



# **Computer Science**

# Springer and Palgrave Essential Textbooks

All Free Access until July31st, 2020

My Catalog

# Springer Nature Customer Service Center GmbH

https://www.springer.com/booksellers row-booksellers@springernature.com Tel +49 (0)6221 345-4301 15-17 Tiergartenstrasse Heidelberg 69121 Germany

Part of **SPRINGER NATURE** 

| Computer Science   | .3  |
|--|-----|
| Artificial Intelligence                                  | .3  |
| Computation by Abstract Devices                          | .4  |
| Computer Appl. in Administrative Data Processing         | .4  |
| Data Mining and Knowledge Discovery                      | .5  |
| Data Structures  | .7  |
| Data Structures and Information Theory                   | .7  |
| Database Management                                      | .8  |
| Discrete Mathematics in Computer Science                 | .9  |
| Image Processing and Computer Vision                     | .9  |
| Information Storage and Retrieval                        | .11 |
| Java   | .12 |
| Logics and Meanings of Programs                          | .12 |
| Machine Learning   | .12 |
| Mathematical Applications in Computer Science            | .13 |
| Mathematical Logic and Formal Languages                  | .13 |
| Probability and Statistics in Computer Science           | .14 |
| Programming Languages, Compilers, Interpreters           | .14 |
| Programming Techniques                                   | .16 |
| Security   | .18 |
| Software Engineering                                     | .18 |
| Software Engineering / Programming and Operating Systems | .19 |
| Theory of Computation                                    | .19 |
| User Interfaces and Human Computer Interaction           | .20 |
| Popular Science  | .21 |
| Popular Computer Science                                 | .21 |

Titles are sorted by author and title within the discipline. Please use springer.com to search for titles or authors. Check updated prices on our web site.



ISBN: 978-3-319-94462-3

Aggarwal, Charu C., International Business Machines, Yorktown Heights, NY, USA

# Neural Networks and Deep Learning

#### A Textbook

• This book covers the theory and algorithms of deep learning and it provides detailed discussions of the relationships of neural networks with traditional machine learning algorithms.

The mathematical aspects are concretely presented without losing accessibility.
The book is written in a textbook style, and it includes exercises, a solution manual, and instructor slides. The depth and breadth of

This book covers both classical and modern models in deep learning. The primary focus is on the theory and algorithms of deep learning. The theory and algorithms of neural networks are particularly important for

understanding important concepts, so that one can understand the important design concepts of neural architectures in different applications. Why do neural networks work? When do they work better than off-the-shelf machine-learning models? When is depth useful? Why is training neural networks so hard? What are the pitfalls? The book is also rich in discussing different applications in order to give the practitioner a flavor of how

#### Contents

...

1 An Introduction to Neural Networks.- 2 Machine Learning with Shallow Neural Networks.- 3 Training Deep Neural Networks.-4 Teaching Deep Learners to Generalize.- 5 Radical Basis Function Networks.- 6 Restricted Boltzmann Machines.- 7 Recurrent Neural Networks.- 8 Convolutional Neural Networks.-9 Deep Reinforcement Learning.- 10 Advanced Topics in Deep Learning.

#### **Fields of Interest**

Artificial Intelligence; Information Systems and Communication Service; Processor

#### Architectures

**Content Level** Graduate

**Product category** Graduate/advanced undergraduate textbook

Available

#### Bibliography

1st ed. 2018,XXIII, 497 p. 139 illus., 11 illus. in color. Hardcover

Medium Type Book

**Imprint** Springer

**Order Quantity** 



ISBN: 978-3-662-44873-1

Eiben, A.E., Smith, J.E., VU University Amsterdam, Amsterdam, The Netherlands

# Introduction to Evolutionary Computing

• New edition of well-established undergraduate textbook revised to offer an integrated view on evolution-based problemsolving algorithms

Includes a new chapter on evolutionary robotics

• Combines chapters on parameter tuning and control with "how-to" chapters in a new book part dedicated to methodology

The overall structure of this new edition is three-tier: Part I presents the basics, Part II is concerned with methodological issues, and Part III discusses advanced topics. In the second edition the authors have reorganized the material to focus on problems, how to represent them, and then how to choose and design algorithms for different representations. They also added a chapter on problems, reflecting the overall book focus on problem-solvers, a chapter on parameter tuning, which they combined with the parameter control and "how-to" chapters into a methodological part, and finally a chapter on evolutionary robotics with an outlook on ...

#### Contents

Problems to Be Solved.- Evolutionary Computing: The Origins.- What Is an Evolutionary Algorithm?.- Representation, Mutation, and Recombination.- Fitness, Selection, and Population Management.-Popular Evolutionary Algorithm Variants.-Hybridisation with Other Techniques: Memetic Algorithms.- Nonstationary and Noisy Function Optimisation.- Multiobjective **Evolutionary Algorithms.- Constraint** Handling.- Interactive Evolutionary Algorithms.- Coevolutionary Systems.-Theory.- Evolutionary Robotics.- Parameters and Parameter Tuning.- Parameter Control.-Working with Evolutionary Algorithms.-References.

#### **Fields of Interest**

Artificial Intelligence; Computational Intelligence; Theory of Computation; Robotics and Automation; Optimization

**Content Level** Upper undergraduate

Product category

Undergraduate textbook

Available

#### **Bibliography**

2nd ed. 2015,XII, 287 p. 67 illus., 12 illus. in color.(Natural Computing Series) Hardcover

Medium Type Book

Imprint Springer

**Order Quantity** 



ISBN: 978-3-319-58486-7

Ertel, Wolfgang, Hochschule Ravensburg-Weingarten, Weingarten, Germany

# Introduction to Artificial Intelligence

An ideal, quick resource on A.I., excellent for self-study

Presents an application-focused and handson approach to learning the subject
Provides study exercises at the end of each chapter, in addition to highlighted examples, definitions, theorems, and illustrative cartoons

This accessible and engaging textbook presents a concise introduction to the exciting field of artificial intelligence (AI). The broad-ranging discussion covers the key subdisciplines within the field, describing practical algorithms and concrete applications in the areas of agents, logic, search, reasoning under uncertainty, machine learning, neural networks, and reinforcement learning. Fully revised and updated, this much-anticipated second edition also includes new material on deep learning. Topics and features: presents an applicationfocused and hands-on approach to learning, with supplementary teaching resources provided at an ...

#### Contents

Introduction.- Propositional Logic.- First-order Predicate Logic.- Limitations of Logic.- Logic Programming with PROLOG.- Search, Games and Problem Solving.- Reasoning with Uncertainty.- Machine Learning and Data Mining.- Neural Networks.- Reinforcement Learning.- Solutions for the Exercises.

#### **Fields of Interest**

Artificial Intelligence

**Content Level** Lower undergraduate

#### Product category

Undergraduate textbook

Available

#### Bibliography

2nd ed. 2017,XIV, 356 p. 130 illus., 46 illus. in color.(Undergraduate Topics in Computer Science) Softcover

Medium Type Book

#### Imprint

Springer

**Order Quantity** 



ISBN: 978-0-387-94907-9

Kozen, Dexter C., Cornell University Dept. Computer Science, Ithaca, NY, USA

# Automata and Computability

The aim of this textbook is to provide undergraduate students with an introduction to the basic theoretical models of computability, and to develop some of the model's rich and varied structure. Students who have already some experience with elementary discrete mathematics will find this a well-paced first course, and a number of supplementary chapters introduce more advanced concepts. The first part of the book is devoted to finite automata and their properties. Pushdown automata provide a broader class of models and enable the analysis of context-free languages. In the remaining chapters, Turing machines are introduced and the book ...

#### Contents

Lectures.- 1 Course Roadmap and Historical Perspective.- 2 Strings and Sets.- 3 Finite Automata and Regular Sets.- 4 More on Regular Sets.- 5 Nondeterministic Finite Automata.- 6 The Subset Construction.- 7 Pattern Matching.- 8 Pattern Matching and **Regular Expressions.- 9 Regular Expressions** and Finite Automata.- A Kleene Algebra and Regular Expressions.- 10 Homomorphisms.-11 Limitations of Finite Automata.- 12 Using the Pumping Lemma.- 13 DFA State Minimization.- 14 A Minimization Algorithm.-15 Myhill-Nerode Relations.- 16 The Myhill—Nerode Theorem.- B Collapsing Nondeterministic Automata.- C Automata on Terms.- D The Myhill-Nerode ...

