Handbook Of Graph Grammars And Computing By Graph Transformation Vol 1

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Concurrency, Parallelism and Distribution Hartmut Ehrig 1999
Fundamentals of Algebraic Graph Transformation Hartmut Ehrig 2006-05-01 This is the first textbook treatment of the algebraic approach to graph transformation, based on algebraic structures and category theory. It contains an introduction to classical graphs. Basic and advanced results are first shown for an abstract form of replacement systems and are then instantiated to several forms of graph and Petri net transformation systems. The book develops typed attributed graph transformation and contains a practical case study.
Handbook of Computer Science & IT Arihant Experts 2018-04-20 Scope of science and technology is expanding at an exponential rate and so is the need of skilled professionals i.e., Engineers. To stand out of the crowd amidst rising competition, many of the engineering graduates aim to crack GATE, IES and PSUs and pursue various post graduate Programmes. Handbook series as its name suggests is a set of Best-selling Multi-Purpose Quick Revision resource books, those are devised with anytime, anywhere approach. It’s a compact, portable revision aid like none other. It contains almost all useful Formulae, equations, Terms, definitions and many more important aspects of these subjects. Computer Science & IT Handbook has been designed for aspirants of GATE, IES, PSUs and Other Competitive Exams. Each topic is summarized in the form of key points and notes for everyday work, problem solving or exam revision, in a unique format that displays concepts clearly. The book also displays formulae and circuit diagrams clearly, places them in context and crisply identities and describes all the variables involved Theory of Computation, Data Structure with Programming in C, Design and Analysis of Algorithm, Database Management Systems, Operation System, Computer Network, Compiler Design, Software Engineering and Information System, Web Technology, Switching Theory and Computer Architecture
Hyperedge Replacement: Grammars and Languages Annegret Habel 1992-12-08 The area of graph grammars is theoretically

attractive and well motivated byvarious applications. More than 20 years ago, the concept of graph grammars was introduced by A. Rosenfeld as a formulation of some problems in pattern recognition and image processing, as well as by H.J. Schneider as a method for data type specification. Within graph-grammar theory one maydistinguish the set-theoretical approach, the algebraic approach, and the logical approach. These approaches differ in the method in which graph replacement is described. Specific approaches, node replacement and hyperedge replacement, concern the basic units of a hypergraph, nodes and hyperedges. This monograph is mainly concerned with the hyperedge-replacement approach. Hyperedge-replacement grammars are introduced as a device for generating hypergraph languages including graph languages and string languages. The concept combines a context-free rewriting with a comparatively large generative power. The volume includes a foreword by H. Ehrig.

Graph-Based Methods in Computer Vision: Developments and Applications Bai, Xiao 2012-07-31 Computer vision, the science and technology of machines that see, has been a rapidly developing research area since the mid-1970s. It focuses on the understanding of digital input images in many forms, including video and 3-D range data. Graph-Based Methods in Computer Vision: Developments and Applications presents a sampling of the research issues related to applying graph-based methods in computer vision. These methods have been under-utilized in the past, but use must now be increased because of their ability to naturally and effectively represent image models and data. This publication explores current activity and future applications of this fascinating and ground-breaking topic.

Applications, Languages and Tools Hartmut Ehrig 1999

Foundation of Software Science and Computation Structures Jerzy Tiuryn 2000-03-15 ETAPS2000wasthethirdinstanceoftheEuropeanJointConferenceso nTheory 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 comprisedv e conferences (FOSSACS, FASE, ESOP,CC, TACAS), ve satellite workshops (CBS, CMCS, CoFI, GRATRA, INT), seven invited lectures, a panel discussion, and ten tutorials. The events that comprise ETAPS address various aspects of the system - velopmentprocess,includingspeci cation,design,implementation,analysis,and improvement. The languages, methodologies, and tools which support these - tivities are all well within its scope. Die rent 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. ETAPS is a loose confederation in which each event retains its own identity, with a separate program committee and independent proceedings. Its format is open-ended, allowing it to grow and evolve as time goes by. Contributed talks and system demonstrations are in synchronized parallel sessions, with invited lectures in plenary sessions. Two of the invited lectures are reserved for \u- fying" talks on topics of interest to the whole range of ETAPS attendees.

