar theories that play a role in current linguistic the- orizing (Phrase Structure Grammar, Transformational Grammar/Government & Binding, Generalized Phrase Structure Grammar, Lexical Functional Grammar, Categorial Gram- mar, Head-Driven Phrase Structure Grammar, Construction Grammar, Tree Adjoining Grammar). The key assumptions are explained and it is shown how the respective the- ory treats arguments and adjuncts, the active/passive alternation, local reorderings, verb placement, and fronting of constituents over long distances. The analyses are explained with German as the object language. The second part of the book compares these approaches with respect to their predictions regarding language acquisition and psycholinguistic plausibility. The nativism hypothe- sis, which assumes that humans posses genetically determined innate language-specific knowledge, is critically examined and alternative models of language acquisition are dis- cussed. The second part then addresses controversial issues of current theory building such as the question of flat or binary branching structures being more appropriate, the question whether constructions should be treated on the phrasal or the lexical level, and the question whether abstract, non-visible entities should play a role in syntactic analyses. It is shown that the analyses suggested in the respective frameworks are often translatable into each other. The book closes with a chapter showing how properties common to all languages or to certain classes of languages can be captured. “With this critical yet fair reflection on various grammatical theories, Müller fills what has been a major gap in the literature.” Karen Lehmann, Zeitschrift für Rezensionen zur germanistischen Sprachwissenschaft, 2012 “Stefan Müller’ s recent introductory textbook, “Grammatiktheorie”, is an astonishingly comprehensive and insightful survey of the present state of syntactic theory for beginning students.” Wolfgang Sternefeld und Frank Richter, Zeitschrift für Sprachwissenschaft, 2012 “This is the kind of work that has been sought after for a while. [...] The impartial and objective discussion offered by the author is particularly refreshing.” Werner Abraham, Germanistik, 2012
Mathematical Knowledge Management May 10 2023 This book constitutes the refereed proceedings of the 5th International Conference on Mathematical Knowledge Management, MKM 2006, held in Wokingham, UK, August 2006. The book presents 22 revised full papers. Coverage extends to the mathematical knowledge management at the intersection of mathematics, computer science, library science, and scientific publishing. The papers are organized in topical sections on proof representations, proof processing, knowledge extraction, knowledge representation, as well as systems and tools.
Theoretical Aspects of Computing - ICTAC 2007 Aug 21 2021 This book constitutes the refereed proceedings of the 4th International Colloquium on Theoretical Aspects of Computing, ICTAC 2007 held in Macau, China in September 2007. The 29 revised full papers presented together with 3 invited talks and summaries of 2 tutorials were carefully reviewed and selected from 69 submissions. The aim of the colloquium is to bring together practitioners and researchers from academia, industry and government to present research results, and exchange experience, ideas, and solutions for their problems in theoretical aspects of computing such as automata theory and formal languages, principles and semantics of programming languages, software architectures and their description languages, software specification, refinement, and verification, model checking and theorem proving, real-time, embedded and hybrid systems, theory of parallel, distributed, and internet-based (grid) computing, simulation and modeling, and service-oriented development.

Abstract State Machines - Theory and Applications Sep 14 2023 The ASM 2000 workshop was held in the conference center of the Swiss Federal Institute of Technology (ETH) at Monte Verit a, Canton Ticino, March 19-24, 2000. The ASM formalism was proposed together with the thesis that it is suitable to model arbitrary computer systems on arbitrary abstraction levels. ASMs have been successfully used to analyze and specify various hardware and software systems including numerous computer languages. The aim of the workshop was to bring together domain-experts, using ASMs as a practical speci cation method, and theorists working with ASMs and related methods. In addition the workshop served as a forum on theoretical and practical topics that relate to ASMs in a broad sense. Three tutorials including hands-on experience with tools were organized by U. Gl ?asser and G. del Castillo (on the topic \Specifying Concurrent Systems with ASMs"), H. Russ ? and N. Shankar (on the topic \A Tutorial Introduction to PVS"), M. Anlau , P.W. Kutter, and A. Pierantonio (on the topic \Developing Domain Speci c Languages"). In response to the organization committee's call for papers, 30 papers were submitted, each of which was independently reviewed by four members of the program committee. This volume presents a selection of 12 of the refereed papers and two reports on industrial ASM application at Siemens AG and Microsoft Research, together with contributions based on the invited talks given by A.