#### **Fields of Interest**

Computation by Abstract Devices; Algorithm Analysis and Problem Complexity

#### **Content Level**

Lower undergraduate

#### **Product category**

Undergraduate textbook

Available

**Bibliography** 1997,XIII, 400 p.(Undergraduate Texts in Computer Science) Hardcover

Medium Type Book

Imprint Springer

Order Quantity



#### ISBN: 978-3-662-56508-7

Dumas, M., La Rosa, M., Mendling, J., Reijers, H.A., University of Tartu, Tartu, Estonia

# Fundamentals of Business Process Management

Covers the whole BPM lifecycle, including process identification, discovery, analysis, redesign, automation and monitoring
Class-tested textbook complemented with additional teaching material on the accompanying website

 Covers both relevant conceptual background, industrial standards and actionable skills

This textbook covers the entire Business Process Management (BPM) lifecycle, from process identification to process monitoring, covering along the way process modelling, analysis, redesign and automation. Concepts, methods and tools from business management, computer science and industrial engineering are blended into one comprehensive and inter-disciplinary approach. The presentation is illustrated using the BPMN industry standard defined by the Object Management Group and widely endorsed by practitioners and vendors worldwide. In addition to explaining the relevant conceptual background, the book provides dozens of examples, more than 230

#### Contents

1 Introduction to Business Process Management.- 2 Process Identification.- 3 Essential Process Modeling.- 4 Advanced Process Modeling.- 5 Process Discovery.- 6 Qualitative Process Analysis.- 7 Quantitative Process Analysis.- 8 Process Redesign.- 9 Process-Aware Information Systems.- 10 Process Implementation with Executable Models.- 11 Process Monitoring.- 12 BPM as an Enterprise Capability.

#### **Fields of Interest**

Computer Appl. in Administrative Data Processing; Business Process Management; Information Systems Applications (incl. Internet); Software Engineering

#### **Content Level**

Graduate

**Product category** Graduate/advanced undergraduate textbook

Available

#### Bibliography

2nd ed. 2018,XXXII, 527 p. 199 illus., 22 illus. in color. Hardcover

Medium Type Book

# Imprint

Springer

**Order Quantity** 



ISBN: 978-3-319-14141-1

Aggarwal, Charu C., IBM T.J. Watson Research Center, Yorktown Heights, NY, USA

#### **Data Mining**

#### The Textbook

 Discusses fundamental methods, data types and applications

Appropriate for basic data mining courses as well as advanced data mining courses
Reinforces basic principles of data mining techniques through examples of data mining from the fundamentals to the complex data types and their applications, capturing the wide diversity of problem domains for data mining issues. It goes beyond the traditional focus on data mining problems to introduce advanced data types such as text, time series, discrete sequences, spatial data, graph data, and social networks. Until now, no single book has addressed all these topics in a comprehensive and integrated way. The chapters of this book fall into one of three categories: Fundamental chapters: Data mining has four main problems, which correspond to clustering, ...

#### Contents

Introduction to Data Mining.- Data Preparation.- Similarity and Distances.-Association Pattern Mining.- Association Pattern Mining: Advanced Concepts.- Cluster Analysis.- Cluster Analysis: Advanced Concepts.- Outlier Analysis.- Outlier Analysis: Advanced Concepts.- Data Classification.-Data Classification: Advanced Concepts.-Mining Data Streams.- Mining Text Data.-Mining Time-Series Data.- Mining Discrete Sequences.- Mining Spatial Data.- Mining Graph Data.- Mining Web Data.- Social Network Analysis.- Privacy-Preserving Data Mining.

#### **Fields of Interest**

Data Mining and Knowledge Discovery; Pattern Recognition

#### **Content Level**

Graduate

#### Product category

Graduate/advanced undergraduate textbook

Available

#### Bibliography

2015,XXIX, 734 p. 180 illus., 173 illus. in color. Hardcover

Medium Type Book

Imprint Springer

**Order Quantity** 



ISBN: 978-3-319-29657-9

Aggarwal, Charu C., IBM T. J. Watson Res Center, Yorktown Heights, NY, USA

# **Recommender Systems**

#### The Textbook

Includes exercises and assignments, with instructor access to a solutions manual
Illustrations throughout aid in comprehension
Provides many examples to simplify

exposition and facilitate in learning

This book comprehensively covers the topic of recommender systems, which provide personalized recommendations of products or services to users based on their previous searches or purchases. Recommender system methods have been adapted to diverse applications including query log mining, social networking, news recommendations, and computational advertising. This book synthesizes both fundamental and advanced topics of a research area that has now reached maturity. The chapters of this book are organized into three categories: Algorithms and evaluation: These chapters discuss the fundamental algorithms in recommender systems, including ...

#### Contents

An Introduction to Recommender Systems.-Neighborhood-Based Collaborative Filtering.-Model-Based Collaborative Filtering.-Content-Based Recommender Systems.-Ensemble-Based and Hybrid Recommender Systems.- Evaluating Recommender Systems.-Context-Sensitive Recommender Systems.-Time- and Location-Sensitive Recommender Systems.- Structural Recommendations in Networks.- Social and Trust-Centric Recommender Systems.- Attack-Resistant Recommender Systems.- Advanced Topics in Recommender Systems.

#### **Fields of Interest**

Data Mining and Knowledge Discovery; Artificial Intelligence

**Content Level** Graduate Graduate/advanced undergraduate textbook

Available

#### Bibliography

1st ed. 2016,XXI, 498 p. 79 illus., 18 illus. in color. Hardcover

#### **Medium Type**

Book

#### Imprint

Springer

#### **Order Quantity**



ISBN: 978-3-319-50016-4

Igual, Laura, Seguí, Santi, Universitat de Barcelona, Barcelona, Spain

# **Introduction to Data Science**

# A Python Approach to Concepts, Techniques and Applications

• Describes tools and techniques that demystify data science

Presents a focus on analytical techniques; the core toolbox for every data scientist
Includes numerous practical case studies using real-world data, supplying code examples and data at an associated website

This accessible and classroom-tested textbook/reference presents an introduction to the fundamentals of the emerging and interdisciplinary field of data science. The coverage spans key concepts adopted from statistics and machine learning, useful techniques for graph analysis and parallel programming, and the practical application of data science for such tasks as building recommender systems or performing sentiment analysis. Topics and features: provides numerous practical case studies using real-world data throughout the book; supports understanding through hands-on experience of solving data science problems using Python; describes ...

#### Contents

Introduction to Data Science.- Toolboxes for Data Scientists.- Descriptive statistics.-Statistical Inference.- Supervised Learning.-Regression Analysis.- Unsupervised Learning.-Network Analysis.- Recommender Systems.-Statistical Natural Language Processing for Sentiment Analysis.- Parallel Computing.

#### **Fields of Interest**

Data Mining and Knowledge Discovery; Probability and Statistics in Computer Science; Artificial Intelligence; Pattern Recognition; Statistics and Computing/ Statistics Programs

#### **Content Level**

Upper undergraduate

#### Product category

Undergraduate textbook

Available

# Bibliography

1st ed. 2017,XIV, 218 p. 73 illus., 67 illus. in color.(Undergraduate Topics in Computer Science) Softcover

Medium Type Book

**Imprint** Springer

# Order Quantity



ISBN: 978-3-319-63912-3

Kubat, Miroslav, University of Miami, Coral Gables, FL, USA

# An Introduction to Machine Learning

• Offers frequent opportunities to practice techniques with control questions, exercises, thought experiments, and computer assignments.

• Reinforces principles using well-selected toy domains and relevant real-world applications.

• Provides additional material, including an instructor's manual with presentation slides, as well as answers to exercises.

This textbook presents fundamental machine learning concepts in an easy to understand manner by providing practical advice, using straightforward examples, and offering engaging discussions of relevant applications. The main topics include Bayesian classifiers, nearest-neighbor classifiers, linear and polynomial classifiers, decision trees, neural networks, and support vector machines. Later chapters show how to combine these simple tools by way of "boosting," how to exploit them in more complicated domains, and how to deal with diverse advanced practical issues. One chapter is dedicated to the popular genetic algorithms. This revised ...