Handbook of Cloud Computing Borko Furht 2010-09-11 Cloud computing has become a significant technology trend. Experts believe cloud computing is currently reshaping information technology and the IT marketplace. The advantages of using cloud computing include cost savings, speed to market, access to greater computing resources, high availability, and scalability. Handbook of Cloud Computing includes contributions from world experts in the field of cloud computing from academia, research laboratories and private industry. This book presents the systems, tools, and services of the leading providers of cloud computing;

including Google, Yahoo, Amazon, IBM, and Microsoft. The basic concepts of cloud computing and cloud computing applications are also introduced. Current and future technologies applied in cloud computing are also discussed. Case studies, examples, and exercises are provided throughout. Handbook of Cloud Computing is intended for advanced-level students and researchers in computer science and electrical engineering as a reference book. This handbook is also beneficial to computer and system infrastructure designers, developers, business managers, entrepreneurs and investors within the cloud computing related industry.

Handbook of Graph Grammars and Computing by Graph Transformation Grzegorz Rozenberg 1999

The Book of Traces Volker Diekert 1995 The theory of traces employs techniques and tackles problems from quite diverse areas which include formal language theory, combinatorics, graph theory, algebra, logic, and the theory of concurrent systems. In all these areas the theory of traces has led to interesting problems and significant results. It has made an especially big impact in formal language theory and the theory of concurrent systems. In both these disciplines it is a well-recognized and dynamic research area. Within formal language theory it yields the theory of partially commutative monoids, and provides an important connection between languages and graphs. Within the theory of concurrent systems it provides an important formal framework for the analysis and synthesis of concurrent systems.This monograph covers all important research lines of the theory of traces; each chapter is devoted to one research line and is written by leading experts. The book is organized in such a way that each chapter can be read independently ? and hence it is very suitable for advanced courses or seminars on formal language theory, the theory of concurrent systems, the theory of semigroups, and combinatorics. An extensive bibliography is included. At present, there is no other book of this type on trace theory.

Graph Transformation Andrea Corradini 2003-06-30 ICGT 2002 was the ?rst International Conference on Graph Transformation following a series of six international workshops on graph grammars with - plications in computer science, held in Bad Honnef (1978), Osnabruc¨ k (1982), Warrenton (1986), Bremen (1990), Williamsburg (1994), and Paderborn (1998). ICGT 2002 was held in Barcelona (Spain), October 7–12, 2002 under the a-pices of the European Association of Theoretical Computer Science (EATCS), the European Association of Software Science and Technology (EASST), and the IFIP Working Group 1.3, Foundations of Systems Speci?cation. The scope of the conference concerned graphical structures of various kinds (like graphs, diagrams, visual sentences and others) that are useful to describe complex structures and systems in a direct and intuitive way. These structures are often augmented by formalisms which add to the static description a further dimension, allowing for the modeling of the evolution of systems via all kinds of transformations of such graphical structures. The ?eld of Graph Transformation is concerned with the theory, applications, and implementation issues of such formalisms. The theory is strongly related to areas such as graph theory and graph - gorithms, formal language and parsing theory, the theory of concurrent and distributed systems, formal speci?cation and veri?cation, logic, and semantics.

Handbook of Graph Grammars and Computing by Graph Transformation Hartmut Ehrig 1999 Graph grammars originated in the late 60s, motivated by considerations about pattern recognition and compiler construction. Since then, the list of areas which have interacted with the development of graph grammars has grown quite impressively. Besides the aforementioned areas, it includes software specification and development, VLSI layout schemes, database design, modeling of concurrent systems, massively parallel computer architectures, logic programming, computer animation, developmental biology, music composition, visual languages, and many others. The area of graph grammars and graph transformations generalizes formal language theory based on strings and the theory of term rewriting based on trees. As a matter of fact, within the area of graph grammars, graph transformation is considered a fundamental computation paradigm where computation includes specification, programming, and implementation. Over the last three decades, graph grammars have developed at a steady pace into a theoretically attractive and important-for-applications research field. Volume 3 of the 'indispensable Handbook of' Graph Grammars and Computing by Graph Transformations presents the research on concurrency, parallelism, and distribution -- important paradigms of modern science. The topics considered include semantics for concurrent systems, modeling of concurrency, mobile and coordinated systems, algebraic specifications, Petri nets, visual design of distributed systems, and distributed algorithms. The contributions have been written in a tutorial/survey style by the top experts.

