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AN INTRODUCTION TO FORMAL LANGUAGES AND AUTOMATA

AN INTRODUCTION TO FORMAL LANGUAGES AND AUTOMATA

Jones & Bartlett Publishers **An Introduction to Formal Languages & Automata provides an excellent presentation of the material that is essential to an introductory theory of computation course. The text was designed to familiarize students with the foundations & principles of computer science & to strengthen the students' ability to carry out formal & rigorous mathematical argument. Employing a problem-solving approach, the text provides students insight into the course material by stressing intuitive motivation & illustration of ideas through straightforward explanations & solid mathematical proofs. By emphasizing learning through problem solving, students learn the material primarily through problem-type illustrative examples that show the motivation behind the concepts, as well as their connection to the theorems & definitions.**

AN INTRODUCTION TO FORMAL LANGUAGES AND AUTOMATA

Jones & Bartlett Publishers **Data Structures & Theory of Computation**

INTRODUCTION TO FORMAL LANGUAGES, AUTOMATA THEORY AND COMPUTATION

Pearson Education India **Introduction to Formal Languages, Automata Theory and Computation presents the theoretical concepts in a concise and clear manner, with an in-depth coverage of formal grammar and basic automata types. The book also examines the underlying theory and principles of computation and is highly suitable to the undergraduate courses in computer science and information technology. An overview of the recent trends in the field and applications are introduced at the appropriate places to stimulate the interest of active learners.**

AN INTRODUCTION TO THE THEORY OF FORMAL LANGUAGES AND AUTOMATA

Walter de Gruyter GmbH & Co KG

AN INTRODUCTION TO FORMAL LANGUAGE THEORY

Springer Science & Business Media **The study of formal languages and of related families of automata has long been at the core of theoretical computer science. Until recently, the main reasons for this centrality were connected with the specification and analy sis of programming languages, which led naturally to the following ques tions. How might a grammar be written for such a language? How could we check whether a text were or were not a well-formed program generated by that grammar? How could we parse a program to provide the structural analysis needed by a compiler? How could we check for ambiguity to en sure that a program has a unique analysis to be passed to the computer? This focus on programming languages has now been broadened by the in creasing concern of computer scientists with designing interfaces which allow humans to communicate with computers in a natural language, at least concerning problems in some well-delimited domain of discourse. The necessary work in computational linguistics draws on studies both within linguistics (the analysis of human languages) and within artificial intelligence. The present volume is the first textbook to combine the topics of formal language theory traditionally taught in the context of program ming languages with an introduction to issues in computational linguistics. It is one of a series, The AKM Series in Theoretical Computer Science, designed to make key mathematical developments in computer science readily accessible to undergraduate and beginning graduate students.**

THEORY OF AUTOMATA AND FORMAL LANGUAGES

Firewall Media

INTRODUCTION TO AUTOMATA THEORY, FORMAL LANGUAGES AND COMPUTATION

Pearson Education India **Formal languages and automata theory is the study of abstract machines and how these can be used for solving problems. The book has a simple and exhaustive approach to topics like automata theory, formal languages and theory of computation. These descriptions are followed by numerous relevant examples related to the topic. A brief introductory chapter on compilers explaining its relation to theory of computation is also given.**

INTRODUCTION TO AUTOMATA THEORY, FORMAL LANGUAGES AND COMPUTATION

A COURSE IN FORMAL LANGUAGES, AUTOMATA AND GROUPS

Springer Science & Business Media **This book is based on notes for a master's course given at Queen Mary, University of London, in the 1998/9 session. Such courses in London are quite short, and the course consisted essentially of the material in the ?rst three chapters, together with a two-hour lecture on connections with group theory. Chapter 5 is a considerably expanded version of this. For the course, the main sources were the books by Hopcroft and Ullman ([20]), by Cohen ([4]), and by Epstein et al. ([7]). Some use was also made of a later book by Hopcroft and Ullman ([21]). The ulterior motive in the ?rst three chapters is to give a rigorous proof that various notions of recursively enumerable language are equivalent. Three such notions are considered. These are: generated by a type 0 grammar, recognised by a Turing machine (deterministic or not) and de?ned by means of a Godel numbering, having de?ned "recursively enumerable" for sets of natural numbers. It is hoped that this has been achieved without too many ar- ments using complicated notation. This is a problem with the entire subject, and it is important to understand the idea of the proof, which is often quite simple. Two particular places that are heavy going are the proof at the end of Chapter 1 that a language recognised by a Turing machine is type 0, and the proof in Chapter 2 that a Turing machine computable function is partial recursive.**