#### Contents

1 A Simple Machine-Learning Task.- 2 Probabilities: Bayesian Classifiers.- Similarities: Nearest-Neighbor Classifiers.- 4 Inter-Class Boundaries: Linear and Polynomial Classifiers.- 5 Artificial Neural Networks.- 6 Decision Trees.- 7 Computational Learning Theory.- 8 A Few Instructive Applications.- 9 Induction of Voting Assemblies.- 10 Some Practical Aspects to Know About.- 11 Performance Evaluation.- 12 Statistical Significance.- 13 Induction in Multi-Label Domains.- 14 Unsupervised Learning.- 15 Classifiers in the Form of Rulesets.- 16 The Genetic Algorithm.- 17 Reinforcement Learning.

# **Fields of Interest**

Data Mining and Knowledge Discovery; Artificial Intelligence; Big Data/Analytics; Computational Intelligence

**Content Level** Upper undergraduate

**Product category** Undergraduate textbook

Available

**Bibliography** 2nd ed. 2017,XIII, 348 p. 85 illus., 3 illus. in color. Hardcover

Medium Type Book

**Imprint** Springer

#### **Computer Science**



ISBN: 978-3-319-55443-3

Skiena, Steven S., Stony Brook University, Stony Brook, NY, USA

# The Data Science Design Manual

Provides an introduction to data science, focusing on the fundamental skills and principles needed to build systems for collecting, analyzing, and interpreting data
Lays the groundwork of what really matters in analyzing data; 'doing the simple things right'

• Aids the reader in developing mathematical intuition, illustrating the key concepts with a minimum of formal mathematics

This engaging and clearly written textbook/ reference provides a must-have introduction to the rapidly emerging interdisciplinary field of data science. It focuses on the principles fundamental to becoming a good data scientist and the key skills needed to build systems for collecting, analyzing, and interpreting data. The Data Science Design Manual is a source of practical insights that highlights what really matters in analyzing data, and provides an intuitive understanding of how these core concepts can be used. The book does not emphasize any particular programming language or suite of dataanalysis tools, focusing instead on high-level

#### Contents

What is Data Science?.- Mathematical Preliminaries.- Data Munging.- Scores and Rankings.- Statistical Analysis.- Visualizing Data.- Mathematical Models.- Linear Algebra.-Linear and Logistic Regression.- Distance and Network Methods.- Machine Learning.- Big Data: Achieving Scale.

#### **Fields of Interest**

Data Mining and Knowledge Discovery; Pattern Recognition; Big Data/Analytics; Visualization; Statistics and Computing/ Statistics Programs

**Content Level** Upper undergraduate **Product category** Undergraduate textbook

Available

# Bibliography

1st ed. 2017,XVII, 445 p. 180 illus., 137 illus. in color.(Texts in Computer Science) Hardcover

Medium Type Book

Imprint Springer

**Order Quantity** 



ISBN: 978-3-319-13071-2

Lee, Kent D., Hubbard, Steve, Luther College, Decorah, IA, USA

# Data Structures and Algorithms with Python

Includes broad coverage of both introductory and advanced data structures topics, supported by examples
Guides the reader through the concepts of

computational complexity, from the basics to amortized complexity

• Makes learning fun, using the development of graphical user interface programs to illustrate concepts

This textbook explains the concepts and techniques required to write programs that can handle large amounts of data efficiently. Project-oriented and classroom-tested, the book presents a number of important algorithms supported by examples that bring meaning to the problems faced by computer programmers. The idea of computational complexity is also introduced, demonstrating what can and cannot be computed efficiently so that the programmer can make informed judgements about the algorithms they use. Features: includes both introductory and advanced data structures and algorithms topics, with suggested chapter sequences for those respective ...

Contents

1: Python Programming 101.- 2: Computational Complexity.- 3: Recursion.-Sequences.- 4: Sets and Maps.- 5: Trees.- 6: Graphs.- 7: Membership Structures.- 8: Heaps.- 9: Balanced Binary Search Trees.- 10: B-Trees.- 11: Heuristic Search.- Appendix A: Integer Operators.- Appendix B: Float Operators.- Appendix C: String Operators and Methods.- Appendix C: String Operators and Methods.- Appendix E: Dictionary Operators and Methods.- Appendix F: Turtle Methods.-Appendix G: TurtleScreen Methods.-Appendix H: Complete Programs.

#### **Fields of Interest**

Data Structures; Python; Algorithm Analysis and Problem Complexity; Programming Techniques

#### **Content Level**

Lower undergraduate

#### **Product category**

Undergraduate textbook

Available

#### **Bibliography**

2015,XV, 363 p. 147 illus., 139 illus. in color. (Undergraduate Topics in Computer Science) Softcover

#### **Medium Type**

Book

#### Imprint Springer

Order Quantity



ISBN: 978-3-642-04100-6

Paar, Christof, Pelzl, Jan, Katholieke Universiteit Leuven Dept. Elektrotechniek (EAST), Leuven, Belgium

# **Understanding Cryptography**

# A Textbook for Students and Practitioners

springer.com

This book is uniquely designed for students of engineering and applied computer science, and engineering practitioners
Authors' website (http://www.cryptotextbook.com/) provides extensive notes, slides, video lectures

 Authors' YouTube channel (https://www. youtube.com/channel/ UC1usFRN4LCMcflV7UjHNuQg) includes video lectures

Cryptography is now ubiquitous - moving beyond the traditional environments, such as government communications and banking systems, we see cryptographic techniques realized in Web browsers, e-mail programs, cell phones, manufacturing systems, embedded software, smart buildings, cars, and even medical implants. Today's designers need a comprehensive understanding of applied cryptography. After an introduction to cryptography and data security, the authors explain the main techniques in modern cryptography, with chapters addressing stream ciphers, the Data Encryption Standard (DES) and 3DES, the Advanced Encryption Standard (AES), block ...

#### Contents

Introduction to Cryptography and Data Security.- Stream Ciphers.- The Data Encryption Standard (DES) and Alternatives.-The Advanced Encryption Standard (AES).-More About Block Ciphers.- to Public-Key Cryptography.- The RSA Cryptosystem.-Public-Key Cryptosystems Based on the Discrete Logarithm Problem.- Elliptic Curve Cryptosystems.- Digital Signatures.- Hash Functions.- Message Authentication Codes (MACs).- Key Establishment.

#### **Fields of Interest**

Data Structures and Information Theory; Systems and Data Security; Programming Techniques; Communications Engineering, Networks; Circuits and Systems

#### **Content Level**

Professional/practitioner

Product category

Undergraduate textbook

Available

**Bibliography** 2010,XVIII, 372 p. Hardcover

Medium Type Book

Imprint Springer

**Order Quantity** 



ISBN: 978-3-319-21935-6

Smart, Nigel, University of Bristol, Bristol, UK

#### **Cryptography Made Simple**

Author is a leading researcher and practitioner in cryptography
Textbook emphasizes security definitions
Suitable for undergraduate courses in computer science, mathematics and

computer science, mathematics and engineering

In this introductory textbook the author explains the key topics in cryptography. He takes a modern approach, where defining what is meant by "secure" is as important as creating something that achieves that goal, and security definitions are central to the discussion throughout. The author balances a largely non-rigorous style — many proofs are sketched only — with appropriate formality and depth. For example, he uses the terminology of groups and finite fields so that the reader can understand both the latest academic research and "real-world" documents such as application programming interface descriptions and cryptographic standards. The ...

#### Contents

Modular Arithmetic, Groups, Finite Fields and Probability.- Elliptic Curves.- Historical Ciphers.- The Enigma Machine.- Information Theoretic Security.- Historical Stream Ciphers.- Modern Stream Ciphers.- Block Ciphers.- Symmetric Key Distribution.- Hash Functions and Message Authentication Codes.- Basic Public Key Encryption Algorithms.- Primality Testing and Factoring.-Discrete Logarithms.- Key Exchange and Signature Schemes.- Implementation Issues.-Obtaining Authentic Public Keys.- Attacks on Public Key Schemes.- Definitions of Security.-Complexity Theoretic Approaches.- Provable Security: With Random Oracles.- Hybrid Encryption.- ...

