

Python For Software Design Cambridge University Press

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History of Illustration - Susan Doyle 2018-02-22

"Written by an international team of illustration historians, practitioners, and educators, History of Illustration covers image-making and print history from around the world, spanning from the prehistoric to the contemporary. With hundreds of color image, this book contextualize the many types of illustrations within social, cultural, and technical parameters, presenting information in a flowing chronology. This essential guide is the first comprehensive history of illustration as its own discipline. Readers will gain an ability to critically analyze images from technical, cultural, and ideological standpoints in order to arrive at an appreciation of art form of both past and present illustration"--

Think Python - Allen B. Downey 2015-12-02

If you want to learn how to program, working with Python is an excellent way to start. This hands-on guide takes you through the language a step at a time, beginning with basic programming concepts before moving on to functions, recursion, data structures, and object-oriented design. This second edition and its supporting code have been updated for Python 3. Through exercises in each chapter, you'll try out programming concepts as you learn them. Think Python is ideal for students at the high school or college level, as well as self-learners, home-schooled students, and professionals who need to learn programming basics. Beginners just getting their feet wet will learn how to start with Python in a browser. Start with the basics, including language syntax and semantics Get a clear definition of each programming concept Learn about values, variables, statements, functions, and data structures in a logical progression Discover how to work with files and databases Understand objects, methods, and object-oriented programming Use debugging techniques to fix syntax, runtime, and semantic errors Explore interface design, data structures, and GUI-based programs through case studies

HI THINK LIKE A COMPUTER SCIENTIST - Jeffrey Elkner 2016-10-04

The goal of this book is to teach you to think like a computer scientist. This way of thinking combines some of the best features of mathematics, engineering, and natural science. Like mathematicians, computer scientists use formal languages to denote ideas (specifically computations). Like engineers, they design things, assembling components into systems and evaluating tradeoffs among alternatives. Like scientists, they observe the behavior of complex systems, form hypotheses, and test predictions. The single most important skill for a computer scientist is problem solving. Problem solving means the ability to formulate problems, think creatively about solutions, and express a solution clearly and accurately. As it turns out, the process of learning to program is an excellent opportunity to practice problem-solving skills. That's why this chapter is called, The way of the program. On one level, you will be learning to program, a useful skill by itself. On another level, you will use programming as a means to an end. As we go along, that end will become clearer.

Software Modeling and Design - Hassan Gomma 2011-02-21

This book covers all you need to know to model and design software applications from use cases to software architectures in UML and shows how to apply the COMET UML-based modeling and design method to real-world problems. The author describes architectural patterns for various architectures, such as broker, discovery, and transaction patterns for service-oriented architectures, and addresses software quality attributes including maintainability, modifiability, testability, traceability, scalability, reusability, performance, availability, and security. Complete case studies illustrate design issues for different software

architectures: a banking system for client/server architecture, an online shopping system for service-oriented architecture, an emergency monitoring system for component-based software architecture, and an automated guided vehicle for real-time software architecture. Organized as an introduction followed by several short, self-contained chapters, the book is perfect for senior undergraduate or graduate courses in software engineering and design, and for experienced software engineers wanting a quick reference at each stage of the analysis, design, and development of large-scale software systems.

Python for Software Design - Allen Downey 2009-03-09

Python for Software Design is a concise introduction to software design using the Python programming language. The focus is on the programming process, with special emphasis on debugging. The book includes a wide range of exercises, from short examples to substantial projects, so that students have ample opportunity to practice each new concept.

Architecture Patterns with Python - Harry Percival 2020-03-05

As Python continues to grow in popularity, projects are becoming larger and more complex. Many Python developers are now taking an interest in high-level software design patterns such as hexagonal/clean architecture, event-driven architecture, and the strategic patterns prescribed by domain-driven design (DDD). But translating those patterns into Python isn't always straightforward. With this hands-on guide, Harry Percival and Bob Gregory from MADE.com introduce proven architectural design patterns to help Python developers manage application complexity—and get the most value out of their test suites. Each pattern is illustrated with concrete examples in beautiful, idiomatic Python, avoiding some of the verbosity of Java and C# syntax. Patterns include: Dependency inversion and its links to ports and adapters (hexagonal/clean architecture) Domain-driven design's distinction between entities, value objects, and aggregates Repository and Unit of Work patterns for persistent storage Events, commands, and the message bus Command-query responsibility segregation (CQRS) Event-driven architecture and reactive microservices

Machine Learning Refined Jeremy Watt 2020-01-29

An intuitive approach to machine learning covering key concepts, real-world applications, and practical Python coding exercises.

