This book constitutes the refereed proceedings of the 23rd Annual Symposium on Theoretical Aspects of Computer Science, held in February 2006. The 54 revised full papers presented together with three invited papers were carefully reviewed and selected from 283 submissions. The papers address the whole range of theoretical computer science including algorithms and data structures, automata and formal languages, complexity theory, semantics, and logic in computer science.

In programming courses, using the different syntax of multiple languages, such as C++, Java, PHP, and Python, for the same abstraction often confuses students new to computer science. Introduction to Programming Languages separates programming language concepts from the restraints of multiple language syntax by discussing the concepts at an abstract level.

This book includes a set of rigorously reviewed world-class manuscripts addressing and detailing state-of-the-art research projects in the areas of Computer Science, Informatics, and Systems Sciences, and Engineering. It includes selected papers from the conference proceedings of the Ninth International Joint Conferences on Computer, Information, and Systems Sciences, and Engineering (CISSE 2013). Coverage includes topics in: Industrial Electronics, Technology & Automation, Telecommunications and Networking, Systems, Computing Sciences and Software Engineering, Engineering Education, Instructional Technology, Assessment, and E-learning. • Provides the latest in a series of books growing out of the International Joint Conferences on Computer, Information, and Systems Sciences, and Engineering; • Includes chapters in the most advanced areas of Computing, Informatics, Systems Sciences, and Engineering; • Accessible to a wide range of readership, including professors, researchers, practitioners and students.
ETAPS 2001 was the fourth instance of the European Joint Conferences on Theory and Practice of Software. ETAPS is an annual federated conference that was established in 1998 by combining a number of existing and new conferences. This year it comprised five conferences (FOSSACS, FASE, ESOP, CC, TACAS), ten satellite workshops (CMCS, ETI Day, JOSES, LDTA, MMAABS, PFM, RelMiS, UNIGRA, WADT, WTUML), seven invited lectures, a debate, and ten tutorials. The events that comprise ETAPS address various aspects of the system development process, including specification, design, implementation, analysis, and improvement. The languages, methodologies, and tools which support these activities are all well within its scope. Different blends of theory and practice are represented, with an inclination towards theory with a practical motivation on one hand and soundly-based practice on the other. Many of the issues involved in software design apply to systems in general, including hardware systems, and the emphasis on software is not intended to be exclusive.

The Cumulative Book Index

This book – the first of two volumes – explores the syntactical constructs of the most common programming languages, and sheds a mathematical light on their semantics, while also providing an accurate presentation of the material aspects that interfere with coding. Concepts and Semantics of Programming Languages 1 is dedicated to functional and imperative features. Included is the formal study of the semantics of typing and execution; their acquisition is facilitated by implementation into OCaml and Python, as well as by worked examples. Data representation is considered in detail: endianness, pointers, memory management, union types and pattern-matching, etc., with examples in OCaml, C and C++. The second volume introduces a specific model for studying modular and object features and uses this model to present Ada and OCaml modules, and subsequently Java, C++, OCaml and Python classes and objects. This book is intended not only for computer science students and teachers but also seasoned programmers, who will find a guide to reading reference manuals and the foundations of program verification.

Static Analysis

KEY BENEFIT: A thorough introduction to the main constructs of contemporary programming languages and the tools needed to critically evaluate existing and future programming languages. KEY TOPICS: Evolution of the Major Programming Languages; Describing Syntax and Semantics; Lexical and Syntax Analysis; Names, Bindings, Type Checking, and Scopes; Data Types; Expressions and Assignment Statements; Statement-Level Control Structures; Subprograms; Implementing Subprograms; Abstract Data Types and Encapsulation Constructs; Support for Object-Oriented Programming; Concurrency; Exception Handling and Event Handling; Functional Programming Languages; Logic Programming Languages MARKET: An ideal reference encapsulating the history and future of programming languages.

Software Engineering

This collection of essays reflects the breadth of research in computer science. Following a biography of Robin Milner it contains sections on semantic foundations; programming logic; programming languages; concurrency; and mobility.
proves. I think, mostly, it worked. In any case, the group of people represented as broad a selection of logicians as I have seen in recent years, and the quality of the talks was (in my view) exceptionally, unusually high. I learned a lot and (I think) others did too.