AN INTRODUCTION TO FORMAL LANGUAGE THEORY

Springer **The study of formal languages and of related families of automata has long been at the core of theoretical computer science. Until recently, the main reasons for this centrality were connected with the specification and analy sis of programming languages, which led naturally to the following ques tions. How might a grammar be written for such a language? How could we check whether a text were or were not a well-formed program generated by that grammar? How could we parse a program to provide the structural analysis needed by a compiler? How could we check for ambiguity to en sure that a program has a unique analysis to be passed to the computer? This focus on programming languages has now been broadened by the in creasing concern of computer scientists with designing interfaces which allow humans to communicate with computers in a natural language, at least concerning problems in some well-delimited domain of discourse. The necessary work in computational linguistics draws on studies both within linguistics (the analysis of human languages) and within artificial intelligence. The present volume is the first textbook to combine the topics of formal language theory traditionally taught in the context of program ming languages with an introduction to issues in computational linguistics. It is one of a series, The AKM Series in Theoretical Computer Science, designed to make key mathematical developments in computer science readily accessible to undergraduate and beginning graduate students.**

INTRODUCTION TO FORMAL LANGUAGES

Courier Corporation **Covers all areas, including operations on languages, context-sensitive languages, automata, decidability, syntax analysis, derivation languages, and more. Numerous worked examples, problem exercises, and elegant mathematical proofs. 1983 edition.**

AUTOMATA THEORY AND FORMAL LANGUAGES

Walter de Gruyter GmbH & Co KG **The book is a concise, self-contained and fully updated introduction to automata theory – a fundamental topic of computer sciences and engineering. The material is presented in a rigorous yet convincing way and is supplied with a wealth of examples, exercises and down-to-the earth convincing explanatory notes. An ideal text to a spectrum of one-term courses in computer sciences, both at the senior undergraduate and graduate students.**

THEORY OF FINITE AUTOMATA

WITH AN INTRODUCTION TO FORMAL LANGUAGES

AN INTRODUCTION TO FORMAL LANGUAGES AND MACHINE COMPUTATION

World Scientific **This book provides a concise and modern introduction to Formal Languages and Machine Computation, a group of disparate topics in the theory of computation, which includes formal languages, automata theory, turing machines, computability, complexity, number-theoretic computation, public-key cryptography, and some new models of computation, such as quantum and biological computation. As the theory of computation is a subject based on mathematics, a thorough introduction to a number of relevant mathematical topics, including mathematical logic, set theory, graph theory, modern abstract algebra, and particularly number theory, is given in the first chapter of the book. The book can be used either as a textbook for an undergraduate course, for a first-year graduate course, or as a basic reference in the field.**

FORMAL LANGUAGES AND COMPILATION

Springer Science & Business Media **This revised and expanded new edition elucidates the elegance and simplicity of the fundamental theory underlying formal languages and compilation. Retaining the reader-friendly style of the 1st edition, this versatile textbook describes the essential principles and methods used for defining the syntax of artificial languages, and for designing efficient parsing algorithms and syntax-directed translators with semantic attributes. Features: presents a novel conceptual approach to parsing algorithms that applies to extended BNF grammars, together with a parallel parsing algorithm (NEW); supplies supplementary teaching tools at an associated website; systematically discusses ambiguous forms, allowing readers to avoid pitfalls; describes all algorithms in pseudocode; makes extensive usage of theoretical models of automata, transducers and formal grammars; includes concise coverage of algorithms for processing regular expressions and finite automata; introduces static program analysis based on flow equations.**

INTRODUCTION TO AUTOMATA THEORY, LANGUAGES, AND COMPUTATION

PEARSON NEW INTERNATIONAL EDITION

This classic book on formal languages, automata theory, and computational complexity has been updated to present theoretical concepts in a concise and straightforward manner with the increase of hands-on, practical applications. This new edition comes with Gradiance, an online assessment tool developed for computer science. Please note, Gradiance is no longer available with this book, as we no longer support this product.