Practical Scientific Computing Muhammad Ali 2011-02-26

Scientific computing is about developing mathematical models, numerical methods and computer implementations to study and solve real problems in science, engineering, business and even social sciences. Mathematical modelling requires deep understanding of classical numerical methods. This essential guide provides the reader with sufficient foundations in these areas to venture into more advanced texts. The first section of the book presents numEclipse, an open source tool for numerical computing based on the notion of MATLAB®. numEclipse is implemented as a plug-in for Eclipse, a leading integrated development environment for Java programming. The second section studies the classical methods of numerical analysis. Numerical algorithms and their implementations are presented using numEclipse. Practical scientific computing is an invaluable reference for undergraduate engineering, science and mathematics students taking numerical methods courses. It will also be a useful handbook for postgraduate researchers and professionals whose work involves scientific computing. An invaluable reference for undergraduate engineering, science and mathematics students taking numerical methods

courses Guides the reader through developing a deep understanding of classical numerical methods
Features a comprehensive analysis of numEclipse including numerical algorithms and their implementations

Advancing Research in Information and Communication Technology - Michael Goedicke 2021-08-03
For 60 years the International Federation for Information Processing (IFIP) has been advancing research in Information and Communication Technology (ICT). This book looks into both past experiences and future perspectives using the core of IFIP's competence, its Technical Committees (TCs) and Working Groups (WGs). Soon after IFIP was founded, it established TCs and related WGs to foster the exchange and development of the scientific and technical aspects of information processing. IFIP TCs are as diverse as the different aspects of information processing, but they share the following aims: To establish and maintain liaison with national and international organizations with allied interests and to foster cooperative action, collaborative research, and information exchange. To identify subjects and priorities for research, to stimulate theoretical work on fundamental issues, and to foster fundamental research which will underpin future development. To provide a forum for professionals with a view to promoting the study, collection, exchange, and dissemination of ideas, information, and research findings and thereby to promote the state of the art. To seek and use the most effective ways of disseminating information about IFIP's work including the organization of conferences, workshops and symposia and the timely production of relevant publications. To have special regard for the needs of developing countries and to seek practicable ways of working with them. To encourage communication and to promote interaction between users, practitioners, and researchers. To foster interdisciplinary work and - in particular - to collaborate with other Technical Committees and Working Groups. The 17 contributions in this book describe the scientific, technical, and further work in TCs and WGs and in many cases also assess the future consequences of the work's results. These contributions explore the developments of IFIP and the ICT profession now and over the next 60 years. The contributions are arranged per TC and conclude with the chapter on the IFIP code of ethics and conduct.

Pyomo — Optimization Modeling in Python - Michael L. Bynum 2021-05-01
This book provides a complete and comprehensive guide to Pyomo (Python Optimization Modeling Objects) for beginning and advanced modelers, including students at the undergraduate and graduate levels, academic researchers, and practitioners. Using many examples to illustrate the different techniques useful for formulating models, this text beautifully elucidates the breadth of modeling capabilities that are supported by Pyomo and its handling of complex real-world applications. In the third edition, much of the material has been reorganized, new examples have been added, and a new chapter has been added describing how modelers can improve the performance of their models. The authors have also modified their recommended method for importing Pyomo. A big change in this edition is the emphasis of concrete models, which provide fewer restrictions on the specification and use of Pyomo models. Pyomo is an open source software package for formulating and solving large-scale optimization problems. The software extends the modeling approach supported by modern AML (Algebraic Modeling Language) tools. Pyomo is a flexible, extensible, and portable AML that is embedded in Python, a full-featured scripting language. Python is a powerful and dynamic programming language that has a very clear, readable syntax and intuitive object orientation. Pyomo includes Python classes for defining sparse sets, parameters, and variables, which can be used to formulate algebraic expressions that define objectives and constraints. Moreover, Pyomo can be used from a command-line interface and within Python's interactive command environment, which makes it easy to create Pyomo models, apply a variety of optimizers, and examine solutions.