The Cambridge Handbook of Computing Education Research Sally A. Fincher 2019-02-13 This is an authoritative introduction to Computing Education research written by over 50 leading researchers from academia and the industry.

Graph-based Knowledge Representation Michel Chein 2008-10-20 This book provides a de?nition and study of a knowledge representation and r- soning formalism stemming from conceptual graphs, while focusing on the com- tational properties of this formalism. Knowledge can be symbolically represented in many ways. The knowledge representation and reasoning formalism presented here is a graph formalism – knowledge is represented by labeled graphs, in the graph theory sense, and r- soning mechanisms are based on graph operations, with graph homomorphism at the core. This formalism can thus be considered as related to semantic networks. Since their conception, semantic networks have faded out several times, but have always returned to the limelight. They faded mainly due to a lack of formal semantics and the limited reasoning tools proposed. They have, however, always rebounded - cause labeled graphs, schemas and drawings provide an intuitive and easily und- standable support to represent knowledge. This formalism has the visual qualities of any graphic model, and it is logically founded. This is a key feature because logics has been the foundation for knowledge representation and reasoning for millennia. The authors also focus substantially on computational facets of the presented formalism as they are interested in knowledge representation and reasoning formalisms upon which knowledge-based systems can be built to solve real problems. Since object structures are graphs, naturally graph homomorphism is the key underlying notion and, from a computational viewpoint, this moors calculus to combinatorics and to computer science domains in which the algorithmicqualitiesofgraphshavelongbeenstudied,asindatabasesandconstraint networks.

Handbook of Graph Grammars and Computing by Graph Transformation Grzegorz Rozenberg 1997-01-01 Graph grammars originated in the late 60s, motivated by considerations about pattern recognition and compiler construction. Since then the list of areas which have interacted with the development of graph grammars has grown quite impressively. Besides the aforementioned areas it includes software specification and development, VLSI layout schemes, database design, modeling of concurrent systems, massively parallel computer architectures, logic programming, computer animation, developmental biology, music composition, visual languages, and many others. The area of graph grammars and graph transformations generalizes formal language theory based on strings and the theory of term rewriting based on trees. As a matter of fact within the area of graph grammars, graph transformation is considered a fundamental programming paradigm where computation includes specification, programming, and implementation.

Handbook of Graph Grammars and Computing by Graph Transformation H Ehrig 1999-08-30 Graph grammars originated in the late 60s, motivated by considerations about pattern recognition and compiler construction. Since then, the list of areas which have interacted with the development of graph grammars has grown quite impressively. Besides the aforementioned areas, it includes software specification and development, VLSI layout schemes, database design, modeling of concurrent systems, massively parallel computer architectures, logic programming, computer animation, developmental biology, music composition, visual languages, and many others. The area of graph grammars and graph transformations generalizes formal language theory based on strings and the theory of term rewriting based on trees. As a matter of fact, within the area of graph grammars, graph transformation is considered as a fundamental computation paradigm where computation includes specification, programming, and implementation. Over the last three decades, graph grammars have developed at a steady pace into a theoretically attractive and important-for-applications research field. Volume 3 of the indispensable Handbook of Graph Grammars and Computing by Graph Transformations presents the research on concurrency, parallelism, and distribution — important paradigms of modern computer science. The topics considered include semantics for concurrent systems, modeling of concurrency, mobile and coordinated systems, algebraic specifications, Petri nets, visual design of distributed systems, and distributed algorithms. The contributions have been written in a tutorial/survey style by the top experts. Contents:Graph Relabelling Systems and Distributed Algorithms (I Litovsky et al.)Actor Grammars and Local Actions (D Janssens)Concurrent Semantics of Algebraic Graph Transformations (P Baldan et al.)Modeling Concurrent, Mobile and Coordinated Systems via Graph Transformations (U Montanari et al.)Distributed Graph Transformation with Application to Visual Design of Distributed Systems (I Fischer et al.)High-Level Replacement Systems Applied to Algebraic Specifications and Petri Nets (H Ehrig et al.)Describing Systems of Processes by Means of High-Level Replacement (H J Schneider) Readership: Students and researchers interested in modern developments in computer science and in particular in three modern paradigms of computer science — concurrency, parallelism, and distribution. Keywords:

Foundations of Software Science and Computation Structures Spain) FOSSACS 2004 (2004 : Barcelona 2004-03-19 This book constitutes the refereed proceedings of the 7th International Conference on Foundations of Software Science and Computation Structures, FOSSACS 2004, held in Barcelona, Spain in March/April 2004. The 34 revised full papers presented together with the abstracts of 2 invited talks were carefully reviewed and selected from over 130 submissions. Among the topics addressed are lambda calculus, cryptographic protocol analysis, graphs and grammar systems, decision theory, bisimulation, rewriting, normalization, specification, verification, process calculi, mobile code, automata, program semantics, dynamic logics, timed languages, security analysis, information-theoretical aspects.

Handbook of Graph Grammars and Computing by Graph Transformation: Concurrency, parallelism, and distribution Grzegorz Rozenberg 1997

Handbook of Graph Grammars and Computing by Graph Transformation H Ehrig 1999-10-20 Graph grammars originated in the late 60s, motivated by considerations about pattern recognition and compiler construction. Since then, the list of areas which have interacted with the development of graph grammars has grown quite impressively. Besides the aforementioned areas, it includes software specification and development, VLSI layout schemes, database design, modeling of concurrent systems, massively parallel computer architectures, logic programming, computer animation, developmental biology, music composition, visual languages, and many others. The area of graph grammars and graph transformations generalizes formal language theory based on strings and the theory of term rewriting based on trees. As a matter of fact, within the area of graph grammars, graph transformation is considered as a fundamental computation paradigm where computation includes specification, programming, and implementation. Over the last three decades, graph grammars have developed at a steady pace into a theoretically attractive and important-for-applications research field. Volume 2 of the indispensable Handbook of Graph Grammars and Computing by Graph Transformations considers applications to functional languages, visual and object-oriented languages, software engineering, mechanical engineering, chemical process engineering, and images. It also presents implemented specification languages and tools, and structuring and modularization concepts for specification languages. The contributions have been written in a tutorial/survey style by the top experts in the corresponding areas. This volume is accompanied by a CD-Rom containing implementations of specification environments based on graph transformation systems, and tools whose implementation is based on the use of graph transformation systems. Contents:Term Rewriting and Functional LanguagesVisual and Object-Oriented LanguagesApplications to Software EngineeringApplications to Engineering DisciplinesApplications to PicturesImplemented Specification Languages and ToolsStructuring and Modularization Concepts Readership: Students and researchers interested in modern developments in computer science, and in particular in the use of modern formal methods in applied computer science. Keywords:

Knowledge Graphs Aidan Hogan 2021-11-08 This book provides a comprehensive and accessible introduction to knowledge graphs, which have recently garnered notable attention from both industry and academia. Knowledge graphs are founded on the principle of applying a graph-based abstraction to data, and are now broadly deployed in scenarios that require integrating and extracting value from multiple, diverse sources of data at large scale. The book defines knowledge graphs and provides a high-level overview of how they are used. It presents and contrasts popular graph models that are commonly used to represent data as graphs, and the languages by which they can be queried before describing how the resulting data graph can be enhanced with notions of schema, identity, and context. The book discusses how ontologies and rules can be used to encode knowledge as well as how inductive techniques—based on statistics, graph analytics, machine learning, etc.—can be used to encode and extract knowledge. It covers techniques for the creation, enrichment, assessment, and refinement of knowledge graphs and surveys recent open and enterprise knowledge graphs and the industries or applications within which they have been most widely adopted. The book closes by discussing the current limitations and future directions along which knowledge graphs are likely to evolve. This book is aimed at students, researchers, and practitioners who wish to learn more about knowledge graphs and how they facilitate extracting value from diverse data at large scale. To make the book accessible for newcomers, running examples and graphical notation are used throughout. Formal definitions and extensive references are also provided for those who opt to delve more deeply into specific topics.