JFLAP

AN INTERACTIVE FORMAL LANGUAGES AND AUTOMATA PACKAGE

Jones & Bartlett Learning **JFLAP: An Interactive Formal Languages and Automata Package is a hands-on supplemental guide through formal languages and automata theory. JFLAP guides students interactively through many of the concepts in an automata theory course or the early topics in a compiler course, including the descriptions of algorithms JFLAP has implemented. Students can experiment with the concepts in the text and receive immediate feedback when applying these concepts with the accompanying software. The text describes each area of JFLAP and reinforces concepts with end-of-chapter exercises. In addition to JFLAP, this guide incorporates two other automata theory tools into JFLAP: JellRap and Pate.**

INTRODUCTION TO SWITCHING AND AUTOMATA THEORY

INTRODUCTION TO FORMAL LANGUAGE THEORY

Addison-Wesley **Formal language theory was fist developed in the mid 1950's in an attempt to develop theories of natural language acquisition. It was soon realized that this theory (particularly the context-free portion) was quite relevant to the artificial languages that had originated in computer science. Since those days, the theory of formal languages has been developed extensively, and has several discernible trends, which include applications to the syntactic analysis of programming languages, program schemes, models of biological systems, and relationships with natural languages.**

THEORY OF AUTOMATA, FORMAL LANGUAGES AND COMPUTATION (AS PER UPTU SYLLABUS)

New Age International **This Book Is Aimed At Providing An Introduction To The Basic Models Of Computability To The Undergraduate Students. This Book Is Devoted To Finite Automata And Their Properties. Pushdown Automata Provides A Class Of Models And Enables The Analysis Of Context-Free Languages. Turing Machines Have Been Introduced And The Book Discusses Computability And Decidability. A Number Of Problems With Solutions Have Been Provided For Each Chapter. A Lot Of Exercises Have Been Given With Hints/Answers To Most Of These Tutorial Problems.**

INTRODUCTION TO THEORY OF AUTOMATA, FORMAL LANGUAGES, AND COMPUTATION

PHI Learning Pvt. Ltd. **The Theory of Computation or Automata and Formal Languages assumes significance as it has a wide range of applications in complier design, robotics, Artificial Intelligence (AI), and knowledge engineering. This compact and well-organized book provides a clear analysis of the subject with its emphasis on concepts which are reinforced with a large number of worked-out examples. The book begins with an overview of mathematical preliminaries. The initial chapters discuss in detail about the basic concepts of formal languages and automata, the finite automata, regular languages and regular expressions, and properties of regular languages. The text then goes on to give a detailed description of context-free languages, pushdown automata and computability of Turing machine, with its complexity and recursive features. The book concludes by giving clear insights into the theory of computability and computational complexity. This text is primarily designed for undergraduate (BE/B.Tech.) students of Computer Science and Engineering (CSE) and Information Technology (IT), postgraduate students (M.Sc.) of Computer Science, and Master of Computer Applications (MCA). Salient Features • One complete chapter devoted to a discussion on undecidable problems. • Numerous worked-out examples given to illustrate the concepts. • Exercises at the end of each chapter to drill the students in self-study. • Sufficient theories with proofs.**

AUTOMATA AND FORMAL LANGUAGES

AN INTRODUCTION

Written with the beginning user in mind. This book builds mathematical sophistication through an example rich presentation.

AN INTRODUCTION TO FORMAL LANGUAGES AND AUTOMATA

Jones & Bartlett Learning **Data Structures & Theory of Computation**

HANDBOOK OF FORMAL LANGUAGES

BEYONDS WORDS

Springer Science & Business Media **Summary: Discusses language theory beyond linear or string models: trees, graphs, grids, pictures, computer graphics.**

