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41B - HARVEY GREGORY

This volume contains the Proceedings of the 7th International Conference on Text, Speech and Dialogue, held in Brno, Czech Republic, in September 2004, under the auspices of the Masaryk University. This series of international conferences on text, speech and dialogue has come to c- stitute a major forum for presentation and discussion, not only of the latest developments in academic research in these ?elds, but also of practical and industrial applications. Uniquely, these conferences bring together researchers from a very wide area, both intellectually and geographically, including scientists working in speech technology, dialogue systems, text processing, lexicography, and other related ?elds. In recent years the conference has dev- oped into aprimary meetingplacefor speech and languagetechnologistsfrom manydifferent parts of the world and in particular it has enabled important and fruitful exchanges of ideas between Western and Eastern Europe. TSD 2004 offered a rich program of invited talks, tutorials, technical papers and poster sessions, aswellasworkshops andsystemdemonstrations. Atotalof78paperswereaccepted out of 127 submitted, contributed altogether by 190 authors from 26 countries. Our thanks as usual go to the Program Committee members and to the external reviewers for their conscientious and diligent assessment of submissions, and to the authors themselves for their high-quality contributions. We would also like to take this opportunity to express our appreciation to all the members of the Organizing Committee for their tireless efforts in organizing the conference and ensuring its smooth running.

An Essential Reference for Intermediate and Advanced R Programmers Advanced R presents useful tools and techniques for attacking many types of R programming problems, helping you avoid mistakes and dead ends. With more than ten years of experience programming in R, the author illustrates the elegance, beauty, and flexibility at the heart of R. The book develops the necessary skills to produce quality code that can be used in a variety of circumstances. You will learn: The fundamentals of R, including standard data types and functions Functional programming as a useful framework for solving wide classes of problems The positives and negatives of metaprogramming How to write fast, memory-efficient code This book not only helps current R users become R programmers but also shows existing programmers what's special about R. Intermediate R programmers can dive deeper into R and learn new strategies for solving diverse problems while programmers from other languages can learn the details of R and understand why R works the way it does.

Success and e?ciency are the latest standards and scales of our society. Virtual surroundings and communication rooms, electronic portals and platforms are pushing us into a new world of personal and professional interaction and c- peration. The network to subdue violence is fragile and crumbly, tradition is no longer a power of our community. What of leisure time, dreams, and fantasy? What of education in the family, at school and at university? Travelling round the world to develop yourself –how man becomes man: pleading for a new determination of the idea of education –a mission of past centuries inadequate nowadays? Regarding September 11th last year, the con?icts and confrontations round the globe, and events in our direct surroundings these questions seem to be a cry at least to re?ect upon what is happening around us and where we –all of us –still play an active role. An International Conference on Computers Helping People with Special Needs is like an island –is this a topic at all these days, is it worth disc- sing the area of ICT and the situation of people with disabilities, persons who are segregated from developing their personal and professional careers? Indeed the biennial meeting has never included these actualities, but the basic idea behind ICCHP, starting in 1989, was to focus on these fringe groups and to o?er a platform of exchange on all aspects of Human Computer Interaction and the usage of ICT for people with special needs.

While all of us regularly use basic math symbols such as those for plus, minus, and equals, few of us know that many of these symbols weren't available before the sixteenth century. What did mathematicians rely on for their work before then? And how did mathematical notations evolve into what we know today? In Enlightening Symbols, popular math writer Joseph Mazur explains the fascinating history behind the development of our mathematical notation system. He shows how symbols were used initially, how one symbol replaced another over time, and how written math was conveyed before and after symbols became widely adopted. Traversing mathematical history and the foundations of numerals in different cultures, Mazur looks at how historians have disagreed over the origins of the numerical system for the past two centuries. He follows the transfigurations of algebra from a rhetorical style to a symbolic one, demonstrating that most algebra before the sixteenth century was written in prose or in verse employing the written names of numerals. Mazur also investigates the subconscious and psychological effects that mathematical symbols have had on mathematical thought, moods, meaning, communication, and comprehension. He considers how these symbols influence us (through similarity, association, identity, resemblance, and repeated imagery), how they lead to new ideas by subconscious associations, how they make connections between experience and the unknown, and how they contribute to the communication of basic mathematics. From words to abbreviations to symbols, this book shows how math evolved to the familiar forms we use today.