CONCUR 2004 -- Concurrency Theory Philippa Gardner 2004-08-19 assisted us in the evaluation of the submitted papers.

The Handbook On Reasoning-based Intelligent Systems Nakamatsu Kazumi 2013-01-18 This book consists of various contributions in conjunction with the keywords “reasoning” and “intelligent systems”, which widely covers theoretical to practical aspects of intelligent systems. Therefore, it is suitable for researchers or graduate students who want to study intelligent systems generally.

Handbook of Graph Grammars and Computing by Graph Transformation Hartmut Ehrig 1999 Graph grammars originated in the late 60s, motivated by considerations about pattern recognition and compiler construction. Since then, the list of areas which have interacted with the development of graph grammars has grown quite impressively. Besides the aforementioned areas, it includes software specification and development, VLSI layout schemes, database design, modeling of concurrent systems, massively parallel computer architectures, logic programming, computer animation, developmental biology, music composition, visual languages, and many others. The area of graph grammars and graph transformations generalizes formal language theory based on strings and the theory of term rewriting based on trees. As a matter of fact, within the area of graph grammars, graph transformation is considered a fundamental computation paradigm where computation includes specification, programming, and implementation. Over the last three decades, graph grammars have developed at a steady pace into a theoretically attractive and important-for-applications research field. Volume 2 of the indispensable Handbook of Graph Grammars and Computing by Graph Transformations considers applications to functional languages, visual and object-oriented languages, software engineering, mechanical engineering, chemical process engineering, and images. It also presents implemented specification languages and tools, and structuring and modularization concepts for specification languages. The contributions have been written in a tutorial/survey style by the top experts in the corresponding areas. This volume is accompanied by a CD-Rom containing implementations of specification environments based on graphtransformation systems, and tools whose implementation is based on the use of graph transformation systems.

Graph Grammars and Their Application to Computer Science Hartmut Ehrig 2014-01-15

Inductive Logic Programming Tamas Horváth 2003-10-24 This book constitutes the refereed proceedings of the 13th International Conference on Inductive Logic Programming, ILP 2003, held in Szeged, Hungary in September/October 2003. The 23 revised full papers presented were carefully reviewed and selected from 53 submissions. Among the topics addressed are multirelational data mining, complexity issues, theory revision, clustering, mathematical discovery, relational reinforcement learning, multirelational learning, inductive inference, description logics, grammar systems, and inductive learning.

Graph Theory with Applications C. Vasudev 2006-01-01 Salient Features * Over 1500 Problems Are Used To Illustrate Concepts, Related To Different Topics, And Introduce Applications. * Over 1000 Exercises In The Text With Many Different Types Of Questions Posed. * Precise Mathematical Language Is Used Without Excessive Formalism And Abstraction. * Care Has Been Taken To Balance The Mix Of Notation And Words In Mathematical Statements. * Problem Sets Are Stated Clearly And Unambiguously, And All Are Carefully Graded For Various Levels Of Difficulty. * This Text Has Been Carefully Designed For Flexible Use.