AUTOMATA THEORY & FORMAL LANGUAGE

Seagull Books Pvt Ltd

A SECOND COURSE IN FORMAL LANGUAGES AND AUTOMATA THEORY

Cambridge University Press **Written for graduate students and advanced undergraduates in computer science, A Second Course in Formal Languages and Automata Theory treats topics in the theory of computation not usually covered in a first course. After a review of basic concepts, the book covers combinatorics on words, regular languages, context-free languages, parsing and recognition, Turing machines, and other language classes. Many topics often absent from other textbooks, such as repetitions in words, state complexity, the interchange lemma, 2DPDAs, and the incompressibility method, are covered here. The author places particular emphasis on the resources needed to represent certain languages. The book also includes a diverse collection of more than 200 exercises, suggestions for term projects, and research problems that remain open.**

A CONCISE INTRODUCTION TO LANGUAGES AND MACHINES

Springer Science & Business Media **A Concise Introduction to Languages, Machines and Logic provides an accessible introduction to three key topics within computer science: formal languages, abstract machines and formal logic. Written in an easy-to-read, informal style, this textbook assumes only a basic knowledge of programming on the part of the reader. The approach is deliberately non-mathematical, and features: - Clear explanations of formal notation and jargon, - Extensive use of examples to illustrate algorithms and proofs, - Pictorial representations of key concepts, - Chapter opening overviews providing an introduction and guidance to each topic, - End-of-chapter exercises and solutions, - Offers an intuitive approach to the topics. This reader-friendly textbook has been written with undergraduates in mind and will be suitable for use on course covering formal languages, formal logic, computability and automata theory. It will also make an excellent supplementary text for courses on algorithm complexity and compilers.**

AUTOMATA AND LANGUAGES

THEORY AND APPLICATIONS

Springer Science & Business Media **A step-by-step development of the theory of automata, languages and computation. Intended for use as the basis of an introductory course at both junior and senior levels, the text is organized so as to allow the design of various courses based on selected material. It features basic models of computation, formal languages and their properties; computability, decidability and complexity; a discussion of modern trends in the theory of automata and formal languages; design of programming languages, including the development of a new programming language; and compiler design, including the construction of a complete compiler. Alexander Meduna uses clear definitions, easy-to-follow proofs and helpful examples to make formerly obscure concepts easy to understand. He also includes challenging exercises and programming projects to enhance the reader's comprehension, and many 'real world' illustrations and applications in practical computer science.**

INTRODUCTION TO LANGUAGES AND THE THEORY OF COMPUTATION

McGraw-Hill Science, Engineering & Mathematics **Introduction to Languages and the Theory of Computation is an introduction to the theory of computation that emphasizes formal languages, automata and abstract models of computation, and computability; it also includes an introduction to computational complexity and NP-completeness. Through the study of these topics, students encounter profound computational questions and are introduced to topics that will have an ongoing impact in computer science. Once students have seen some of the many diverse technologies contributing to computer science, they can also begin to appreciate the field as a coherent discipline. A distinctive feature of this text is its gentle and gradual introduction of the necessary mathematical tools in the context in which they are used. Martin takes advantage of the clarity and precision of mathematical language but also provides discussion and examples that make the language intelligible to those just learning to read and speak it. The material is designed to be accessible to students who do not have a strong background in discrete mathematics, but it is also appropriate for students who have had some exposure to discrete math but whose skills in this area need to be consolidated and sharpened.**

INTRODUCTION TO LANGUAGES, MACHINES AND LOGIC

COMPUTABLE LANGUAGES, ABSTRACT MACHINES AND FORMAL LOGIC

Springer Science & Business Media **A well-written and accessible introduction to the most important features of formal languages and automata theory. It focuses on the key concepts, illustrating potentially intimidating material through diagrams and pictorial representations, and this edition includes new and expanded coverage of topics such as: reduction and simplification of material on Turing machines; complexity and O notation; propositional logic and first order predicate logic. Aimed primarily at computer scientists rather than mathematicians, algorithms and proofs are presented informally through examples, and there are numerous exercises (many with solutions) and an extensive glossary.**

FORMAL LANGUAGES AND AUTOMATA THEORY

Oxford University Press, USA **Theory of Automata is designed to serve as a textbook for undergraduate students of B..E, B.Tech. CSE and MCA/IT. It attempts to help students grasp the essential concepts involved in automata theory.**