#### **Fields of Interest**

Data Structures and Information Theory; Mathematics of Computing; Security Science and Technology; Discrete Mathematics

#### **Content Level**

Upper undergraduate

**Product category** Undergraduate textbook

Available

**Bibliography** 1st ed. 2016,XII, 481 p.(Information Security and Cryptography) Hardcover

Medium Type Book

Imprint Springer

**Order Quantity** 



ISBN: 978-1-4471-5600-0

Lake, Peter, Crowther, Paul, Sheffield Hallam University, Sheffield, UK

#### **Concise Guide to Databases**

#### **A Practical Introduction**

 Includes numerous examples to support the description of both business and technical issues

 Introduces a range of commercial databases and encourages the reader to experiment with these in an associated learning environment

• Presents a mixture of both theory and practical elements

This easy-to-read textbook/reference presents a comprehensive introduction to databases, opening with a concise history of databases and of data as an organisational asset. As relational database management systems are no longer the only database solution, the book takes a wider view of database technology, encompassing big data, NoSQL, object and object-relational and in-memory databases. The text also examines the issues of scalability, availability, performance and security encountered when building and running a database in the real world. Topics and features: presents review and discussion questions at the end of each chapter, in ...

#### Contents

Part I: Databases in Context.- Data: An Organisational Asset.- The History of Databases.- Physical Storage and Distribution.- Part II: Database Types.-Relational: The Start of the Modern Era in Databases.- NoSQL: Column-Based and Document-Based Databases.- Big Data.-Object and Object-Relational.- In-Memory Databases.- Part III: What Database Professionals Worry About.- Scalability.-Availability.- Performance.- Security.

#### **Fields of Interest**

Database Management; Information Storage and Retrieval; Data Structures and Information Theory; Software Engineering/ Programming and Operating Systems

#### Content Level

Upper undergraduate

#### Product category

Undergraduate textbook

Available

#### Bibliography

2013,XIX, 307 p. 113 illus.(Undergraduate Topics in Computer Science) Softcover

Medium Type Book

# Imprint

Springer





ISBN: 978-3-319-44560-1

O'Regan, Gerard, SQC Consulting, Mallow, Ireland

# **Guide to Discrete Mathematics**

An Accessible Introduction to the History, Theory, Logic and Applications

• Presents a broad and accessible introduction to discrete mathematics

• Provides an introduction to logic, covering historical developments

• Presents a strong focus on applications to coding and graph theory, formal methods, databases, and software reliability

This stimulating textbook presents a broad and accessible guide to the fundamentals of discrete mathematics, highlighting how the techniques may be applied to various exciting areas in computing. The text is designed to motivate and inspire the reader, encouraging further study in this important skill. Features: provides an introduction to the building blocks of discrete mathematics, including sets, relations and functions; describes the basics of number theory, the techniques of induction and recursion, and the applications of mathematical sequences, series, permutations, and combinations; presents the essentials of algebra; explains the ...

#### Contents

Mathematics in Civilization.- Sets, Relations and Functions.- Number Theory.-Mathematical Induction and Recursion.-Sequences, Series and Permutations and Combinations.- Algebra.- Automata Theory.-Matrix Theory.- Graph Theory.-Cryptography.- Coding Theory.- Language Theory and Semantics.- Computability and Decidability.- A Short History of Logic.-Propositional and Predicate Logic.- Advanced Topics in Logic.- Software Engineering Mathematics.- Formal Methods.- Z Formal Specification Language.- Probability, Statistics and Applications.

#### **Fields of Interest**

Discrete Mathematics in Computer Science; Arithmetic and Logic Structures; Logics and Meanings of Programs; History of Computing; Mathematical Applications in Computer Science; Math Applications in Computer Science

#### **Content Level**

Lower undergraduate

#### **Product category**

Undergraduate textbook

Available

#### **Bibliography**

1st ed. 2016,XXI, 368 p. 117 illus.(Texts in Computer Science) Hardcover

Medium Type Book

**Imprint** Springer

**Order Quantity** 



ISBN: 978-1-4471-6683-2

Burger, Wilhelm, Burge, Mark J., Upper Austria Univ. of Applied Sciences, Hagenberg, Austria

# **Digital Image Processing**

# An Algorithmic Introduction Using Java

Updated and expanded new edition
Presents an accessible introduction to the methods of digital image processing
Describes the most important procedures, with formal and mathematical aspects discussed at a fundamental level

This revised and expanded new edition of an internationally successful classic presents an accessible introduction to the key methods in digital image processing for both practitioners and teachers. Emphasis is placed on practical application, presenting precise algorithmic descriptions in an unusually high level of detail, while highlighting direct connections between the mathematical foundations and concrete implementation. The text is supported by practical examples and carefully constructed chapter-ending exercises drawn from the authors' years of teaching experience, including easily adaptable Java code and completely worked out ...

#### Contents

Digital Images.- ImageJ.- Histograms and Image Statistics.- Point Operations.- Filters.-Edges and Contours.- Corner Detection.-Finding Simple Curves: The Hough Transform.- Morphological Filters.- Regions in Binary Images.- Automatic Thresholding.-Color Images.- Color Quantization.-Colorimetric Color Spaces.- Filters for Color Images.- Edge Detection in Color Images.-Edge-Preserving Smoothing Filters.-Introduction to Spectral Techniques.- The Discrete Fourier Transform in 2D.- The Discrete Cosine Transform (DCT).- Geometric **Operations.-** Pixel Interpolation.- Image Matching and Registration.- Non-Rigid Image Matching.- Scale-Invariant ...

#### **Fields of Interest**

Image Processing and Computer Vision; Signal, Image and Speech Processing;

#### **Computational Intelligence**

Content Level Lower undergraduate

**Product category** Undergraduate textbook

Available

# Bibliography

2nd ed. 2016,XXIII, 811 p. 413 illus., 141 illus. in color.(Texts in Computer Science) Hardcover

Medium Type Book

Imprint Springer

**Order Quantity** 



ISBN: 978-3-319-05289-2

Li, Z.-N., Drew, M.S., Liu, J., Simon Fraser University, Burnaby, BC, Canada

# Fundamentals of Multimedia

Provides an introduction to the fundamentals of multimedia for students with no background in the area
Enhanced second edition with a greater emphasis on networks, including social networks, wireless and mobile networks and coverage of multimedia databases and retrieval

 Updated with the latest multimedia standards, such as the new video compression and conferencing standards H. 264 and H.265

This textbook introduces the "Fundamentals of Multimedia", addressing real issues commonly faced in the workplace. The essential concepts are explained in a practical way to enable students to apply their existing skills to address problems in multimedia. Fully revised and updated, this new edition now includes coverage of such topics as 3D TV, social networks, high-efficiency video compression and conferencing, wireless and mobile networks, and their attendant technologies. Features: presents an overview of the key concepts in multimedia, including color science; reviews lossless and lossy compression methods for image, video and audio ...

#### Contents

Part I: Introduction and Multimedia Data Representations.- Introduction to Multimedia.- A Taste of Multimedia.- Graphics and Image Data Representations.- Color in Image and Video.- Fundamental Concepts in Video.- Basics of Digital Audio.- Part II: Multimedia Data Compression.- Lossless Compression Algorithms.- Lossy Compression Algorithms.- Image Compression Standards.-Basic Video Compression Techniques.- MPEG Video Coding: MPEG-1, 2, 4 and 7.- New Video Coding Standards: H.264 and H.265.- Basic Audio Compression Techniques.- MPEG Audio Compression.- Part III: Multimedia Communications and Networking.- Network Services and Protocols for ...

#### **Fields of Interest**

Image Processing and Computer Vision; Computer Communication Networks; Information Storage and Retrieval; Database Management

#### Content Level

Upper undergraduate

#### **Product category**

Graduate/advanced undergraduate textbook

Available

#### Bibliography

2nd ed. 2014,XXIV, 727 p. 350 illus., 97 illus. in color.(Texts in Computer Science) Hardcover

Medium Type Book

Imprint Springer

Order Quantity



ISBN: 978-1-84882-934-3

Szeliski, Richard, Microsoft Research, Redmond, WA, USA

# **Computer Vision**

#### **Algorithms and Applications**

• First fully comprehensive computer vision textbook

- Structured to support active curricula and project-oriented courses
- Presents exercises and additional reading at the end of each chapter

Computer Vision: Algorithms and Applications explores the variety of techniques commonly used to analyze and interpret images. It also describes challenging real-world applications where vision is being successfully used, both for specialized applications such as medical imaging, and for fun, consumer-level tasks such as image editing and stitching, which students can apply to their own personal photos and videos. More than just a source of "recipes," this exceptionally authoritative and comprehensive textbook/reference also takes a scientific approach to basic vision problems, formulating physical models of the imaging process before ...