Software Language Engineering

The digital age has presented an exponential growth in the amount of data available to individuals looking to draw conclusions based on given or collected information across industries. Challenges associated with the analysis, security, sharing, storage, and visualization of large and complex data sets continue to plague data scientists and analysts alike as traditional data processing applications struggle to adequately manage big data. Big Data: Concepts, Methodologies, Tools, and Applications is a multi-volume compendium of research-based perspectives and solutions within the realm of large-scale and complex data sets. Taking a multidisciplinary approach, this publication presents exhaustive coverage of crucial topics in the field of big data including diverse applications, storage solutions, analysis techniques, and methods for searching and transferring large data sets, in addition to security issues. Emphasizing essential research in the field of data science, this publication is an ideal reference source for data analysts, IT professionals, researchers, and academics.

Ten Years Of Concurrency Semantics: Selected Papers Of The Amsterdam Concurrency Group


Programmiersprachen und Programmentwicklung

As the Czech ambassador to the United States, H. E. Petr Gandalovic noted in his foreword to this book that Mla Rechcgl has written a monumental work representing a culmination of his life achievement as a historian of Czech America. The Encyclopedia of Bohemian and Czech American Biography is a unique and unparalleled publication. The enormity of this undertaking is reflected in the fact that it covers a universe, starting a few decades after the discovery of the New World, through the escapades and significant contributions of Bohemian Jesuits and Moravian brethren in the seventeenth and eighteenth centuries, the mass migration of the Czechs after the revolutionary year of 1848, and up to the early years of the twentieth century and the influx of refugees from Nazism and communism. The encyclopedia has been planned as a representative, a comprehensive and authoritative reference tool, encompassing over 7,500 biographies. This prodigious and unparalleled encyclopedic vade mecum, reflecting enduring contributions of notable Americans with Czech roots, is not only an invaluable tool for all researchers and students of Czech American history but is also a carte blanche for the Czech Republic, which considers Czech Americans as their own and as a part of its magnificent cultural history.
From the point of view that the best way to study and understand programming languages is to focus on a few essential concepts. The book includes such topics as variables, expressions, statements, typing, scope, procedures, data types, exception handling and concurrency. By understanding what these concepts are and how they are realized in different programming languages, the reader arrives at a level of comprehension far greater than can be achieved by writing programs in various languages. Moreover, knowledge of these concepts provides a framework for understanding future language designs.

Reliable Software Technologies -- Ada-Europe 2012

Basic principles of image processing and programming explained without college-level mathematics. This book explores image processing from several perspectives: the creative, the theoretical (mainly mathematical), and the programmatical. It explains the basic principles of image processing, drawing on key concepts and techniques from mathematics, psychology of perception, computer science, and art, and introduces computer programming as a way to get more control over image processing operations. It does so without requiring college-level mathematics or prior programming experience. The content is supported by PixelMath, a freely available software program that helps the reader understand images as both visual and mathematical objects. The first part of the book covers such topics as digital image representation, sampling, brightness and contrast, color models, geometric transformations, synthesizing images, stereograms, photomosaics, and fractals. The second part of the book introduces computer programming using an open-source version of the easy-to-learn Python language. It covers the basics of image analysis and pattern recognition, including edge detection, convolution, thresholding, contour representation, and K-nearest-neighbor classification. A chapter on computational photography explores such subjects as high-dynamic-range imaging, autofocusing, and methods for automatically inpainting to fill gaps or remove unwanted objects in a scene. Applications described include the design and implementation of an image-based game. The PixelMath software provides a "transparent" view of digital images by allowing the user to view the RGB values of pixels by zooming in on an image. PixelMath provides three interfaces: the pixel calculator; the formula page, an advanced extension of the calculator; and the Python window.
Design and implementation of service-oriented architectures impose numerous research questions from the fields of software engineering, system analysis and modeling, adaptability, and application integration. Service-oriented Systems Engineering represents a symbiosis of best practices in object orientation, component-based development, distributed computing, and business process management. It provides integration of business and IT concerns. Service-oriented Systems Engineering denotes a current research topic in the field of IT-Systems Engineering with high potential in academic research and industrial application. The annual Ph.D. Retreat of the Research School provides all members the opportunity to present the current state of their research and to give an outline of prospective Ph.D. projects. Due to the interdisciplinary structure of the Research School, this technical report covers a wide range of research topics. These include but are not limited to: Human Computer Interaction and Computer Vision as Service; Service-oriented Geovisualization Systems; Algorithm Engineering for Service-oriented Systems; Modeling and Verification of Self-adaptive Service-oriented Systems; Tools and Methods for Software Engineering in Service-oriented Systems; Security Engineering of Service-based IT Systems; Service-oriented Information Systems; Evolutionary Transition of Enterprise Applications to Service Orientation; Operating System Abstractions for Service-oriented Computing; and Services Specification, Composition, and Enactment.