FORMAL LANGUAGES AND COMPUTATION

MODELS AND THEIR APPLICATIONS

CRC Press **Formal Languages and Computation: Models and Their Applications gives a clear, comprehensive introduction to formal language theory and its applications in computer science. It covers all rudimental topics concerning formal languages and their models, especially grammars and automata, and sketches the basic ideas underlying the theory of computation, including computability, decidability, and computational complexity. Emphasizing the relationship between theory and application, the book describes many real-world applications, including computer science engineering techniques for language processing and their implementation. Covers the theory of formal languages and their models, including all essential concepts and properties Explains how language models underlie language processors Pays a special attention to programming language analyzers, such as scanners and parsers, based on four language models—regular expressions, finite automata, context-free grammars, and pushdown automata Discusses the mathematical notion of a Turing machine as a universally accepted formalization of the intuitive notion of a procedure Reviews the general theory of computation, particularly computability and decidability Considers problem-deciding algorithms in terms of their computational complexity measured according to time and space requirements Points out that some problems are decidable in principle, but they are, in fact, intractable problems for absurdly high computational requirements of the algorithms that decide them In short, this book represents a theoretically oriented treatment of formal languages and their models with a focus on their applications. It introduces all formalisms concerning them with enough rigors to make all results quite clear and valid. Every complicated mathematical passage is preceded by its intuitive explanation so that even the most complex parts of the book are easy to grasp. After studying this book, both student and professional should be able to understand the fundamental theory of formal languages and computation, write language processors, and confidently follow most advanced books on the subject.**

LANGUAGE AND AUTOMATA THEORY AND APPLICATIONS

13TH INTERNATIONAL CONFERENCE, LATA 2019, ST. PETERSBURG, RUSSIA, MARCH 26-29, 2019, PROCEEDINGS

Springer **This book constitutes the refereed proceedings of the 13th International Conference on Language and Automata Theory and Applications, LATA 2019, held in St. Petersburg, Russia, in March 2019. The 31 revised full papers presented together with 5 invited talks were carefully reviewed and selected from 98 submissions. The papers cover the following topics: Automata; Complexity; Grammars; Languages; Graphs, trees and rewriting; and Words and codes.**

FORMAL LANGUAGES AND COMPUTATION

MODELS AND THEIR APPLICATIONS

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INTRODUCTION TO AUTOMATA THEORY, LANGUAGES, AND COMPUTATION

Pearson **This classic book on formal languages, automata theory, and computational complexity has been updated to present theoretical concepts in a concise and straightforward manner with the increase of hands-on, practical applications. This new edition comes with Gradiance, an online assessment tool developed for computer science. Please note, Gradiance is no longer available with this book, as we no longer support this product.**

EXPLORING NUMERICAL METHODS

AN INTRODUCTION TO SCIENTIFIC COMPUTING USING MATLAB

Jones & Bartlett Learning **Advanced Mathematics**

AUTOMATA AND COMPUTABILITY

Springer **These are my lecture notes from CS381/481: Automata and Computability Theory, a one-semester senior-level course I have taught at Cornell Uni versity for many years. I took this course myself in thc fall of 1974 as a first-year Ph.D. student at Cornell from Juris Hartmanis and have been in love with the subject ever sin,:e. The course is required for computer science majors at Cornell. It exists in two forms: CS481, an honors version; and CS381, a somewhat gentler paced version. The syllabus is roughly the same, but CS481 go es deeper into thc subject, covers more material, and is taught at a more abstract level. Students are encouraged to start off in one or the other, then switch within the first few weeks if they find the other version more suitaLle to their level of mathematical skill. The purpose of t.hc course is twofold: to introduce computer science students to the rieh heritage of models and abstractions that have arisen over the years; and to dew!c'p the capacity to form abstractions of their own and reason in terms of them.**

FORMAL MODELS, LANGUAGES AND APPLICATIONS

World Scientific **A collection of articles by leading experts in theoretical computer science, this volume commemorates the 75th birthday of Professor Rani Siromoney, one of the pioneers in the field in India. The articles span the vast range of areas that Professor Siromoney has worked in or influenced, including grammar systems, picture languages and new models of computation.**

AN INTRODUCTION TO THE THEORY OF FORMAL LANGUAGES AND AUTOMATA