#### Contents

Introduction.- Image Formation.- Image Processing.- Feature Detection and Matching.- Segmentation.- Feature-based Alignment.- Structure from Motion.- Dense Motion Estimation.- Image Stitching.-Computational Photography.- Stereo Correspondence.- 3D Reconstruction.- Imagebased Rendering.- Recognition.

#### **Fields of Interest**

Image Processing and Computer Vision

**Content Level** Graduate

**Product category** Undergraduate textbook

Available

**Bibliography** 2011,XX, 812 p. 574 illus., 560 illus. in color. (Texts in Computer Science) Hardcover

Medium Type Book

Imprint Springer

#### **Computer Science**



ISBN: 978-1-4471-7306-9

Bramer, Max, University of Portsmouth School of Computing, Portsmouth, UK

# **Principles of Data Mining**

• Presents the principal techniques of data mining with particular emphasis on explaining and motivating the techniques used

 Focuses on understanding of the basic algorithms and awareness of their strengths and weaknesses

• Does not require a strong mathematical or statistical background

This book explains and explores the principal techniques of Data Mining, the automatic extraction of implicit and potentially useful information from data, which is increasingly used in commercial, scientific and other application areas. It focuses on classification, association rule mining and clustering. Each topic is clearly explained, with a focus on algorithms not mathematical formalism, and is illustrated by detailed worked examples. The book is written for readers without a strong background in mathematics or statistics and any formulae used are explained in detail. It can be used as a textbook to support courses at undergraduate or ...

#### Contents

Introduction to Data Mining.- Data for Data Mining.- Introduction to Classification: Naïve Bayes and Nearest Neighbour.- Using Decision Trees for Classification.- Decision Tree Induction: Using Entropy for Attribute Selection.- Decision Tree Induction: Using Frequency Tables for Attribute Selection.-Estimating the Predictive Accuracy of a Classifier.- Continuous Attributes.- Avoiding Overfitting of Decision Trees.- More About Entropy.- Inducing Modular Rules for Classifier.- Dealing with Large Volumes of Data.- Ensemble Classification.- Comparing Classifiers.- Associate Rule Mining I.- ...

#### **Fields of Interest**

Information Storage and Retrieval; Database Management; Artificial Intelligence; Programming Techniques **Content Level** Lower undergraduate

**Product category** Undergraduate textbook

Available

# Bibliography

3rd ed. 2016,XV, 526 p. 123 illus. (Undergraduate Topics in Computer Science) Softcover

Medium Type Book

Imprint Springer

#### **Order Quantity**



ISBN: 978-3-319-55605-5

Kizza, Joseph Migga, University of Tennessee, Chattanooga, TN, USA

# Guide to Computer Network Security

Fully revised and updated new edition, covering the latest developments in virtualization, cloud computing, mobile systems, and the Internet of Things
Includes both quick and more advanced exercises at the end of each chapter, as well as an entire chapter devoted to laboratory exercises

• Provides supporting material for instructors and students at an associated website, including slides, lab projects, and answers to selected exercises

This fully revised and updated new edition of the definitive text/reference on computer network and information security presents a comprehensive guide to the repertoire of security tools, algorithms and best practices mandated by the technology we depend on. Topics and features: highlights the magnitude of the vulnerabilities, weaknesses and loopholes inherent in computer networks; discusses how to develop effective security solutions, protocols, and best practices for the modern computing environment; examines the role of legislation, regulation, and enforcement in securing computing and mobile systems; describes the burning security ...

#### Contents

Part I: Introduction to Computer Network Security.- Computer Network Fundamentals.-Computer Network Security Fundamentals.-Part II: Security Issues and Challenges in the Traditional Computer Network.- Security Motives and Threats to Computer Networks.-Introduction to Computer Network Vulnerabilities.- Cyber Crimes and Hackers.-Scripting and Security in Computer Networks and Web Browsers.- Security Assessment, Analysis, and Assurance.- Part III: Dealing with Computer Network Security Challenges.-**Disaster Management.- Access Control and** Authorization.- Authentication.-Cryptography.- Firewalls.- System Intrusion Detection and Prevention.- ...

#### **Fields of Interest**

Information Storage and Retrieval; Data Storage Representation; Management of Computing and Information Systems; Computer Communication Networks

#### **Content Level**

Lower undergraduate

#### Product category

Undergraduate textbook

Available

#### **Bibliography**

4th ed. 2017,XXIV, 569 p. 111 illus.(Computer Communications and Networks) Hardcover

#### **Medium Type**

Book

# Imprint

Springer



#### ISBN: 978-3-319-89490-4

Ogihara, Mitsunori, University of Miami, Miami, FL, USA

# Fundamentals of Java Programming

Key object classes (String, Scanner, PrintStream, Arrays, and File) are included to get started in Java programming
Concise coverage of the fundamental conceps of Java programming uses line-byline descriptions of code examples, without using graphics

 Source codes of the code examples available electronically

Making extensive use of examples, this textbook on Java programming teaches the fundamental skills for getting started in a command-line environment. Meant to be used for a one-semester course to build solid foundations in Java, Fundamentals of Java Programming eschews second-semester content to concentrate on over 180 code examples and 250 exercises. Key object classes (String, Scanner, PrintStream, Arrays, and File) are included to get started in Java programming. The programs are explained with almost line-by-line descriptions, also with chapter-by-chapter coding exercises. Teaching resources include solutions to the exercises, as well as ...

#### Contents

1 Java and the Java Virtual Machine.- 2 Our First Programs.- 3 Using Data for Computation.- 4 Reading Keyboard Input.- 5 Decomposing Code into Components.- 6 Passing Values to and from Methods.- 7 For-Loops.- 8 Using Conditions to Control the Flow.- 9 Formatted Printing using printf.- 10 String Methods for Text Processing.- 11 Branching Using Switch Segments.- 12 While and Do-while Loops.- 13 Arrays.- 14 Class Arrays, Resizing Arrays, and Arrays with Capacity.- 15 Multidimensional Arrays.- 16 Class File.- 17 Designing Object Classes.- 18 Interfaces, Subclasses, Inheritance, and Polymorphism.- 19 Cumulative Algorithms.-20 Recursive ...

#### **Fields of Interest**

Java; Programming Languages, Compilers, Interpreters; Programming Techniques

Content Level

Lower undergraduate

#### Product category

Undergraduate textbook

Available

#### Bibliography

1st ed. 2018,XVII, 515 p. 635 illus., 611 illus. in color. Hardcover

Book

Imprint

Springer

Order Quantity



ISBN: 978-1-84800-321-7

Moller, Faron, Struth, Georg, Swansea University Department of Computer Science, Sketty, Swansea, UK

# Modelling Computing Systems

# **Mathematics for Computer Science**

• Provides an elementary introduction to the mathematics and modelling of computing systems

• Explores concepts of games and strategies to provide a paradigm for understanding the nature of computation

• Develops a foundation for computational thinking and problem solving

This engaging text presents the fundamental mathematics and modelling techniques for computing systems in a novel and lighthearted way, which can be easily followed by students at the very beginning of their university education. Key concepts are taught through a large collection of challenging yet fun mathematical games and logical puzzles that require no prior knowledge about computers. The text begins with intuition and examples as a basis from which precise concepts are then developed; demonstrating how, by working within the confines of a precise structured method, the occurrence of errors in the system can be drastically reduced. ...

#### Contents

Introduction.- Part I: Mathematics for Computer Science.- Propositional Logic.-Sets.- Boolean Algebras and Circuits.-Predicate Logic.- Proof Strategies.- Functions.-Relations.- Inductive and Recursive Definitions.- Proofs by Induction.- Games and Strategies.- Part II: Modelling Computing Systems.- Modelling Processes.- Distinguishing Between Processes.- Logical Properties of Processes.- Concurrent Processes.- Temporal Properties.