Introduction to Statistics in Metrology - Stephen Crowder 2020-11-30
This book provides an overview of the application of statistical methods to problems in metrology, with emphasis on modelling measurement processes and quantifying their associated uncertainties. It covers everything from fundamentals to more advanced special topics, each illustrated with case studies from the authors' work in the Nuclear Security Enterprise (NSE). The material provides readers with a solid understanding of how to apply the techniques to metrology studies in a wide variety of contexts. The volume offers particular attention to uncertainty in decision making, design of experiments (DOEx) and

curve fitting, along with special topics such as statistical process control (SPC), assessment of binary measurement systems, and new results on sample size selection in metrology studies. The methodologies presented are supported with R script when appropriate, and the code has been made available for readers to use in their own applications. Designed to promote collaboration between statistics and metrology, this book will be of use to practitioners of metrology as well as students and researchers in statistics and engineering disciplines.

Formal and Practical Aspects of Domain-Specific Languages: Recent Developments - Mernik, Marjan 2012-09-30

"This book presents current research on all aspects of domain-specific language for scholars and practitioners in the software engineering fields, providing new results and answers to open problems in DSL research"--

Advanced Guide to Python 3 Programming John Hunt 2019-09-18

Advanced Guide to Python 3 Programming delves deeply into a host of subjects that you need to understand if you are to develop sophisticated real-world programs. Each topic is preceded by an introduction followed by more advanced topics, along with numerous examples, that take you to an advanced level. There are nine different sections within the book covering Computer Graphics (including GUIs), Games, Testing, File Input and Output, Databases Access, Logging, Concurrency and Parallelism, Reactive programming, and Networking. Each section is self-contained and can either be read on its own or as part of the book as a whole. This book is aimed at the those who have learnt the basics of the Python 3 language but want to delve deeper into Python's eco system of additional libraries and modules, to explore concurrency and parallelism, to create impressive looking graphical interfaces, to work with databases and files and to provide professional logging facilities.

Implementation and Application of Functional Languages - Olaf Chitil 2008-08-21

This book constitutes the thoroughly refereed post-proceedings of the 19th International Workshop on Implementation and Applications of Functional Languages, IFL 2007, held in Freiburg, Germany in September 2007. The 15 revised full papers presented went through two rounds of reviewing and improvement and were selected from 33 submissions. The papers address all current theoretical and methodological issues on functional and function-based languages such as type checking, contract checking, compilation, parallelism, development and debugging, data structures, parsing as well as various performance related concepts.

Artificial Intelligence - David L. Poole 2017-09-25

Artificial Intelligence presents a practical guide to AI, including agents, machine learning and problem-solving simple and complex domains.

Learning Scientific Programming with Python - Christian Hill 2020-10-22

This fast-paced introduction to Python moves from the basics to advanced concepts, enabling readers to gain proficiency quickly.

Pharmacometrics - Ene I. Ete 2013-03-14

Pharmacometrics is the science of interpreting and describing pharmacology in a quantitative fashion. The pharmaceutical industry is integrating pharmacometrics into its drug development program, but there is a lack of and need for experienced pharmacometricians since fewer and fewer academic programs exist to train them. Pharmacometrics: The Science of Quantitative Pharmacology lays out the science of pharmacometrics and its application to drug development, evaluation, and patient pharmacotherapy, providing a comprehensive set of tools for the training and development of pharmacometricians. Edited and written by key leaders in the field, this flagship text on pharmacometrics: Integrates theory and practice to let the reader apply principles and concepts. Provides a comprehensive set of tools for training and developing expertise in the pharmacometric field. Is unique in including computer code information with the examples. This volume is an invaluable resource for all pharmacometricians, statisticians, teachers, graduate and undergraduate students in academia, industry, and regulatory agencies.

Promoting Computer Literacy Through Programming Python John Alexander Miller 2004

Silicon Photonics Design - Lukas Chrostowski 2015-03-12

This hands-on introduction to silicon photonics engineering equips students with everything they need to begin creating foundry-ready designs.