Foundations Grzegorz Rozenberg 1997-01 Graph grammars originated in the late 60s, motivated by considerations about pattern recognition and compiler construction. Since then the list of areas which have interacted with the development of graph grammars has grown quite impressively. Besides the aforementioned areas it includes software specification and development, VLSI layout schemes, database design, modeling of concurrent systems, massively parallel computer architectures, logic programming, computer animation, developmental biology, music composition, visual languages, and many others.The area of graph grammars and graph transformations generalizes formal language theory based on strings and the theory of term rewriting based on trees. As a matter of fact within the area of graph grammars, graph transformation is considered a fundamental programming paradigm where computation includes specification, programming, and implementation.Over the last 25-odd years graph grammars have developed at a steady pace into a theoretically attractive and well-motivated research field. In particular, they are now based on very solid foundations, which are presented in this volume. Volume 1 of the indispensable Handbook of Graph Grammars and Computing by Graph Transformations includes a state-of-the-art presentation of the foundations of all the basic approaches to rule-based graph specification and transformation: algebraic approach, logic approach, node-based rewriting, (hyper)edge-based rewriting, programmed graph rewriting, and 2-structures. The book has been written in a tutorial/survey style to enhance its usefulness.

Graph Grammars and Their Application to Computer Science Janice Cuny 2014-01-15

Term Graph Rewriting M. R. Sleep 1993-06-08 Charting the progress of the theory, implementations and applications of rewriting models of computation, this volume represents a key resource for researchers. Much of modern computer science - particularly 'new generation languages' - relies heavily on rewriting systems, and Term Graph Rewriting offers an insight into the very foundations. A major feature of the book is the presentation of theoretical advances, such as: a new theory of transfinite term rewriting, a single pushout categorical model of graph rewriting, and an abstract interpretation for term graph rewriting. In order to fully appreciate the practical but novel benefits offered by term and graph rewriting techniques, readers are here presented with the most comprehensive study conducted to date. A crucial theme throughout is the relationship between term and graph rewriting which provides a useful context for considering implementations - ranging from high performance sequential to parallel distributed memory, and applications - specifically to logic and functional programming.

The Oxford Handbook of Affective Computing Rafael A. Calvo 2015 The Oxford Handbook of Affective Computing is the definitive reference for research in Affective Computing (AC), a growing multidisciplinary field encompassing computer science, engineering, psychology, education, neuroscience, and many other disciplines. The handbook explores how affective factors influence interactions between humans and technology, how affect sensing and affect generation techniques can inform our understanding of human affect, and on thedesign, implementation, and evaluation of systems that intricately involve affect at their core.

Graph Transformations Italy) Icgt 200 (2004 Rome 2004-09-17 This book constitutes the refereed proceedings of the Second International Conference on Graph Transformation, ICGT 2004, held in Rome, Italy, in September/October 2004. The 26 revised full papers presented together with three invited contributions and summaries of 2 tutorials and 5 workshops were carefully reviewed and selected from 58 submissions. The papers are organized in topical sections on integration technology, chemistry and biology, graph transformation concepts, DPO theory for high-level structures, analysis and testing, graph theory and algorithms, application conditions and logic, transformation of special structures, and object-orientation.

Theory and Application of Graph Transformations Hartmut Ehrig 2014-01-15

Graph Structure and Monadic Second-Order Logic Bruno Courcelle 2012-06-14 The study of graph structure has advanced in recent years with great strides: finite graphs can be described algebraically, enabling them to be constructed out of more basic elements. Separately the properties of graphs can be studied in a logical language called monadic second-order logic. In this book, these two features of graph structure are brought together for the first time in a presentation that unifies and synthesizes research over the last 25 years. The authors not only provide a thorough description of the theory, but also detail its applications, on the one hand to the construction of graph algorithms, and, on the other to the extension of formal language theory to finite graphs. Consequently the book will be of interest to graduate students and researchers in graph theory, finite model theory, formal language theory, and complexity theory.

Formal and Natural Computing Wilfried Brauer 2003-08-01 This book presents state of the art research in theoretical computer science and related ?elds. In particular, the following areas are discussed: automata theory, formal languages and combinatorics of words, graph transformations, Petri nets, concurrency, as well as natural and molecular computing. The articles are written by leading researchers in these areas. The writers were originally invited to contribute to this book but then the normal refereeing procedure was applied as well. All of the articles deal with some issue that has been under vigorous study during recent years. Still, the topics range from very classical ones to issues raised only two or three years ago. Both survey articles and papers attacking speci?c research problems are included. The book highlights some key issues of theoretical computer science, as they seem to us now at the beginning of the new millennium. Being a comprehensive overview of some of the most active current research in theoretical computer science, it should be of de?nite interest for all researchers in the areas covered. The topics range from basic decidability and the notion of information to graph grammars and graph transformations, and from trees and traces to aqueous algorithms, DNA encoding and self-assembly. Special e?ort has been given to lucid presentation. Therefore, the book should be of interest also for advanced students.