The Semantic Web is a major endeavor aimed at enriching the existing Web withmetadataandprocessingmethodssoastoprovideWeb-basedsystemswith advanced(so-calledintelligent)capabilities, inparticularwithcontext-awareness and decision support. The advanced capabilities striven for in most Semantic Web application s- narios primarily call for reasoning. Reasoning capabilities are o?ered by exi- ing Semantic Web languages, such as BPEL4WS, BPML, ConsVISor, DAML-S, JTP, TRIPLE, and others. These languages, however, were developed mostly from functionality-centered (e.g., ontology reasoning or access validation) or application-centered (e.g., Web service retrieval and composition) perspectives. A perspective centered on the reasoning techniques (e.g., forward or backward chaining, tableau-like methods, constraint reasoning, etc.) complementing the above-mentioned activities appears desirable for Semantic Web systems and - plications. The workshop on "Principles and Practice of Semantic Web Reasoning," which took place on December 8, 2003, in Mumbai, India, was the?rst of a series of scienti?c meetings devoted to such a perspective. JustasthecurrentWebisinherentlyheterogeneousindataformatsanddata semantics, the Semantic Web will be inherently heterogeneous in its reasoning forms. Indeed, anysingleformof reasoningturnsouttobeirrealin theSemantic Web. For example, ontology reasoning in general relies on monotonic negation (for the metadata often can be fully speci?ed), while databases, Web databases, and Web-based information systems call for non-monotonic reasoning (for one would not specify non-existing trains in a railway timetable); constraint reas- ing is needed when dealing with time (for time intervals have to be dealt with), while(forwardand/orbackward)chainingisthereasoningofchoicewhencoping with database-like views (for views, i.e., virtual data, can be derived from actual data using operations such as join and projections)

This book presents the complete collection of peer-reviewed presentations at the 1999 Cognitive Science Society meeting, including papers, poster abstracts, and descriptions of conference symposia. For students and researchers in all areas of cognitive science.

This volume contains selected papers presented at the Fourth Asian Symposium on Computer Mathematics. There are 39 peer-reviewed contributions together with full papers and extended abstracts by the four invited speakers, G.H. Gonnet, D. Lazard, W. McCune and W.-T. Wu, and these cover some of the most significant advances in computer mathematics, including algebraic, symbolic, numeric and geometric computation, automated mathematical reasoning, mathematical software, and computer-aided geometric design.

The field of sketch-based interfaces and modeling (SBIM) is concerned with developing methods and techniques to enable users to interact with a computer through sketching - a simple, yet highly expressive medium. SBIM blends concepts from computer graphics, human-computer interaction, artificial intelligence, and machine learning. Recent improvements in hardware, coupled with new machine learning techniques for more accurate recognition, and more robust depth inferencing techniques for sketch-based modeling, have resulted in an explosion of both sketch-based interfaces and pen-based computing devices. Presenting the first coherent, unified overview of SBIM, this unique text/reference bridges the two complementary research areas of user interaction (sketch-based interfaces), and graphical modeling and construction (sketch-based modeling). The book discusses the state of the art of this rapidly evolving field, with contributions from an international selection of experts. Also covered are sketch-based systems that allow the user to manipulate and edit existing data - from text, images, 3D shapes, and video - as opposed to modeling from scratch. Topics and features: reviews pen/stylus interfaces to graphical applications that avoid reliance on user interface modes; describes systems for diagrammatic sketch recognition, mathematical sketching, and sketch-based retrieval of vector drawings; examines pen-based user interfaces for engineering and educational applications; presents a set of techniques for sketch recognition that rely strictly on spatial information; introduces the Teddy system; a pioneering sketching interface for designing free-form 3D models; investigates a range of advanced sketch-based systems for modeling and designing 3D objects, including complex contours, clothing, and hair-styles; explores methods for modeling from just a single sketch or using only a few strokes. This text is an essential resource for researchers, practitioners and graduate students involved in human-factors and user interfaces, interactive computer graphics, and intelligent user interfaces and AI.