#### **Fields of Interest**

Logics and Meanings of Programs; Mathematical Logic and Formal Languages; Discrete Mathematics in Computer Science; Math Applications in Computer Science

#### **Content Level**

Lower undergraduate

#### Product category

Undergraduate textbook

Available

#### **Bibliography**

2013,XVI, 500 p. 46 illus.(Undergraduate Topics in Computer Science) Softcover

Medium Type Book

#### Imprint

Springer

**Order Quantity** 



ISBN: 978-3-319-73003-5

Skansi, Sandro, University of Zagreb, Zagreb, Croatia

#### Introduction to Deep Learning

#### From Logical Calculus to Artificial Intelligence

• Offers a welcome clarity of expression, maintaining mathematical rigor yet presenting the ideas in an intuitive and colourful manner

Includes references to open problems studied in other disciplines, enabling the reader to pursue these topics on their own, armed with the tools learned from the book
Presents an accessible style and interdisciplinary approach, with a vivid and lively exposition supported by numerous examples, connected ideas, and historical

#### remarks

This textbook presents a concise, accessible and engaging first introduction to deep learning, offering a wide range of connectionist models which represent the current state-of-the-art. The text explores the most popular algorithms and architectures in a simple and intuitive style, explaining the mathematical derivations in a step-by-step manner. The content coverage includes convolutional networks, LSTMs, Word2vec, RBMs, DBNs, neural Turing machines, memory networks and autoencoders. Numerous examples in working Python code are provided throughout the book, and the code is also supplied separately at an accompanying website. Topics and ...

#### Contents

From Logic to Cognitive Science.-Mathematical and Computational Prerequisites.- Machine Learning Basics.-Feed-forward Neural Networks.-Modifications and Extensions to a Feedforward Neural Network.- Convolutional Neural Networks.- Recurrent Neural Networks.- Autoencoders.- Neural Language Models.- An Overview of Different Neural Network Architectures.- Conclusion.

#### **Fields of Interest**

Machine Learning; Pattern Recognition; Mathematical Models of Cognitive Processes and Neural Networks; Coding and Information Theory

#### **Content Level**

Upper undergraduate

#### Product category

Undergraduate textbook

Available

#### Bibliography

1st ed. 2018,XIII, 191 p. 38 illus. (Undergraduate Topics in Computer Science) Softcover

Medium Type Book

Imprint Springer

**Order Quantity** 



ISBN: 978-3-319-91154-0

Oberguggenberger, Michael, Ostermann, Alexander, University of Innsbruck, Innsbruck, Austria

# Analysis for Computer Scientists

# Foundations, Methods, and Algorithms

Presents an algorithmic approach to mathematical analysis, with a focus on modelling and on the applications of analysis
Makes thorough use of examples and explanations using MATLAB, Maple, and Java applets

• Describes mathematical theory alongside the basic concepts and methods of numerical analysis, supported by computer experiments and programming exercises

This easy-to-follow textbook/reference presents a concise introduction to mathematical analysis from an algorithmic point of view, with a particular focus on applications of analysis and aspects of mathematical modelling. The text describes the mathematical theory alongside the basic concepts and methods of numerical analysis, enriched by computer experiments using MATLAB, Python, Maple, and Java applets. This fully updated and expanded new edition also features an even greater number of programming exercises. Topics and features: describes the fundamental concepts in analysis, covering real and complex numbers, trigonometry, sequences and ...

#### Contents

Numbers.- Real-Valued Functions.-Trigonometry.- Complex Numbers.-Sequences and Series.- Limits and Continuity of Functions.- The Derivative of a Function.-Applications of the Derivative.- Fractals and L-Systems.- Antiderivatives.- Definite Integrals.-Taylor Series.- Numerical Integration.-Curves.- Scalar-Valued Functions of Two Variables.- Vector-Valued Functions of Two Variables.- Integration of Functions of Two Variables.- Linear Regression.- Differential Equations.- Systems of Differential Equations.- Numerical Solution of Differential Equations.- Appendix A: Vector Algebra.- Appendix B: Matrices.- Appendix C: Further Results on ...

#### **Fields of Interest**

Math Applications in Computer Science; Computational Mathematics and Numerical Analysis; Mathematical and Computational Engineering; Discrete Mathematics in Computer Science

#### **Content Level**

Upper undergraduate

#### Product category

Undergraduate textbook

Available

#### Bibliography

2nd ed. 2018,XII, 378 p. 231 illus. (Undergraduate Topics in Computer Science) Softcover

#### Medium Type Book

**Imprint** Springer

**Order Quantity** 





ISBN: 978-3-319-63587-3

Platzer, André, Carnegie Mellon University, Pittsburgh, PA, USA

# Logical Foundations of Cyber-Physical Systems

• Supported with detailed lecture notes, lecture videos, homework assignments, and lab assignments

• Cornerstone of author's course is hybrid programs (HPs), capturing dynamical aspects of cyber-physical systems (CPSs) in a simple programming language

• Teaches skills required to formally analyze ubiquitous CPSs, such as power plants and pacemakers

Cyber-physical systems (CPSs) combine cyber

capabilities, such as computation or communication, with physical capabilities, such as motion or other physical processes. Cars, aircraft, and robots are prime examples, because they move physically in space in a way that is determined by discrete computerized control algorithms. Designing these algorithms is challenging due to their tight coupling with physical behavior, while it is vital that these algorithms be correct because we rely on them for safety-critical tasks. This textbook teaches undergraduate students the core principles behind CPSs. It shows them how to develop models and controls; ...

#### Contents

Cyberphysical Systems: Introduction.-Differential Equations and Domains.- Choice and Control.- Safety and Contracts.-Dynamical Systems and Dynamic Axioms.-Truth and Proof.- Control Loops and Invariants.- Events and Responses.- Reactions and Delays.- Differential Equations and Differential Invariants.- Differential Equations and Proofs.- Ghosts and Differential Ghosts.-Logical Foundations and CPS.- Differential Invariants and Proof Theory.- Verified Models and Verified Runtime Validation.- Hybrid Systems and Games.- Winning Strategies and **Regions.- Winning and Proving Hybrid** Games.- Game Proofs and Separations.-Virtual Substitution and ...

#### **Fields of Interest**

Mathematical Logic and Formal Languages; Artificial Intelligence; Mathematical Logic and Foundations; Control, Robotics, Mechatronics; Quality Control, Reliability, Safety and Risk

#### **Content Level**

Upper undergraduate

#### **Product category**

Graduate/advanced undergraduate textbook

#### Available

#### **Bibliography**

1st ed. 2018,XXXI, 639 p. 182 illus., 176 illus. in color. Hardcover

#### Medium Type Book

Doon

Imprint Springer

**Order Quantity** 



ISBN: 978-3-319-64409-7

Forsyth, David, University of Illinois at Urbana Champain, Urbana, IL, USA

# Probability and Statistics for Computer Science

A clear but crisp account of probability, structured specifically to the needs of the undergraduate computer science student
Many exercises and examples using a wide range of real published datasets throughout, focusing on content that is likely to be used in practice

• Easy-to-understand but careful treatment of topics, with much emphasis on exploratory data analysis and descriptive statistics

This textbook is aimed at computer science undergraduates late in sophomore or early in junior year, supplying a

comprehensive background in qualitative and quantitative data analysis, probability, random variables, and statistical methods, including machine learning. With careful treatment of topics that fill the curricular needs for the course, Probability and Statistics for Computer Science features: • A treatment of random variables and expectations dealing primarily with the discrete case. • A practical treatment of simulation, showing how many interesting probabilities and expectations can be extracted, with particular emphasis ...

#### Contents

1 Notation and conventions.- 2 First Tools for Looking at Data.- 3 Looking at Relationships.-4 Basic ideas in probability.- 5 Random Variables and Expectations.- 6 Useful Probability Distributions.- 7 Samples and Populations.- 8 The Significance of Evidence.-9 Experiments.- 10 Inferring Probability Models from Data.- 11 Extracting Important Relationships in High Dimensions.- 12 Learning to Classify.- 13 Clustering: Models of High Dimensional Data.- 14 Regression.- 15 Markov Chains and Hidden Markov Models.-16 Resources.