Software Engineering: The Current Practice teaches students basic software engineering skills and helps practitioners refresh their knowledge and explore recent developments in the field, including software changes and iterative processes of software development. After a historical overview and an introduction to software technology and models, the book discusses the software change and its phases, including concept location, impact analysis, refactoring, actualization, and verification. It then covers the most common iterative processes: agile, directed, and centralized processes. The text also journeys through the software life span from the initial development of software from scratch to the final stages that lead toward software closedown. For Professionals The book gives programmers and software managers a unified view of the contemporary practice of software engineering. It shows how various developments fit together and fit into the contemporary software engineering mosaic. The knowledge gained from the book allows practitioners to evaluate and improve the software engineering processes in their projects. For Instructors Instructors have several options for using this classroom-tested material. Designed to be run in conjunction with the lectures, ideas for student projects include open source programs that use Java or C++ and range in size from 50 to 500 thousand lines of code. These projects emphasize the role of developers in a classroom-tailored version of the directed iterative process (DIP). For Students Students gain a real understanding of software engineering processes through the lectures and projects. They acquire hands-on experience with software of the size and quality comparable to that of industrial software. As is the case in the industry, students work in teams but have individual assignments and accountability.
While in the previous volume the majority of magnetic data was obtained either from magnetometric measurements or from neutron diffraction, for the present data the main emphasis is devoted to ‘related’ properties without which, however, the understanding of classical magnetic properties is impossible. A second part will deal with binary oxides of the actinide elements.

The World of Programming Languages


Programming Languages: Implementations, Logics, and Programs

This book uses a functional programming language (F#) as a metalanguage to present all concepts and examples, and thus has an operational flavour, enabling practical experiments and exercises. It includes basic concepts such as abstract syntax, interpretation, stack machines, compilation, type checking, garbage collection, and real machine code. Also included are more advanced topics on polymorphic types, type inference using unification, co- and contravariant types, continuations, and backwards code generation with on-the-fly peephole optimization.

This second edition includes two new chapters. One describes compilation and type checking of a full functional language, tying together the previous chapters. The other describes how to compile a C subset to real (x86) hardware, as a smooth extension of the previously presented compilers. The examples present several interpreters and compilers for toy languages, including compilers for a small but usable subset of C, abstract machines, a garbage collector, and ML-style polymorphic type inference. Each chapter has exercises. Programming Language Concepts covers practical construction of lexers and parsers, but not regular expressions, automata and grammars, which are well covered already. It discusses the design and technology of Java and C# to strengthen students’ understanding of these widely used languages.

Fundamentals of Programming Languages

This book assumes familiarity with threads (in a language such as Ada, C#, or Java) and introduces the entity-life modeling (ELM) design approach for certain kinds of multithreaded software. ELM focuses on “reactive systems,” which continuously interact with the problem environment. These “reactive systems” include embedded systems, as well as such interactive systems as cruise controllers and automated teller machines. Part I covers two fundamentals: program-language thread support and state diagramming. These are necessary for understanding ELM and are provided primarily for reference. Part II covers ELM from different angles. Part III positions ELM relative to other design approaches.

Design Concepts in Programming Languages

This volume is the proceedings of the 3rd Workshop on the Mathematical Foundations of Programming Language Semantics held at Tulane University, New Orleans, Louisiana, April 8-10, 1987. The 1st Workshop was at Kansas State University, Manhattan, Kansas in April, 1985 (see LNCS 239), and the 2nd Workshop with a limited number of participants was at Kansas State in April, 1986. It was the intention of the organizers that the 3rd Workshop survey as many areas of the Mathematical Foundations of Programming Language Semantics as reasonably possible. The Workshop attracted 49 submitted papers, from which 28 papers were chosen for presentation. The papers ranged in subject from category theory and Lambda-calculus to the structure theory of domains and power domains, to implementation issues surrounding semantics.
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