This book is a collection of carefully selected works presented at the Third International Conference on Computer Vision & Image Processing (CVIP 2018). The conference was organized by the Department of Computer Science and Engineering of PDPM Indian Institute of Information Technology, Design & Manufacturing, Jabalpur, India during September 29 - October 01, 2018. All the papers have been rigorously reviewed by the experts from the domain. This 2 volume proceedings include technical contributions in the areas of Image/Video Processing and Analysis; Image/Video Formation and Display; Image/Video Filtering, Restoration, Enhancement and Super-resolution; Image/Video Coding and Transmission; Image/Video Storage, Retrieval and Authentication; Image/Video Quality; Transform-based and Multi-resolution Image/Video Analysis; Biological and Perceptual Models for Image/Video Processing; Machine Learning in Image/Video Analysis; Probability and uncertainty handling for Image/Video Processing; and Motion and Tracking.

Constitutes the proceedings of the 5th International Conference on Mathematical Knowledge Management, MKM 2006, held in Wokingham. This book includes 22 full papers which cover the whole area of mathematical knowledge management in the intersection of mathematics, computer science, library science, and scientific publishing.

Online handwritten mathematical expressions consist of sequences of strokes. Automatic recognition these data requires solving three subproblems: symbol segmentation, symbol classification, and structural analysis (i.e. identification of spatial relations between symbols). Ambiguity, that often leads to several likely interpretations, and the non-linear structure of the expressions are main issues of the recognition process. In this thesis, we model the recognition problem as a graph parsing problem. The graph-based description of relations in production rules allows direct modeling of non-linear structures. Our parsing algorithm determines recursive partitions of the input strokes that induce graphs matching the production rule graphs. To mitigate the computational cost, we constrain the partitions to graphs derived from sets of symbol and relation hypotheses, calculated using previously trained classifiers. A set of labels that indicate likely interpretations is associated to each hypothesis, and the selection of the best interpretation is driven by the parsing algorithm. The parsing method computes multiple parse trees to represent alternative interpretations, assigns a cost to each tree and selects a tree with minimum cost as result. The evaluations show that the proposed method is more accurate than several state of the art methods; the use of symbol and relation hypotheses to constrain the search space effectively reduces the parsing complexity; and adaptation to other two-dimensional object recognition problems is possible. As a secondary contribution, we developed a framework to automatize the handwritten mathematical expression datasets building process.

This book constitutes the proceedings of the 5th International Conference on Mathematical Software, ICMS 2015, held in Berlin, Germany, in July 2016. The 68 papers included in this volume were carefully reviewed and selected from numerous submissions. The papers are organized in topical sections named: univalent foundations and proof assistants; software for mathematical reasoning and applications; algebraic and toric geometry; algebraic geometry in applications; software of polynomial systems; software for numerically solving polynomial systems; high-precision arithmetic, effective analysis, and special functions; mathematical optimization; interactive operation to scientific artwork and mathematical reasoning; information services for mathematics: software, services, models, and data; semDML: towards a semantic layer of a world digital mathematical library; miscellanea.

THIS TEXTBOOK is about computer science. It is also about Python. However, there is much more. The study of algorithms and data structures is central to understanding what computer science is all about. Learning computer science is not unlike learning any other type of difficult subject matter. The only way to be successful is through deliberate and incremental exposure to the fundamental ideas. A beginning computer scientist needs practice so that there is a thorough understanding before continuing on to the more complex parts of the curriculum. In addition, a beginner needs to be given the opportunity to be successful and gain confidence. This textbook is designed to serve as a text for a first course on data structures and algorithms, typically taught as the second course in the computer science curriculum. Even though the second course is considered more advanced than the first course, this book assumes you are beginners at this level. You may still be struggling with some of the basic ideas and skills from a first computer science course and yet be ready to further explore the discipline and continue to practice problem solving. We cover abstract data types and data structures, writing algorithms, and solving problems. We look at a number of data structures and solve classic problems that arise. The tools and techniques that you learn here will be applied over and over as you continue your study of computer science.