Asymptotic Approximation in the Three-dimensional Theory of Thin and Thick Elastic Shells May 18 2021

Intelligent Robotics and Applications Jun 18 2021 These two volumes constitute the refereed proceedings of the First International Conference on Intelligent Robotics and Applications, ICIRA 2008, held in Wuhan, China, in October 2008. The 265 revised full papers presented were thoroughly reviewed and selected from 552 submissions; they are devoted but not limited to robot motion planning and manipulation; robot control; cognitive robotics; rehabilitation robotics; health care and artificial limb; robot learning; robot vision; human-machine interaction & coordination; mobile robotics; micro/nano mechanical systems; manufacturing automation; multi-axis surface machining; realworld applications.

KADS Dec 25 2021 KADS is a structured methodology for the development of knowledge based systems which has been adopted throughout the world by academic and industrial professionals alike. KADS approaches development as a modeling activity. Two key characteristics of KADS are the use of multiple models to cope with the complexity of knowledge engineering and the use of knowledge-level descriptions as an immediate model between system design and expertise data. The result is that KADS enables effective KBS construction by building a computational model of desired behavior for a particular problem domain. KADS contains three section: the Theoretical Basis of KADS, Languages and Tools, and Applications. Together they form a comprehensive sourcebook of the how and why of the KADS methodology. KADS will be required reading for all academic and industrial professionals concerned with building knowledge-based systems. It will also be a valuable source for students of knowledge acquisition and KBS. * SPECIAL FEATURES: * KADS is the most widely used commercial structured methodology for KBS development in Europe and is becoming one of the few significant AI exports to the US. * Describes KADS from its Theoretical Basis, through Language and Tool Developments, to real Applications.

Software Engineering with OBJ May 22 2024 Software Engineering with OBJ: Algebraic Specification in Action is a comprehensive introduction to OBJ, the most widely used algebraic specification system. As a formal specification language, OBJ makes specifications and designs more precise and easier to read, as well as making maintenance easier and more accurate. OBJ differs from most other specification languages not just in having a formal semantics, but in being executable, either through symbolic execution with term rewriting, or more generally through theorem proving. One problem with specifications is that they are often wrong. OBJ can help validate specifications by executing test cases, and by proving properties. As well as providing a detailed introduction to the language and the OBJ system that implements it, Software Engineering with OBJ: Algebraic Specification in Action provides case studies by leading practitioners in the field, in areas such as computer graphics standards, hardware design, and parallel computation. The case studies demonstrate that OBJ can be used in a wide variety of ways to achieve a wide variety of practical aims in the system development process. The papers on various OBJ systems also demonstrate that the language is relatively easy to understand, implement, and use, and that it supports formal reasoning in a straightforward but powerful way. Software Engineering with OBJ: Algebraic Specification in Action will be of interest to students and teachers in the areas of data types, programming languages, semantics, theorem proving, and algebra, as well as to researchers and practitioners in software engineering.

Handbook of Philosophical Logic Nov 23 2021 It is with great pleasure that we are presenting to the community the second edition of this extraordinary handbook. It has been over 15 years since the publication of the first edition and there have been great changes in the landscape of philosophical logic since then. The first edition has proved invaluable to generations of students and researchers in formal philosophy and language, as well as to consumers of logic in many applied areas. The main logic article in the Encyclopaedia Britannica 1999 has described the first edition as 'the best starting point for exploring any of the topics in logic'. We are confident that the second edition will prove to be just as good! The first edition was the second handbook published for the logic com- nity. It followed the North Holland one volume Handbook of Mathematical Logic, published in 1977, edited by the late Jon Barwise. The four volume Handbook of Philosophical Logic, published 1983-1989 came at a fortunate temporal junction at the evolution of logic. This was the time when logic was gaining ground in computer science and artificial intelligence circles. These areas were under increasing commercial pressure to provide devices which help and/or replace the human in his daily activity. This pressure required the use of logic in the modelling of human activity and organi- tion on the one hand and to provide the theoretical basis for the computer program constructs on the other.