Introduction to Computation and Programming Using Python, second edition - John V. Guttag 2016-08-12

The new edition of an introductory text that teaches students the art of computational problem solving, covering topics ranging from simple algorithms to information visualization. This book introduces students with little or no prior programming experience to the art of computational problem solving using Python and various Python libraries, including PyLab. It provides students with skills that will enable them to make productive use of computational techniques, including some of the tools and techniques of data science for using computation to model and interpret data. The book is based on an MIT course (which became the most popular course offered through MIT's OpenCourseWare) and was developed for use not only in a conventional classroom but in a massive open online course (MOOC). This new edition has been updated for Python 3, reorganized to make it easier to use for courses that cover only a subset of the material, and offers additional material including five new chapters. Students are introduced to Python and the basics of programming in the context of such computational concepts and techniques as exhaustive enumeration, bisection search, and efficient approximation algorithms. Although it covers such traditional topics as computational complexity and simple algorithms, the book focuses on a wide range of topics not found in most introductory texts, including information visualization, simulations to model randomness, computational techniques to understand data, and statistical techniques that inform (and misinform) as well as two related but relatively advanced topics: optimization problems and dynamic programming. This edition offers expanded material on statistics and machine learning and new chapters on Frequentist and Bayesian statistics.

Conversations Around Semiotic Engineering - Simone Diniz Junqueira Barbosa 2017-05-09

Demonstrating the influence of Semiotic Engineering in Human-Computer Interaction, this book focuses on the work of one of the pioneers of the field - Clarisse de Souza - and her influence on this broad and wide-ranging area of research. It contains a selection of essays written by those that have worked with her over the years and will encourage readers to extend their reading and research in this area. Clarisse de Souza, widely known as the founder of Semiotic Engineering, will reach her 60th birthday in 2017, and the Semiotic Engineering Research Group that she founded will also celebrate its 20th anniversary. A key figure in HCI, Clarisse argued that human-computer interaction enables computer-mediated communication between the designer and the user at the point of interaction thus enabling and facilitating designers in understanding who their users are, and what their requirements may be. This book brings together prominent researchers who have helped to shape semiotic engineering by their insightful discussions on the theory.

Functional and Logic Programming Masami Hagiya 2006-03-16

This book constitutes the refereed proceedings of the 8th International Symposium on Functional and Logic Programming, FLOPS 2006, held in Fuji-Susono, Japan, in April 2006. The 17 revised full papers presented together with 2 invited contributions were carefully reviewed and selected from 51 submissions. The papers are organized in topical sections on data types, FP extensions, type theory, LP extensions, analysis, contracts, as well as Web and GUI.

Python by Example - Nichola Lacey 2019-06-06

A refreshingly different and engaging way of learning how to program using Python. This book includes example code and brief user-friendly explanations, along with 150 progressively trickier challenges. As readers are actively involved in their learning, they quickly master the new skills and gain confidence in creating their own programs.

The British National Bibliography - Arthur James Wells 2009

Ambient Communications and Computer Systems - Yu-Chen Hu 2022-05-07

This book features high-quality, peer-reviewed papers from the Fourth International Conference on Recent Advancements in Computer, Communication, and Computational Sciences (RACCCS 2021), held at Aryabhata College of Engineering and Research Center, Ajmer, India, on August 20–21, 2021. Presenting

the latest developments and technical solutions in computational sciences, it covers a variety of topics, such as intelligent hardware and software design, advanced communications, intelligent computing technologies, advanced software engineering, the web and informatics, and intelligent image processing. As such, it helps those in the computer industry and academia to use the advances in next-generation communication and computational technology to shape real-world applications.

Numerical Methods in Engineering with Python 3 - Jaan Kiusalaas 2013-01-21

Provides an introduction to numerical methods for students in engineering. It uses Python 3, an easy-to-use, high-level programming language.