This wwo volume set of the Computing Handbook, Third Edition (previously theComputer Science Handbook) provides up-to-date information on a wide range of topics in computer science, information systems (IS), information technology (IT), and software engineering. The third edition of this popular handbook addresses not only the dramatic growth of computing as a discipline but also the relatively new delineation of computing as a family of separate disciplines as described by the Association for Computing Machinery (ACM), the IEEE Computer Society (IEEE-CS), and the Association for Information Systems (AIS). Both volumes in the set describe what occurs in research laboratories, educational institutions, and public and private organizations to advance the effective development and use of computers and computing in today's world. Research-level survey articles provide deep insights into the computing discipline, enabling readers to understand the principles and practices that drive computing education, research, and development in the twenty-first century. Chapters are organized with minimal interdependence so that they can be read in any order and each volume contains a table of contents and subject index, offering easy access to specific topics. The first volume of this popular handbook mirrors the modern taxonomy of computer science and software engineering as described by the Association for Computing Machinery (ACM) and the IEEE Computer Society (IEEE-CS). Written by established leading experts and influential young researchers, it examines the elements involved in designing and implementing software, new areas in which computers are being used, and ways to solve computing problems. The book also explores our current understanding of software engineering and its effect on the practice of software development and the education of software professionals. The second volume of this popular handbook demonstrates the richness and breadth of the IS and IT disciplines. The book explores their close links to the practice of using, managing, and developing IT-based solutions to advance the goals of modern organizational environments. Established leading experts and influential young researchers present introductions to the current status and future directions of research and give in-depth perspectives on the contributions of academic research to the practice of IS and IT development, use, and management.

Write good regexes and parsers with the Perl 6 programming language. You'll see how regexes are used for searching, parsing, and validation: in particular the grammar extension makes them uniquely suitable for parsing, the main focus of this book. Written by Perl 6 expert Moritz Lenz, a core contributor of Rakudo, Parsing with Perl 6 Regexes and Grammars starts from the very basics of regular expressions, and then explores how they integrate with regular Perl 6 code. Then follows a deeper exploration of how regexes work under the hood and a discussion of common techniques for constructing regexes and exploring the data under scrutiny. Later material goes beyond relatively simple formats to reusable named regexes and grammars, which permit code reuse in grammars, and shows how to write parsers for more involved data formats. Error reporting and case studies wrap up the topic. While regexes allow you to search for patterns in text and validate input, Perl 6 regexes advance that concept: you'll see how they are easier to read, yet much more powerful, than the traditional "Perl-compatible regular expression". With improved reusability and backtracking control, you will be able to write complete parsers with the help of this book. What You'll Learn Discover the building blocks of Perl 6 regexes Handle regex mechanics and master useful regex techniques Extract data and work with patterns among these use cases Reuse named regexes and other grammars as components or templates Write full parsers, including advanced error reporting and data extraction Learn how to parse nested scopes and indention-based formats Who This Book Is For Those with at least some prior experience with Perl programming, but who may be new to Perl 6 as well as searching and parsing.

The 4-volume set LNCS 13019, 13020, 13021 and 13022 constitutes the refereed proceedings of the 4th Chinese Conference on Pattern Recognition and Computer Vision, PRCV 2021, held in Beijing, China, in October-November 2021. The 201 full papers presented were carefully reviewed and selected from 513 submissions. The papers have been organized in the following topical sections: Object Detection, Tracking and Recognition; Computer Vision, Theories and Applications, Multimedia Processing and Analysis; Low-level Vision and Image Processing; Biomedical Image Processing and Analysis; Machine Learning, Neural Network and Deep Learning, and New Advances in Visual Perception and Understanding.

Computing Handbook, Third Edition: Computer Science and Software Engineering mirrors the modern taxonomy of computer science and software engineering as described by the Association for Computing Machinery (ACM) and the IEEE Computer Society (IEEE-CS). Written by established leading experts and influential young researchers, the first volume of this popular handbook examines the elements involved in designing and implementing software, new areas in which computers are being used, and ways to solve computing problems. The book also explores our current understanding of software engineering and its effect on the practice of software development and the education of software professionals. Like the second volume, this first volume describes what occurs in research laboratories, educational institutions, and public and private organizations to advance the effective development and use of computers and computing in today's world. Research-level survey articles provide deep insights into the computing discipline, enabling readers to understand the principles and practices that drive computing education, research, and development in the twenty-first century.