Spatial Information Theory. Cognitive and Computational Foundations of Geographic Information Science Nov 04 2022 This book constitutes the refereed proceedings of the International Conference on Spatial Information Theory, COSIT '99, held in Stade, Germany, in August 1999. The 30 revised full papers presented were carefully reviewed and selected from 70 submissions. The book is divided into topical sections on landmarks and navigation, route directions, abstraction and spatial hierarchies, spatial reasoning calculi, ontology of space, visual representation and reasoning, maps and routes, and granularity and qualitative abstraction.

Theory and Practice of Model Transformations Feb 07 2023 This book constitutes the refereed proceedings of the 4th International Conference, ICMT 2011, held in Zurich, Switzerland in June 2011. The 14 revised full papers were carefully revised and selected from 51 submissions. The scope of the contributions ranges from theoretical and methodological topics to implementation issues and applications. Topics addressed are such as transformation paradigms and languages, transformation algorithms and strategies, implementation and tools, as well as applications and case studies.

Theory and Practice of Model Transformation Mar 20 2024 This book constitutes the refereed proceedings of the 10th International Conference on Model Transformation, ICMT 2017, held as part of STAF 2017, in Marburg, Germany, in July 2017. The 9 full papers and 2 short papers were carefully reviewed and selected from 31 submissions. The papers are organized in the following topical sections: transformation paradigms, languages, algorithms and strategies; development of transformations; and applications and case studies.

Instructional Strategies for Middle and High School Feb 24 2022 Instructional Strategies for Middle and High School is an accessible, practical, and engaging methods textbook that introduces pre-service teachers to various instructional strategies and helps them to decide how and when to use these methods in the classroom. Classrooms are comprised of diverse learners, and aspiring teachers will face complex decisions about the assessment of student learning and classroom management. Veteran teacher educators Bruce Larson and Timothy Keiper offer practical suggestions for ways to integrate effective classroom management and valid assessment techniques with each instructional strategy. Instructional Strategies for Middle and High School equips pre-service teachers with the methodological tools to promote understanding, conceptual awareness, and learning for every child in the classroom. Features and updates to this new edition include: Clear, step-by-step descriptions and illustrative in-class videos of seven instructional techniques and that pre-service teachers can realistically implement within the classroom setting Increased coverage on teaching English language learners, including a "Making Your Lesson More Meaningful for ELLs" feature now included in every instructional strategy chapter "Enhancing Your Teaching With Technology" feature included in every instructional strategy chapter Fresh interior design to better highlight pedagogical elements and key features, all to better engage students Fully revamped and comprehensive companion website, with both student and instructor materials that stress real-world application of strategies, classroom assessment and management.

Theory and Models for Cyber Situation Awareness Aug 13 2023 Today, when a security incident happens, the top three questions a cyber operation center would ask are: What has happened? Why did it happen? What should I do? Answers to the first two questions form the core of Cyber Situation Awareness (SA). Whether the last question can be satisfactorily addressed is largely dependent upon the cyber situation awareness capability of an enterprise. The goal of this book is to present a summary of recent research advances in the development of highly desirable Cyber Situation Awareness capabilities. The 8 invited full papers presented in this volume are organized around the following topics: computer-aided human centric cyber situation awareness; computer and information science aspects of the recent advances in cyber situation awareness; learning and decision making aspects of the recent advances in cyber situation awareness; cognitive science aspects of the recent advances in cyber situation awareness

Theory and Applications of Relational Structures as Knowledge Instruments Mar 08 2023 Relational structures abound in our daily environment: relational databases, data mining, scaling procedures, preference relations, etc. As the documentation of scientific results achieved within the European COST Action 274, TARSKI, this book advances the understanding of relational structures and the use of relational methods in various application fields. The 12 revised full papers were carefully reviewed and selected for presentations. The papers are devoted to mechanization of relational reasoning, relational scaling and preferences, and algebraic and logical foundations of real world relations.