Handbook of Graph Grammars and Computing by Graph Transformation: Applications, languages and tools Grzegorz Rozenberg 1997

Handbook of Graph Grammars and Computing by Graph Transformation Grzegorz Rozenberg 1997-02-27 Graph grammars originated in the late 60s, motivated by considerations about pattern recognition and compiler construction. Since then the list of areas which have interacted with the development of graph grammars has grown quite impressively. Besides the aforementioned areas it includes software specification and development, VLSI layout schemes, database design, modeling of concurrent systems, massively parallel computer architectures, logic programming, computer animation, developmental biology, music composition, visual languages, and many others. The area of graph grammars and graph transformations generalizes formal language theory based on strings and the theory of term rewriting based on trees. As a matter of fact within the area of graph grammars, graph transformation is considered a fundamental programming paradigm where computation includes specification, programming, and implementation. Over the last 25-odd years graph grammars have developed at a steady pace into a theoretically attractive and well-motivated research field. In particular, they are now based on very solid foundations, which are presented in this volume. Volume 1 of the indispensable Handbook of Graph Grammars and Computing by Graph Transformations includes a state-of-the-art presentation of the foundations of all the basic approaches to rule-based graph specification and transformation: algebraic approach, logic approach, node-based rewriting, (hyper)edge-based rewriting, programmed graph rewriting, and 2-structures. The book has been written in a tutorial/survey style to enhance its usefulness. Contents:Node Replacement Graph Grammars (J Engelfriet & G Rozenberg)Hyperedge Replacement Graph Grammars (F Drewes et al.)The Expression of Graph Properties and Graph Transformations in Monadic Second-Order Logic (B Courcelle)Algebraic Approaches to Graph Transformation — Part I: Basic Concepts and Double Pushout Approach (A Corradini et al.)Algebraic Approaches to Graph Transformation — Part II: Single Pushout Approach and Comparison with Double Pushout Approach (H Ehrig et al.)2-Structures — A Framework for Decomposition and Transformation of Graphs (A Ehrenfeucht et al.)Programmed Graph Replacement Systems (A Schürr) Readership: Computer scientists and mathematicians. keywords:

Graph Transformations Hartmut Ehrig 2014-01-15

The Grammar of Graphics Leland Wilkinson 2013-03-09 Written for statisticians, computer scientists, geographers, research and applied scientists, and others interested in visualizing data, this book presents a unique foundation for producing almost every quantitative graphic found in scientific journals, newspapers, statistical packages, and data visualization systems. It was designed for a distributed computing environment, with special attention given to conserving computer code and system resources. While the tangible result of this work is a Java production graphics library, the text focuses on the deep structures involved in producing quantitative graphics from data. It investigates the rules that underlie pie charts, bar charts, scatterplots, function plots, maps, mosaics, and radar charts. These rules are abstracted from the work of Bertin, Cleveland, Kosslyn, MacEachren, Pinker, Tufte, Tukey, Tobler, and other theorists of quantitative graphics.

Graph Transformations in Computer Science Hans J. Schneider 2014-01-15

Lectures on Concurrency and Petri Nets Jörg Desel 2004-06-14 This tutorial volume originates from the 4th Advanced Course on Petri Nets, ACPN 2003, held in Eichsttt, Germany in September 2003. In addition to lectures given at ACPN 2003, additional chapters have been commissioned to give a well-balanced presentation of the state of the art in the area. This book will be useful as both a reference for those working in the area as well as a study book for the reader who is interested in an up-to-date overview of research and development in concurrent and distributed systems; of course, readers specifically interested in theoretical or applicational aspects of Petri nets will appreciate the book as well.