Vol inclu all ppers & postrs presntd at 2000 Cog Sci mtg & summaries of symposia & invitd addresses. Dealg wth issues of represntg & modelg cog procsses, appeals to scholars in all subdiscip tht comprise cog sci: psy, compu sci, neuro sci, ling, & philo

This book constitutes the thoroughly refereed post-proceedings of the Joint Chinese-German Workshop on Cognitive Systems held in Shanghai, March 2005. The 13 revised papers are organized in topical sections on multimodal human-computer interfaces, neuropsychology and neurocomputing, Chinese-German natural language processing and psycholinguistics, as well as information processing and retrieval from the semantic Web for intelligent applications.

The term Intelligent Environments (IEs) refers to physical spaces in which IT and other pervasive computing technologies are combined and used to achieve specific goals for the user, the environment, or both. The ultimate objective of IEs is to enrich user experience, improve management of the environment in question and increase user awareness. This book presents the proceedings of the following workshops, which formed part of the 12th International Conference on Intelligent Environments (IE16), held in London, UK, in September 2016: the 5th International Workshop on Smart Offices and Other Workplaces (SOOW'16); the 5th International Workshop on the Reliability of Intelligent Environments (WoRIE'16); the 1st International Workshop on Legal Issues in Intelligent Environments (LIIE'2016); the 2nd International Symposium on Future Intelligent Educational Environments and Learning (SOFIEE'16); the 2nd International Workshop on Future Internet and Smart Networks (FI&SN'2016); the International Workshop on Intelligent Environments Supporting Healthcare and Well-being (WISHWell'2016); the International Workshop on Computation Sustainability, Technologies and Applications (CoSTA'2016); the Creative Science 2016 (CS'16) and Cloud-of-Things 2016 (CoT'16); the Workshop on Wireless Body Area Networks for Personal Monitoring in Intelligent Environments (WBAN-PMIE); and the Physical Computing Workshop. The workshops focused on the development of advanced intelligent environments, as well as newly emerging and rapidly evolving topics, emphasizing the multi-disciplinary and transversal aspects of IEs, as well as cutting-edge topics. The book will be of interest to all those whose work involves them in the use of intelligent environments.

This book constitutes the refereed proceedings of the 20th Iberoamerican Congress on Pattern Recognition, CIARP 2015, held in Montevideo, Uruguay, in November 2015. The 95 papers presented were carefully reviewed and selected from 185 submissions. The papers are organized in topical sections on applications on pattern recognition; biometrics; computer vision; gesture recognition; image classification and retrieval; image coding, processing and analysis; segmentation, analysis of shape and texture; signals analysis and processing; theory of pattern recognition; video analysis, segmentation and tracking.

"Practical recipes for visualizing data"--Cover.

This book showcases powerful new hybrid methods that combine numerical and symbolic algorithms. Hybrid algorithm research is currently one of the most promising directions in the context of geosciences mathematics and computer mathematics in general. One important topic addressed here with a broad range of applications is the solution of multivariate polynomial systems by means of resultants and Groebner bases. But that's barely the beginning, as the authors proceed to discuss genetic algorithms, integer programming, symbolic regression, parallel computing, and many other topics. The book is strictly goal-oriented, focusing on the solution of fundamental problems in the geosciences, such as positioning and point cloud problems. As such, at no point does it discuss purely theoretical mathematics. "The book delivers hybrid symbolic-numeric solutions, which are a large and growing area at the boundary of mathematics and computer science." Dr. Daniel Li chtbau

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Programming Languages: Concepts and Implementation teaches language concepts from two complementary perspectives: implementation and paradigms. It covers the implementation of concepts through the incremental construction of a progressive series of interpreters in Python, and Racket Scheme, for purposes of its combined simplicity and power, and assessing the differences in the resulting languages. 1. Hands-on, implementation-oriented approach. 2. Numerous conceptual and programming exercises. 3. Interpreter-based projects in Python and Racket Scheme. 4. All interpreter code (and solutions) in Python (and Racket) are provided as a Git repository in BitBucket. 5. New concurrency models (Communicating Sequential Processes (CSP), and Actor Model of Concurrency).