The Situation in Logic May 30 2022 Situation Theory and situation semantics are recent approaches to language and information, approaches first formulated by Jon Barwise and John Perry in Situations and Attitudes (1983). The present volume collects some of Barwise's papers written since then, those directly concerned with relations among logic, situation theory, and situation semantics. Several papers appear here for the first time.

Algebraic K-theory: The Homotopy Approach Of Quillen And An Approach From Commutative Algebra Jun 11 2023 In this book the author takes a pedagogic approach to Algebraic K-theory. He tried to find the shortest route possible, with complete details, to arrive at the homotopy approach of Quillen [Q] to Algebraic K-theory, with a simple goal to produce a self-contained and comprehensive pedagogic document in Algebraic K-theory, that is accessible to upper level graduate students. That is precisely what this book faithfully executes and achieves.The contents of this book can be divided into three parts — (1) The main body (Chapters 2-8), (2) Epilogue Chapters (Chapters 9, 10, 11) and (3) the Background and preliminaries (Chapters A, B, C, 1). The main body deals with Quillen's definition of K-theory and the K-theory of schemes. Chapters 2, 3, 5, 6, and 7 provide expositions of the paper of Quillen [Q], and chapter 4 is on agreement of Classical K-theory and Quillen K-theory. Chapter 8 is an exposition of the work of Swan [Sw1] on K-theory of quadrics.The Epilogue chapters can be viewed as a natural progression of Quillen's work and methods. These represent significant benchmarks and include Waldhausen K-theory,

Negative K-theory, Hermitian K-theory, ?-theory spectra, Grothendieck-Witt theory spectra, Triangulated categories, Nori-Homotopy and its relationships with Chow-Witt obstructions for projective modules. In most cases, the proofs are improvisation of methods of Quillen [Q].The background, preliminaries and tools needed in chapters 2-11, are developed in chapters A on Category Theory and Exact Categories, B on Homotopy, C on CW Complexes, and 1 on Simplicial Sets.

Algorithmic Decision Theory Jan 26 2022 This book constitutes the refereed proceedings of the Second International Conference on Algorithmic Decision Theory, ADT 2011, held in Piscataway, NJ, USA, in October 2011. The 24 revised full papers presented were carefully reviewed and selected from 50 submissions.

Systems: Theory and Practice Oct 15 2023 There is hardly a science that is without the notion of "system". We have systems in mathematics, formal systems in logic, systems in physics, electrical and mechanical engineering, architectural-, operating-, infonnation-, programming systems in computer science, management-and PJoduction systems in industrial applications, economical-, ecological-, biological systems, and many more. In many of these disciplines formal tools for system specification, construction, verification, have been developed as well as mathematical concepts for system modeling and system simulation. Thus it is quite natural to expect that systems theory as an interdisciplinary and well established science offering general concepts and methods for a wide variety of applications is a subject in its own right in academic education. However, as can be seen from the literature and from the curricula of university studies -at least in Central Europe-, it is subordinated and either seen as part of mathematics with the risk that mathematicians, who may not be familiar with applications, define it in their own way, or it is treated separately within each application field focusing on only those aspects which are thought to be needed in the particular application. This often results in uneconomical re-inventing and re-naming of concepts and methods within one field, while the same concepts and methods are already well introduced and practiced in other fields. The fundamentals on general systems theory were developed several decades ago. We note the pioneering work of M. A. Arbib, R. E. Kalman, G. 1. Klir, M. D.