How to Think About Algorithms - Jeff Edmonds 2008-05-19

This textbook, for second- or third-year students of computer science, presents insights, notations, and analogies to help them describe and think about algorithms like an expert, without grinding through lots of formal proof. Solutions to many problems are provided to let students check their progress, while class-tested PowerPoint slides are on the web for anyone running the course. By looking at both the big picture and easy step-by-step methods for developing algorithms, the author guides students around the common pitfalls. He stresses paradigms such as loop invariants and recursion to unify a huge range of algorithms into a few meta-algorithms. The book fosters a deeper understanding of how and why each algorithm works. These insights are presented in a careful and clear way, helping students to think abstractly and preparing them for creating their own innovative ways to solve problems.

A First Course in Network Science - Filippo Menczer 2020-01-30

A practical introduction to network science for students across business, cognitive science, neuroscience, sociology, biology, engineering and other disciplines.

Python Programming for Biology - Tim J. Stevens 2015-02-12

Do you have a biological question that could be readily answered by computational techniques, but little experience in programming? Do you want to learn more about the core techniques used in computational biology and bioinformatics? Written in an accessible style, this guide provides a foundation for both newcomers to computer programming and those interested in learning more about computational biology. The chapters guide the reader through: a complete beginners' course to programming in Python, with an introduction to computing jargon; descriptions of core bioinformatics methods with working Python examples; scientific computing techniques, including image analysis, statistics and machine learning. This book also functions as a language reference written in straightforward English, covering the most common Python language elements and a glossary of computing and biological terms. This title will teach undergraduates, postgraduates and professionals working in the life sciences how to program with Python, a powerful, flexible and easy-to-use language.

Big Practical Guide to Computer Simulations - Alexander K Hartmann 2015-01-29

This book teaches you all necessary (problem-independent) tools and techniques needed to implement and perform sophisticated scientific numerical simulations. Thus, it is suited for undergraduate and graduate students who want to become experts in computer simulations in Physics, Chemistry, Biology, Engineering, Computer Science and other fields.

Getting to Know Python Simone Payment 2014-07-15

Beginner coders often gravitate to the easy-to-use Python language for its versatility and usability. Games, robots, and Web sites—including those of Google and YouTube—and much more run on Python, and developers are constantly collaborating to improve the language and address problem areas. This volume introduces readers to Python, exploring its various applications and the history of its development. Side-by-side comparisons with other languages are also included to show the benefits of Python, while interviews with programmers highlight its many real-world applications.

Pattern-Oriented Software Architecture, Patterns for Resource Management - Michael Kircher 2013-04-19

The first volume of the POSA pattern series introduced a broad-spectrum of general-purpose patterns in software design and architecture. The second narrowed the focus to fundamental patterns for building sophisticated concurrent and networked software systems and applications. This volume uses design patterns to present techniques for implementing effective resource management in a system. The patterns are covered in detail making use of several examples providing directions to the readers on how to

implement the presented patterns. Additionally, the volume presents a thorough introduction into resource management and a case study where the patterns are applied to the domain of mobile radio networks. The patterns are grouped by different areas of resource management and hence address the complete lifecycle of resources: resource acquisition, coordination and release.

Handbook of Research on Software Engineering and Productivity Technologies: Implications of Globalization - Ramachandran, Muthu 2009-08-31

"This book provides integrated chapters on software engineering and enterprise systems focusing on parts integrating requirements engineering, software engineering, process and frameworks, productivity technologies, and enterprise systems"--Provided by publisher.

Python for Probability, Statistics, and Machine Learning - José Unpingco 2022-12-06

Using a novel integration of mathematics and Python codes, this book illustrates the fundamental concepts that link probability, statistics, and machine learning, so that the reader can not only employ statistical and machine learning models using modern Python modules, but also understand their relative strengths and weaknesses. To clearly connect theoretical concepts to practical implementations, the author provides many worked-out examples along with "Programming Tips" that encourage the reader to write quality Python code. The entire text, including all the figures and numerical results, is reproducible using the Python codes provided, thus enabling readers to follow along by experimenting with the same code on their own computers. Modern Python modules like Pandas, Sympy, Scikit-learn, Statsmodels, Scipy, Xarray, Tensorflow, and Keras are used to implement and visualize important machine learning concepts like the bias/variance trade-off, cross-validation, interpretability, and regularization. Many abstract mathematical ideas, such as modes of convergence in probability, are explained and illustrated with concrete numerical examples. This book is suitable for anyone with undergraduate-level experience with probability, statistics, or machine learning and with rudimentary knowledge of Python programming.