The Mathematical Intelligent Educational Environments considered here provide methods on how ILE systems are developed. The book looks at the most recent developments in Intelligent Learning Environments for the domain, and groups together the most recent work.

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.

* The first book focused solely on data parsing, a task commonly deemed Perl's greatest strength * Couples an introduction to data parsing concepts and techniques with practical instruction regarding the key Perl modules capable of facilitating often complex parsing tasks * The author, Christopher Frenz, is a bioinformaticist and expert on Perl and scientific computing

This book explores the adaptation of cognitive processes to limited resources. It deals with resource-bounded and resource-adaptive cognitive processes in human information processing and human-machine systems plus the related technology transfer issues.

Creativity: A Handbook for Teachers covers topics related to creativity research, development, theories and practices. It serves as a reference for academics, teacher educators, teachers, and scientists to stimulate further dialogue on ways to enhance creativity.

Learn how to exploit the impressive power of PHP 7 with this collection of practical project blueprints – begin building better applications for the web today! About This Book Don't just learn PHP 7 – follow a diverse range of practical knowledge to get started quickly Take advantage of PHP 7's newest features – and find out how to use them to solve real development challenges Put PHP to work for performance and scalability – we'll show you how, you do it! Who This Book Is For The book is for web developers, PHP consultants, and anyone who is working on multiple projects with PHP. Basic knowledge of PHP programming is assumed. What You Will Learn Build versatile projects using the newest features PHP 7 has to offer Learn how to use PHP 7's event-driven asynchronous features Find out how to improve the performance of your code with effective techniques and design patterns Get to grips with backend development and find out how to optimize session handling Learn how to use the PHP 7 Abstract Syntax Tree to improve the quality of your code and make it more maintainable Find out how to build a RESTful web service Build your own asynchronous microservice In Detail When it comes to modern web development, performance is everything. The latest version of PHP has been improvised and updated to make it easier to build for performance, improved engine execution, better memory usage, and a new and extended set of tools. If you're a web developer, what's not to love? This guide will show you how to make full use of PHP 7 with a range of practical projects that will not only teach you the principles, but also show you how to put them into practice. It will push and extend your skills, helping you to become a more confident and fluent PHP developer. You'll find out how to build a social newsletter service, a simple blog with a search capability using Elasticsearch, as well as a chat application. We'll also show you how to create a RESTful web service, a database class to manage a shopping cart on an e-commerce site and how to build an asynchronous microservice architecture. With further guidance on using reactive extensions in PHP, we're sure that you'll find everything you need to take full advantage of PHP 7. So dive in now! Style and approach This product focuses on helping developers build projects from scratch. But more than that, each project will help the reader to learn a new facet or feature of PHP 7 – it means the reader really will 'learn by doing.'