Algebraic K-Theory and Its Applications Oct 23 2021 Algebraic K-Theory is crucial in many areas of modern mathematics, especially algebraic topology, number theory, algebraic geometry, and operator theory. This text is designed to help graduate students in other areas learn the basics of K-Theory and get a feel for its many applications. Topics include algebraic topology, homological algebra, algebraic number theory, and an introduction to cyclic homology and its interrelationship with K-Theory.

Computer Aided Systems Theory – EUROCAST 2017 Apr 28 2022 The two-volume set LNCS 10671 and 10672 constitutes the thoroughly refereed proceedings of the 16th International Conference on Computer Aided Systems Theory, EUROCAST 2017, held in Las Palmas de Gran Canaria, Spain, in February 2017. The 117 full papers presented were carefully reviewed and selected from 160 submissions. The papers are organized in topical sections on: pioneers and landmarks in the development of information and communication technologies; systems theory, socio-economic systems and applications; theory and applications of metaheuristic algorithms; stochastic models and applications to natural, social and technical systems; model-based system design, verification and simulation; applications of signal processing technology; algebraic and combinatorial methods in signal and pattern analysis; computer vision, deep learning and applications; computer and systems based methods and electronics technologies in medicine; intelligent transportation systems and smart mobility.

Fundamentals of Set and Number Theory Feb 19 2024 This comprehensive two-volume work is devoted to the most general beginnings of mathematics. It goes back to Hausdorff’s classic Set Theory (2nd ed., 1927), where set theory and the theory of functions were expounded as the fundamental parts of mathematics in such a way that there was no need for references to other sources. Along the lines of Hausdorff’s initial work (1st ed., 1914), measure and integration theory is also included here as the third fundamental part of contemporary mathematics.The material about sets and numbers is placed in Volume 1 and the material about functions and measures is placed in Volume 2. Contents Fundamentals of the theory of classes, sets, and numbers Characterization of all natural models of Neumann – Bernays – Godel and Zermelo – Fraenkel set theories Local theory of sets as a foundation for category theory and its connection with the Zermelo – Fraenkel set theory Compactness theorem for generalized second-order language

A Theory of Objects Jun 23 2024 By developing object calculi in which objects are treated as primitives, the authors are able to explain both the semantics of objects and their typing rules, and also demonstrate how to develop all of the most important concepts of object-oriented programming languages: self, dynamic dispatch, classes, inheritance, protected and private methods, prototyping, subtyping, covariance and contravariance, and method specialization. An innovative and important approach to the subject for researchers and graduates.

Applications and Theory of Petri Nets 2004 Jan 06 2023 This book constitutes the refereed proceedings of the 25th International Conference on Applications and Theory of Petri Nets, ICATPN 2004, held in Bologna, Italy in June 2004. The 19 revised full regular papers and 5 revised tool presentation papers presented together with 6 invited papers were carefully reviewed and selected from 62 submissions. All current issues on research and development in the area of Petri nets are addressed, in particular concurrent systems design and analysis, modular systems development, formal specification, model validation, model checking, workflow management, flow charts, networking, formal methods in software engineering, etc.

Modelling Database Dynamics Aug 01 2022 Database modelling is concerned with the design of reliable and efficient database systems. Three different approaches to modelling can be identified: structure-oriented, process-oriented, and behaviour-oriented. Database literature has traditionally focused on structure-oriented approaches, but it is now widely

recognised that problems can be solved more effectively by integrating all three. As a result, modelling database dynamics is now considered to be as important as modelling static database structures. This volume contains selected papers from the Fourth International Workshop on Foundations of Models and Languages for Data and Objects, held in Volkse, Germany, 19-22 October, 1992. This series of international workshops was initiated by the Working Group on Foundations of Information Systems, part of the German Association for Informatics. It provides an international forum for the discussion of current research into database theory and its application to database technology. The theme of this particular workshop was modelling the dynamic behaviour of database systems in formal frameworks. As object-oriented principles are being widely used in current research work, particular emphasis was also given to object dynamics. Among the topics covered in this volume are: specifying the dynamics of complex objects databases; updates in a rule-based language for objects; an order-sorted approach to active objects; non-deterministic aspects of database transformations involving object creation; monitoring temporal permissions using partially evaluated transition graphs; a formalisation of logic databases and integrity constraints; a comparison of approaches for modelling dynamics of databases. Modelling Database Dynamics provides a comprehensive overview of current research into the modelling and use of database dynamics. It will provide invaluable reading for researchers, postgraduate students, and anyone interested in the theoretical foundations of computer science.