# **Fields of Interest**

Probability and Statistics in Computer Science; Simulation and Modeling; Statistics and Computing/Statistics Programs **Content Level** Upper undergraduate

**Product category** Undergraduate textbook

Available

#### **Bibliography** 1st ed. 2018,XXIV, 367 p. 124 illus., 84 illus. in color. Hardcover

Medium Type Book

Imprint Springer

**Order Quantity** 



ISBN: 978-3-319-70789-1

Lee, Kent D., Luther College, Decorah, IA, USA

# Foundations of Programming Languages

• Focuses on the three paradigms of programming: imperative, functional, and logic programming

• Demonstrates not only how programming language concepts are used in language, but also how these concepts are implemented • Covers assembly language programming, C++, Standard ML, and Prolog

This clearly written textbook provides an accessible introduction to the three programming paradigms of object-oriented/ imperative, functional, and logic programming. Highly interactive in style, the text encourages learning through practice, offering test exercises for each topic covered. Review questions and programming projects are also presented, to help reinforce the concepts outside of the classroom. This updated and revised new edition features new material on the Java implementation of the JCoCo virtual machine.Topics and features: includes review questions and solved practice exercises, with supplementary code and support files ...

#### Contents

Introduction.- Syntax.- Assembly Language.-Object-Oriented Programming.- Functional Programming.- Compiling Standard ML.-Logic Programming.- Standard ML Type Inference.- Appendix A: The JCoCo Virtual Machine Specification.- Appendix B: The Standard ML Basis Library.

#### **Fields of Interest**

Programming Languages, Compilers, Interpreters; Control Structures and Microprogramming; Mathematical and Computational Engineering

**Content Level** Lower undergraduate

#### Product category

Undergraduate textbook

Available

#### Bibliography

2nd ed. 2017,XIV, 370 p. 189 illus., 39 illus. in color.(Undergraduate Topics in Computer Science) Softcover

#### Medium Type Book

**Imprint** Springer

#### **Order Quantity**



ISBN: 978-1-4471-6641-2

Lee, Kent D., Luther College, Decorah, IA, USA

# Python Programming Fundamentals

Employs an active, classroom-tested, handson learning approach
Contains numerous examples and solved

practice exercises

• Provides helpful additional resources for both students and instructors at an

#### associated website

This easy-to-follow and classroom-tested textbook guides the reader through the fundamentals of programming with Python, an accessible language which can be learned incrementally. Features: incudes numerous examples and practice exercises throughout the text, with additional exercises, solutions and review questions at the end of each chapter; highlights the patterns which frequently appear when writing programs, reinforcing the application of these patterns for problem-solving through practice exercises; introduces the use of a debugger tool to inspect a program, enabling students to discover for themselves how programs work and enhance ...

#### Contents

Introduction.- Decision Making.- Repetitive Tasks.- Using Objects.- Defining Functions.-Event-Driven Programming.- Defining Classes.- Appendix A: Integer Operators.-Appendix B: Float Operators.- Appendix C: String Operators and Methods.- Appendix D: List Operators and Methods.- Appendix E: Dictionary Operators and Methods.-Appendix F: Turtle Methods.- Appendix G: TurtleScreen Methods.- Appendix H: The Reminder! Program.- Appendix I: The Bouncing Ball Program.

#### **Fields of Interest**

Programming Languages, Compilers, Interpreters; Python

**Content Level** Lower undergraduate

# Product category

Undergraduate textbook

Available

#### Bibliography

2nd ed. 2014,XII, 239 p. 64 illus., 53 illus. in color.(Undergraduate Topics in Computer Science) Softcover

Medium Type Book

Imprint Springer

**Order Quantity** 



ISBN: 978-3-319-38561-7

Stephenson, Ben, University of Calgary, , AB, Canada

# **The Python Workbook**

# A Brief Introduction with Exercises and Solutions

• Presents numerous exercises, many of which with complete solutions

Supports the solutions with additional notes that explain the technique used and highlight specific points of Python syntax
Includes a mixture of classic computer science exercises and exercises that make connections to other disciplines

While other textbooks devote their pages to explaining introductory programming concepts, The Python Workbook focuses exclusively on exercises, following the philosophy that computer programming is a skill best learned through experience and practice. Designed to support and encourage hands-on learning about programming, this student-friendly work contains 174 exercises, spanning a variety of academic disciplines and everyday situations. Solutions to selected exercises are also provided, supported by brief annotations that explain the technique used to solve the problem, or highlight specific points of Python syntax. No background knowledge ...

#### Contents

Part I: Exercises.- Introduction to Programming Exercises.- If Statement Exercises.- Loop Exercises.- Function Exercises.- List Exercises.- Dictionary Exercises.- File and Exception Exercises.-Recursion Exercises.- Part II: Solutions.-Introduction to Programming Solutions.- If Statement Exercise Solutions.- Loop Exercise Solutions.- Function Solutions.- List Solutions.- Dictionary Solutions.- File and Exception Solutions.- Recursion Solutions.

#### **Fields of Interest**

Programming Languages, Compilers, Interpreters; Python; Computational Intelligence

**Content Level** 

#### Lower undergraduate

Product category Undergraduate textbook

Available

#### Bibliography

Softcover reprint of the original 1st ed. 2014,XVI, 165 p. 87 illus., 86 illus. in color. Softcover

#### Medium Type

Book (Paperback Initiative)

#### Imprint Springer

**Order Quantity** 



ISBN: 978-3-319-24278-1

Dathan, Brahma, Ramnath, Sarnath, Metropolitan State University, St. Paul, Minnesota, USA

# Object-Oriented Analysis, Design and Implementation

#### **An Integrated Approach**

Contains a complete reference for UML

Covers implementation issues

 Provides a sound footing on object-oriented concepts such as classes, objects, interfaces, inheritance, polymorphism, dynamic linking etc.

The second edition of this textbook includes revisions based on the feedback on the first edition. In a new chapter the authors provide a concise introduction to the remainder of UML diagrams, adopting the same holistic approach as the first edition. Using a casestudy-based approach for providing a comprehensive introduction to the principles of object-oriented design, it includes: A sound footing on object-oriented concepts such as classes, objects, interfaces, inheritance, polymorphism, dynamic linking, etc. A good introduction to the stage of requirements analysis Use of UML to document user requirements and design An

#### extensive ...

#### Contents

Preface to the Second Edition.- Preface to the First Edition.- Part I: Basic Object-Oriented Concepts.- Introduction.- Basics of Object-**Oriented Programming.- Relationships** Between Classes.- Language Features for **Object-Oriented Implementation.- Part II:** Introduction to Object-Oriented Analysis, Design, Implementation and Refactoring.-Elementary Design Patterns.- Analysing a System.- Design and Implementation.- How 'Object-Oriented' is Our Design?.- Part III: Advanced Concepts in Object-Oriented Design.- Exploring Inheritance.- Modelling with Finite State Machines.- Interactive Systems and the MVC Architecture.-Designing with Distributed ...

#### **Fields of Interest**

**Programming Techniques** 

#### **Content Level**

Graduate

#### **Product category**

Graduate/advanced undergraduate textbook

Available

#### Bibliography

2nd ed. 2015,XIX, 471 p. 166 illus. in color. (Undergraduate Topics in Computer Science) Softcover

# Medium Type

Book

#### Imprint Springer

**Order Quantity** 



ISBN: 978-3-319-73131-5

Pitt-Francis, Joe, Whiteley, Jonathan, University of Oxford, Oxford, UK

Guide to Scientific Computing in C++ • With an emphasis on the modularity of C++ programming

• Includes an introduction to parallel programming using MPI

• Covers the object-oriented design of a numerical library for solving differential equations

This simple-to-follow textbook/reference provides an invaluable guide to objectoriented C++ programming for scientific computing. Through a series of clear and concise discussions, the key features most useful to the novice programmer are explored, enabling the reader to quickly master the basics and build the confidence to investigate less well-used features when needed. The text presents a hands-on approach that emphasizes the benefits of learning by example, stressing the importance of a clear programming style to minimise the introduction of errors into the code, and offering an extensive selection of practice exercises. This updated ...

#### Contents

Getting Started.- Flow of Control.- File Input and Output.- Pointers.- Blocks, Functions and Reference Variables.- An Introduction to Classes.- Inheritance and Derived Classes.-Templates.- Errors, Exceptions and Testing.-Developing Classes for Linear Algebra Calculations.- An Introduction to Parallel Programming Using MPI.- Designing Object-Oriented Numerical Libraries.- Linear Algebra.- Other Programming Constructs You Might Meet.- Solutions to Exercises.