IRC (Internet Relay Chat) may very well turn out to be the world's most successful hack. In 1988, Jarkko Oikarinen wrote the original IRC program at the University of Oulu, Finland. As he says in his foreword, "IRC started as one summer trainee's programming exercise. A hack grew into a software development project that hundreds of people participated in, and then became a worldwide environment where tens of thousands of people now spend time with each other. I have found many of my friends through IRC and learnt a significant part of my present software engineering knowledge while using and working with IRC. That would not have been possible without learning from code examples and hacks from others". IRC has continued to grow in popularity since its inception. Millions of people from all over the world now use IRC to chat with friends, discuss projects and collaborate on research. With a simple, clearly defined protocol, IRC has become one of the most accessible chat environments, with clients written for a multitude of operating systems. And IRC is more than just a simple chat system it is a network of intercommunicating servers, allowing thousands of clients to connect from anywhere in the world using the IRC protocol. While IRC is easy to get into and many people are happy to use it without being aware of what's happening under the hood, there are those who hunger for more knowledge, and this book is for them. IRC Hacks is a collection of tips and tools that cover just about everything needed to become a true IRC master, featuring contributions from some of the most renowned IRC hackers, many of whom collaborated on IRC, grouping together to form the channel #irchacks on the freenode IRC network (irc.freenode.net). Like all of our Hacks books, there are many different ways to use IRC Hacks. You can read the book from cover to cover, but you might be better served by picking an interesting item from the table of contents and just diving in. If you're relatively new to IRC, you should considering starting with a few hacks from each progressive chapter. Chapter 1 starts you off by showing you how to connect to IRC, while Chapter 2 acquaints you with the everyday concepts you'll need to use IRC effectively. Chapter 3 is all about users and channels, and introduces the first pieces of code. Chapter 4 shows you how to make useful enhancements to IRC clients. Chapter 5 is where you will learn the basics about creating IRC bots, with Chapters 6-12 introducing more complex bots that can be used for logging, servicing communities, searching, announcing, networking, managing channels or simply for having fun. Chapter 13 delves into the IRC protocol in more detail, and Chapter 14 demonstrates some interesting alternative methods for connecting to IRC. Finally, Chapter 15 will move you on to new pastures by showing you how to set up your own IRC server. This book presents an opportunity to learn how IRC works and how to make best use of some of the features that have made it the most successful, most scalable, and most mature chat system on this planet. IRC Hacks delves deep into the possibilities.

JavaScript is arguably the most polarizing and misunderstood programming language in the world. Many have attempted to replace it as the language of the Web, but JavaScript has survived, evolved, and thrived. Why did a language created in such hurry succeed where others failed? This guide gives you a rare glimpse into JavaScript from people intimately familiar with it. Chapters contributed by domain experts such as Jacob Thornton, Ariya Hidayat, and Sara Chipps show what they love about their favorite language—whether it’s turning the most feared features into useful tools, or how JavaScript can be used for self-expression. Contributors include: Angus Croll Jonathan Barronville Sara Chipps Marijn Haverbeke Ariya Hidayat Daryl Koopersmith Anton Kovalyov Rebecca Murphey Daniel Pupius Graeme Roberts Jenn Schiffer Jacob Thornton Ben Vinegar Rick Waldron Nicholas Zakas

This unique volume focuses on computing systems that exhibit intelligent behavior. As such, it discusses research aimed at building a computer that has the same cognitive architecture as the mind -- permitting evaluations of it as a model of the mind -- and allowing for comparisons between computer performance and experimental data on human performance. It also examines architectures that permit large, complex computations to be performed -- and questions whether the computer so structured can handle these difficult tasks intelligently.

In Math for Programmers you’ll explore important mathematical concepts through hands-on coding. Filled with graphics and more than 300 exercises and mini-projects, this book unlocks the door to interesting–and lucrative!–careers in some of today’s hottest fields. As you tackle the basics of linear algebra, calculus, and machine learning, you’ll master the key Python libraries used to turn them into real-world software applications. Summary To score a job in data science, machine learning, computer graphics, and cryptography, you need to bring strong math skills to the party. Math for Programmers teaches the math you need for these hot careers, concentrating on what you need to know as a developer. Filled with lots of helpful graphics and more than 200 exercises and mini-projects, this book unlocks the door to interesting–and lucrative!–careers in some of today’s hottest programming fields. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Skip the mathematical jargon: This one-of-a-kind book uses Python to teach the math you need to build games, simulations, 3D graphics, and machine learning algorithms. Discover how algebra and calculus come alive when you see them in code! About the book In Math for Programmers you’ll explore important mathematical concepts through hands-on coding. Filled with graphics and more than 300 exercises and mini-projects, this book unlocks the door to interesting–and lucrative!–careers in some of today’s hottest fields. As you tackle the basics of linear algebra, calculus, and machine learning, you’ll master the key Python libraries used to turn them into real-world software applications. What's inside Vector geometry for computer graphics Matrices and linear transformations Core concepts from calculus Simulation and optimization Image and audio processing Machine learning algorithms for regression and classification About the reader For programmers with basic skills in algebra. About the author Paul Orland is a programmer, software entrepreneur, and math enthusiast. He is co-founder of Tachyus, a start-up building predictive analytics software for the energy industry. You can find him online at www.paulor.land. Table of Contents 1 Learning math with code PART I - VECTORS AND GRAPHICS 2 Drawing with 2D vectors 3 Ascending to the 3D world 4 Transforming vectors and graphics 5 Computing transformations with matrices 6 Generalizing to higher dimensions 7 Solving systems of linear equations PART 2 - CALCULUS AND PHYSICAL SIMULATION 8 Understanding rates of change 9 Simulating moving objects 10 Working with symbolic expressions 11 Simulating force fields 12 Optimizing a physical system 13 Analyzing sound waves with a Fourier series PART 3 - MACHINE LEARNING APPLICATIONS 14 Fitting functions to data 15 Classifying data with logistic regression 16 Training neural networks