Graph Transformations and Model-Driven Engineering Mar 16 2021 This festschrift volume, published in honor of Manfred Nagl on the occasion of his 65th birthday, contains 30 refereed contributions, that cover graph transformations, software architectures and reengineering, embedded systems engineering, and more.

Checking Theory and Grammatical Functions in Universal Grammar Jan 18 2024 Ura demonstrates that his theory of multiple feature-checking, an extension of Chomsky's Agr-less checking theory, gives a natural explanation for a wide range of data drawn from a variety of languages in a very consistent way with a limited set of parameters.

Dynamic Worlds Feb 12 2021 Surveys and synthesizes recent work in the field, and presents new research results. Among topics treated are logics for reasoning about actions and planning, belief revision and the reconciliation of logically conflicting inputs, resolution of conflicts by merging of knowledge, and issues in the evolution of object-oriented databases. Other subjects include action and change in rewriting logic, heterogeneous systems for modeling dynamic worlds, and reasoning about actual and hypothetical occurrences of concurrent and non- deterministic actions. No index. Annotation copyrighted by Book News, Inc., Portland, OR

Cosmological Applications of Algebraic Quantum Field Theory in Curved Spacetimes Jul 20 2021 This book provides a largely self-contained and broadly accessible exposition on two cosmological applications of algebraic quantum field theory (QFT) in curved spacetime: a fundamental analysis of the cosmological evolution according to the Standard Model of Cosmology; and a fundamental study of the perturbations in inflation. The two central sections of the book dealing with these applications are preceded by sections providing a pedagogical introduction to the subject. Introductory material on the construction of linear QFTs on general curved spacetimes with and without gauge symmetry in the algebraic approach, physically meaningful quantum states on general curved spacetimes, and the backreaction of quantum fields in curved spacetimes via the semiclassical Einstein equation is also given. The reader should have a basic understanding of General Relativity and QFT on Minkowski spacetime, but no background in QFT on curved spacetimes or the algebraic approach to QFT is required.>

Rules on the Web: From Theory to Applications Apr 16 2021 This book constitutes the refereed proceedings of the 8th International RuleML Symposium, RuleML 2014, co-located with the 21st European Conference on Artificial Intelligence, ECAI 2014, held in Prague, Czech Republic, in August 2014. The 17 full and 6 short papers presented together with 3 keynote talks were carefully reviewed and selected from 48 submissions. The papers cover the following topics: semantic web rule languages and standards, rule engines, formal and operational semantics and rule-based systems, the relation between natural language and rules, automation of business rules generation from existing data, and aspects related to legal rules and norms for web and corporate environments.

Classics of Moral and Political Theory Dec 05 2022 The fifth edition of Michael L. Morgan's Classics of Moral and Political Theory broadens the scope and increases the versatility of this landmark anthology by offering new selections from Aristotle's Politics, Aquinas' Disputed Questions on Virtue and Treatise on Law, as well as the entirety of Locke's Letter Concerning Toleration, Kant's To Perpetual Peace, and Nietzsche's On the Advantage and Disadvantage of History for Life.

Developments in Language Theory Jun 30 2022 The refereed proceedings of the 6th International Conference on Developments in Language Theory, DLT 2002, held in Kyoto, Japan in September 2002. The 28 revised full papers presented together with 8 invited papers were carefully reviewed and selected from 63 submissions. Among the topics addressed are grammars and acceptors for strings, graphs, arrays, etc; efficient algorithms for languages; combinatorial and algebraic properties of languages; decision problems; relations to complexity theory, logic picture description and analysis, DNA computing, cryptography, concurrency, quantum computing, and algebraic systems.