Model-Driven Engineering and Software Development Slimane Hammoudi 2020-01-03

This book constitutes thoroughly revised and selected papers from the 7th International Conference on Model-Driven Engineering and Software Development, MODELSWARD 2019, held in Prague, Czech Republic, in February 2019. The 16 thoroughly revised and extended papers presented in this volume were carefully reviewed and selected from 76 submissions. They address some of the most relevant challenges being faced by researchers and practitioners in the field of model-driven engineering and software development and cover topics like language design and tooling; programming support tools; code and text generation from models, behavior modeling and analysis; model transformations and multi-view modeling; as well as applications of MDD and its related techniques to cyber-physical systems, cyber security, IoT, autonomous vehicles and healthcare.

Doing Data Science Cathy O'Neil 2013-10-09

A guide to the usefulness of data science covers such topics as algorithms, logistic regression, financial modeling, data visualization, and data engineering.

Object Detection and Recognition in Digital Images - Boguslaw Cyganek 2013-05-20

Object detection, tracking and recognition in images are key problems in computer vision. This book provides the reader with a balanced treatment between the theory and practice of selected methods in these areas to make the book accessible to a range of researchers, engineers, developers and postgraduate students working in computer vision and related fields. Key features: Explains the main theoretical ideas

behind each method (which are augmented with a rigorous mathematical derivation of the formulas), their implementation (in C++) and demonstrated working in real applications. Places an emphasis on tensor and statistical based approaches within object detection and recognition. Provides an overview of image clustering and classification methods which includes subspace and kernel based processing, mean shift and Kalman filter, neural networks, and k-means methods. Contains numerous case study examples of mainly automotive applications. Includes a companion website hosting full C++ implementation, of topics presented in the book as a software library, and an accompanying manual to the software platform.

Python for Software Design Allen B. Downey 2009-03-16

Python for Software Design is a concise introduction to software design using the Python programming language. Intended for people with no programming experience, this book starts with the most basic concepts and gradually adds new material. Some of the ideas students find most challenging, like recursion and object-oriented programming, are divided into a sequence of smaller steps and introduced over the course of several chapters. The focus is on the programming process, with special emphasis on debugging. The book includes a wide range of exercises, from short examples to substantial projects, so that students have ample opportunity to practice each new concept. Exercise solutions and code examples are available from thinkpython.com, along with Swampy, a suite of Python programs that is used in some of the exercises.

Logical Modeling of Cellular Processes: From Software Development to Network Dynamics Barberis 2019-08-16

Mathematical models have become invaluable tools for understanding the intricate dynamic behavior of complex biochemical and biological systems. Among computational strategies, logical modeling has been recently gaining interest as an alternative approach to address network dynamics. Due to its advantages, including scalability and independence of kinetic parameters, the logical modeling framework is becoming increasingly popular to study the dynamics of highly interconnected systems, such as cell cycle progression, T cell differentiation and gene regulation. Novel tools and standards have been developed to increase the interoperability of logical models, which can now be employed to respond a variety of biological questions. This Research Topic brings together the most recent and cutting-edge approaches in the area of logical modeling including, among others, novel biological applications, software development and model analysis techniques.

Software Design for Flexibility - Chris Hanson 2021-03-09

Strategies for building large systems that can be easily adapted for new situations with only minor programming modifications. Time pressures encourage programmers to write code that works well for a narrow purpose, with no room to grow. But the best systems are evolvable; they can be adapted for new situations by adding code, rather than changing the existing code. The authors describe techniques they have found effective--over their combined 100-plus years of programming experience--that will help programmers avoid programming themselves into corners. The authors explore ways to enhance flexibility by: Organizing systems using combinators to compose mix-and-match parts, ranging from small functions to whole arithmetics, with standardized interfaces Augmenting data with independent annotation layers, such as units of measurement or provenance Combining independent pieces of partial information using unification or propagation Separating control structure from problem domain with domain models, rule systems and pattern matching, propagation, and dependency-directed backtracking Extending the programming language, using dynamically extensible evaluators