Despite using them every day, most software engineers know little about how programming languages are designed and implemented. For many, their only experience with that corner of computer science was a terrifying "compilers" class that they suffered through in undergrad and tried to blot from their memory as soon as they had scribbled their last NFA to DFA conversion on the final exam. That fearsome reputation belies a field that is rich with useful techniques and not so difficult as some of its practitioners might have you believe. A better understanding of how programming languages are built will make you a stronger software engineer and teach you concepts and data structures you'll use the rest of your coding days. You might even have fun. This book teaches you everything you need to know to implement a full-featured, efficient scripting language. You'll learn both high-level concepts around parsing and semantics and gritty details like bytecode representation and garbage collection. Your brain will light up with new ideas, and your hands will get dirty and calloused. Starting from main(), you will build a language that features rich syntax, dynamic typing, garbage collection, lexical scope, first-class functions, closures, classes, and inheritance. All packed into a few thousand lines of clean, fast code that you thoroughly understand because you wrote each one yourself.

This book constitutes the refereed proceedings of the International Conference on Intelligent Computer Mathematics, CICM 2015, held in Washington, DC, USA, in July 2015. The 16 full papers and 9 short papers presented together with two invited talks plus one abstract were carefully reviewed and selected from a total of 43 submissions. The papers are organized in topical sections following the tracks of the conference: Invited Talks; Calculemus; Digital Mathematics Libraries; Mathematical Knowledge Management; Projects and Surveys; Systems and Data.

"Math expressions are an essential part of scientific documents. Handwritten math expressions recognition can benefit human-computer interaction especially in the education domain and is a critical part of document recognition and analysis. Parsing the spatial arrangement of symbols is an essential part of math expression recognition. A variety of parsing techniques have been developed during the past three decades, and fall into two groups. The first group is graph-based parsing. It selects a path or sub-graph which obeys some rule to form a possible interpretation for the given expression. The second group is grammar driven parsing. Grammars and related parameters are defined manually for different tasks. The time complexity of these two groups parsing is high, and they often impose some strict constraints to reduce the computation. The aim of this thesis is working towards building a straightforward and effective parser with as few constraints as possible. First, we propose using a line of sight graph for representing the layout of strokes and symbols in math expressions. It achieves higher F-score than other graph representations and reduces search space for parsing. Second, we modify the shape context feature with Parzen window density estimation. This feature set works well for symbol segmentation, symbol classification and symbol layout analysis. We get a higher symbol segmentation F-score than other systems on CROHME 2014 dataset. Finally, we develop a Maximum Spanning Tree (MST) based parser using Edmonds' algorithm, which extracts an MST from the directed line of sight graph in two passes: first symbols are segmented, and then symbols and spatial relationship are labeled. The time complexity of our MST-based parsing is lower than the time complexity of CYK parsing with context-free grammars. Also, our MST-based parsing obtains higher structure rate and expression rate than CYK parsing when symbol segmentation is accurate. Correct structure means we get the structure of the symbol layout tree correct, even though the label of the edge in the symbol layout tree might be wrong. The performance of our math expression recognition system with MST-based parsing is competitive on CROHME 2012 and 2014 datasets. For future work, how to incorporate symbol classifier result and correct segmentation error in MST-based parsing needs more research."--Abstract.