Specification of Software Systems Sep 21 2021 This extensively revised and updated new edition of Specification of Software Systems builds upon the original focus on software specification with added emphasis on the practice of formal methods for specification and verification activities for different types of software systems and at different stages of developing software systems. Topics and features: provides a wide coverage of formal specification techniques and a clear writing style, supported by end-of-chapter bibliographic notes for further reading; presents a logical structure, with sections devoted to specification fundamentals, basics of formalism, logic, set theory and relations, property-oriented

specification methods, and model-based specification techniques; contains end-of-chapter exercises and numerous case studies, with potential course outlines suggested in the Preface; covers Object-Z, B-Method, and Calculus of Communicating Systems; offers material that can be taught with tool-supported laboratory projects.

Capacity Theory with Local Rationality Apr 09 2023 This book is devoted to the proof of a deep theorem in arithmetic geometry, the Fekete-Szegö theorem with local rationality conditions. The prototype for the theorem is Raphael Robinson's theorem on totally real algebraic integers in an interval, which says that if is a real interval of length greater than 4, then it contains infinitely many Galois orbits of algebraic integers, while if its length is less than 4, it contains only finitely many. The theorem shows this phenomenon holds on algebraic curves of arbitrary genus over global fields of any characteristic, and is valid for a broad class of sets. The book is a sequel to the author's work Capacity Theory on Algebraic Curves and contains applications to algebraic integers and units, the Mandelbrot set, elliptic curves, Fermat curves, and modular curves. A long chapter is devoted to examples, including methods for computing capacities. Another chapter contains extensions of the theorem, including variants on Berkovich curves. The proof uses both algebraic and analytic methods, and draws on arithmetic and algebraic geometry, potential theory, and approximation theory. It introduces new ideas and tools which may be useful in other settings, including the local action of the Jacobian on a curve, the "universal function" of given degree on a curve, the theory of inner capacities and Green's functions, and the construction of near-extremal approximating functions by means of the canonical distance.

Approximation Theory Apr 21 2024 This concisely written book gives an elementary introduction to a classical area of mathematics—approximation theory—in a way that naturally leads to the modern field of wavelets. The exposition, driven by ideas rather than technical details and proofs, demonstrates the dynamic nature of mathematics and the influence of classical disciplines on many areas of modern mathematics and applications. Key features and topics: * Description of wavelets in words rather than mathematical symbols * Elementary introduction to approximation using polynomials (Weierstrass' and Taylor's theorems) * Introduction to infinite series, with emphasis on approximation-theoretic aspects * Introduction to Fourier analysis * Numerous classical, illustrative examples and constructions * Discussion of the role of wavelets in digital signal processing and data compression, such as the FBI's use of wavelets to store fingerprints * Minimal prerequisites: elementary calculus * Exercises that may be used in undergraduate and graduate courses on infinite series and Fourier series Approximation Theory: From Taylor Polynomials to Wavelets will be an excellent textbook or self-study reference for students and instructors in pure and applied mathematics, mathematical physics, and engineering. Readers will find motivation and background material pointing toward advanced literature and research topics in pure and applied harmonic analysis and related areas.

Perspectives of System Informatics Oct 03 2022 This book constitutes the thoroughly refereed post-proceedings of the Third International Andrei Ershov Memorial Conference, PSI'99, held in Akademgorodok, Novosibirsk, Russia, in July 1999. The 44 revised papers presented together with five revised full invited papers were carefully reviewed and selected from a total of 73 submissions. The papers are organized in sections on algebraic specifications, partial evaluation and super compilation, specification with states, concurrency and parallelism, logic and processes, languages and software, database programming, object-oriented programming, constraint programming, model checking and program checking, and artificial intelligence.

Theory and Practice of Model Transformations Nov 16 2023 Models have become essential for dealing with the numerous aspects involved in developing and maintaining complex IT systems. Models allow capturing of the relevant aspects of a system from a given perspective, and at a precise level of abstraction. In addition to models, the transformations between them are other key elements in model-driven engineering. Model transformations allow the de?nition and implementation of the operations on models, and also provide achainthatenablestheautomateddevelopmentofasystemfromitscorrespo- ing models. Furthermore, model transformations may be realized using models, and are, therefore, an integral part of any model-driven approach. There are already several proposals for model transformation speci?cation, implementation and execution, which are beginning to be used by modeling practitioners. However, model transformations need specialized support in s- eral aspects in order to realize their full potential. The problem goes beyond having speci?c languages to represent model transformations; we also need to understandtheirfoundations,suchasthekeyconceptsandoperatorssupporting those languages, their semantics, and their structuring mechanisms and pr- erties (e. g. , modularity, composability and parametrization). In addition, model transformations can be stored in repositories as reusable assets, where they can be managed, discovered and reused. There is also a need to chain and combine model transformations in order to produce new and more powerful transfor- tions, and to be able to implement new operations on models. Finally, model transformations need methodology support, i. e. , they need to be integrated into software development methodologies supported by appropriate tools and en- ronments. These issues and concerns de?ne the focus of these proceedings.

Modeling Decisions for Artificial Intelligence Dec 17 2023 This book constitutes the refereed proceedings of the First International Conference on Modeling Decisions for Artificial Intelligence, MDAI 2004, held in Barcelona, Spain in August 2004. The 26 revised full papers presented together with 4 invited papers were carefully reviewed and selected from 53 submissions. The papers are devoted to topics like models for information fusion, aggregation operators, model selection, fuzzy integrals, fuzzy sets, fuzzy multisets, neural learning, rule-based classification systems, fuzzy association rules, algorithmic learning, diagnosis, text categorization, unsupervised aggregation, the Choquet integral, group decision making, preference relations, vague knowledge processing, etc.

Optimality Theory and Pragmatics Sep 02 2022 Ten leading scholars provide exacting research results and a reliable and accessible introduction to the new field of optimality theoretic pragmatics. The book includes a general introduction that overviews the foundations of this new research paradigm. The book is intended to satisfy the needs of students and professional researchers interested in pragmatics and optimality theory, and will be of particular interest to those exploring the interfaces of formal pragmatics with grammar, semantics, philosophy of language, information theory and cognitive psychology.
Qualitative Representations Jul 12 2023 An argument that qualitative representations—symbolic representations that carve continuous phenomena into meaningful units—are central to human cognition. In this book, Kenneth Forbus proposes that qualitative representations hold the key to one of the deepest mysteries of cognitive science: how we reason and learn about the continuous phenomena surrounding us. Forbus argues that qualitative representations—symbolic representations that carve continuous phenomena into meaningful units—are central to human cognition. Qualitative representations provide a basis for commonsense reasoning, because they enable practical reasoning with very little data; this makes qualitative representations a useful component of natural language semantics. Qualitative representations also provide a foundation for expert reasoning in science and engineering by making explicit the broad categories of things that might happen and enabling causal models that help guide the application of more quantitative knowledge as needed. Qualitative representations are important for creating more human-like artificial intelligence systems with capabilities for spatial reasoning, vision, question answering, and understanding natural language. Forbus discusses, among other topics, basic ideas of knowledge representation and reasoning; qualitative process theory; qualitative simulation and reasoning about change; compositional modeling; qualitative spatial reasoning; and learning and conceptual change. His argument is notable both for presenting an approach to qualitative reasoning in which analogical reasoning and learning play crucial roles and for marshaling a wide variety of evidence, including the performance of AI systems. Cognitive scientists will find Forbus's account of qualitative representations illuminating; AI scientists will value Forbus's new approach to qualitative representations and the overview he offers.