#### **Fields of Interest**

Programming Techniques; Numeric Computing; Simulation and Modeling; Programming Languages, Compilers, Interpreters; Math Applications in Computer Science; Software Engineering

#### **Content Level**

Upper undergraduate

# Product category

Undergraduate textbook

Available

#### **Bibliography**

2nd ed. 2017,XIV, 287 p. 11 illus. (Undergraduate Topics in Computer Science) Softcover

Medium Type Book

Imprint Springer

#### **Computer Science**



ISBN: 978-3-319-98832-0

Trobec, R., Slivnik, B., Bulić, P., Robič, B., Jožef Stefan Institute, Ljubljana, Slovenia

# Introduction to Parallel Computing

# From Algorithms to Programming on State-of-the-Art Platforms

• Introduces the foundations and state of the art of parallel computing

Suitable for a 15-week course for advanced undergraduate studies, and featuring exercises

• Covers the key aspects of parallel computing: parallel, distributed and embedded multicore computing, computer clusters, and GPU computing

Advancements in microprocessor architecture, interconnection technology, and software development have fueled rapid growth in parallel and distributed computing. However, this development is only of practical benefit if it is accompanied by progress in the design, analysis and programming of parallel algorithms. This concise textbook provides, in one place, three mainstream parallelization approaches, Open MPP, MPI and OpenCL, for multicore computers, interconnected computers and graphical processing units. An overview of practical parallel computing and principles will enable the reader to design efficient parallel programs for solving ...

#### Contents

Part I: Foundations.- Why Do We Need Parallel Programming.- Overview of Parallel Systems.-Part II: Programming.- Programming Multi-Core and Shared Memory Multiprocessors Using OpenMP.- MPI Processes and Messaging.- OpenCL for Massively Parallel Graphic Processors.- Part III: Engineering.-Engineering: Parallel Computation of the Number  $\pi$ .- Engineering: Parallel Solution of 1-D Heat Equation.- Engineering: Parallel Implementation of Seam Carving.- Final Remarks and Perspectives.- Appendix A: Hints for Making Your Computer a Parallel Machine.

#### **Fields of Interest**

Programming Techniques; Processor

Architectures; Control Structures and Microprogramming; Numeric Computing

#### **Content Level**

Upper undergraduate

#### Product category

Undergraduate textbook

Available

#### Bibliography

1st ed. 2018,XII, 256 p. 86 illus., 7 illus. in color. (Undergraduate Topics in Computer Science) Softcover

Medium Type Book

**Imprint** Springer

# Order Quantity



ISBN: 978-3-319-92428-1

Wang, K.C., Washington State University, Pullman, WA, USA

# Systems Programming in Unix/ Linux

• Providies students with the needed background and skills to do advanced programming through detailed development steps

• Introduces parallel computing and concurrent programming, and explains the concept of threads and their advantages over processes; covers Pthreads programming in detail

• Explains process concept and process management using a simple C program together with a piece of assembly code to show real processes in action

Covering all the essential components of Unix/Linux, including process management, concurrent programming, timer and time service, file systems and network programming, this textbook emphasizes programming practice in the Unix/Linux environment. Systems Programming in Unix/ Linux is intended as a textbook for systems programming courses in technically-oriented Computer Science/Engineering curricula that emphasize both theory and programming practice. The book contains many detailed working example programs with complete source code. It is also suitable for self-study by advanced programmers and computer enthusiasts.Systems programming is an ...

#### Contents

Chapter 1. Introduction to Unix/Linux.-Chapter 2. Programming Background.-Chapter 3 Process Management in Unix/ Linux.- Chapter 4 Concurrent Programming.-Chapter 5 Timers and Time Service.- Chapter 6 Signals and Signal Processing.- Chapter 7 File Operations.- Chapter 8 System Calls for File Operations.- Chapter 9 Library I/O Functions Chapter 10 Sh Programming.-Chapter 11 EXT2 File System.- Chapter 12. Block Device I/O and Buffer Management.-Chapter 13 TCP/IP and Network Programming.

#### **Fields of Interest**

Programming Techniques; Programming Languages, Compilers, Interpreters; Data Structures; Operating Systems

#### **Content Level**

Upper undergraduate

#### Product category

Undergraduate textbook

Available

#### Bibliography

1st ed. 2018,XXI, 452 p. 111 illus., 61 illus. in color. Hardcover

Medium Type Book

#### Imprint Springer



ISBN: 978-3-030-00580-1

Lin, Xiaodong, Wilfrid Laurier University, Waterloo, ON, Canada

# Introductory Computer Forensics

#### A Hands-on Practical Approach

 Ties theory with hands-on lab exercises, helping students gain a better understanding of digital forensics, gaining hands-on experience in collecting and preserving digital evidence

Covers more than 20 topics in digital forensics, all of which stand on their own and not dependent on previous parts. This independence gives instructors flexibility in determining what parts from the text they want to cover and in what order
Each forensic topic is composed of two parts: background knowledge and practical exercises. Each theoretical or background section concludes with a series of quiz questions to test students' understanding of the material, while the practical exercises are intended to afford student

This textbook provides an introduction to digital forensics, a rapidly evolving field for solving crimes. Beginning with the basic concepts of computer forensics, each of the book's 21 chapters focuses on a particular forensic topic composed of two parts: background knowledge and hands-on experience through practice exercises. Each theoretical or background section concludes with a series of review questions, which are prepared to test students' understanding of the materials, while the practice exercises are intended to afford students the opportunity to apply the concepts introduced in the section on background knowledge. This ...

#### Contents

1 Introduction to Computer Forensics.- 2 Introduction to Computer Organization.- 3 Building a Forensics Workstation.- 4 Volume Analysis.- 5 Examining FAT File System.- 6 Deleted File Recovery in FAT.- 7 Examining NTFS File System.- 8 Deleted File Recovery in NTFS.- 9 File Carving.- 10 File Signature Searching Forensics.- 11 Keyword Forensics.-12 Timeline Analysis.- 13 Data Hiding and Detection.- 14 Log Analysis.- 15 Android Forensics.- 16 GPS Forensics.- 17 SIM Cards Forensics.- 18 Introductory Malware Analysis.-19 Ransomware Analysis.- 20 Image Forgery Detection.- 21 Steganography and Steganalysis.

#### **Fields of Interest**

Security; Forensic Science; Cybercrime; Systems and Data Security; Multimedia Information Systems

Content Level Graduate

#### Product category

Graduate/advanced undergraduate textbook

Available

# Bibliography

1st ed. 2018,XXIII, 577 p. 459 illus., 347 illus. in color. Hardcover

Medium Type Book

Imprint Springer

#### Order Quantity



ISBN: 978-3-319-57749-4

O'Regan, Gerard, SQC Consulting, Cork, Ireland

# Concise Guide to Software Engineering

# From Fundamentals to Application Methods

• Describes the fundamental principles of software engineering

• Provides guidance on how to apply the theory in an industrial environment

• Offers such pedagogical features as key topics, chapter summaries, review questions, and a glossary

This essential textbook presents a concise introduction to the fundamental principles of software engineering, together with practical guidance on how to apply the theory in a real-world, industrial environment. The wideranging coverage encompasses all areas of software design, management, and quality. Topics and features: presents a broad overview of software engineering, including software lifecycles and phases in software development, and project management for software engineering; examines the areas of requirements engineering, software configuration management, software inspections, software testing, software quality assurance, and ...

#### Contents

Background.- Software Project Management.-Requirements Engineering.- Software Design and Development.- Configuration Management.- Software Inspections.-Software Testing.- Supplier Selection and Management.- Software Quality Assurance.-Software Metrics and Problem Solving.-Software Reliability and Dependability.-Formal Methods.- Z Formal Specification Language.- Unified Modeling Language.-Software Process Improvement.- Capability Maturity Model Integration.- Software Engineering Tools.- Agile Methodology.- A Miscellany of Innovation.- Epilogue.

#### **Fields of Interest**

Software Engineering; Computer Engineering; Software Management; Mathematical Software

#### **Content Level**

Upper undergraduate

#### **Product category**

Undergraduate textbook

#### Available

#### Bibliography

1st ed. 2017,XXIV, 331 p. 99 illus., 12 illus. in color.(Undergraduate Topics in Computer Science) Softcover

#### Medium Type Book

**Imprint** Springer

**Order Quantity** 



#### ISBN: 978-3-319-12741-5

Seidl, M., Scholz, M., Huemer, C., Kappel, G., Johannes Kepler University Linz, Linz, Austria

# UML @ Classroom

An Introduction to Object-Oriented Modeling Describes not only syntax and semantics of UML elements, but also how to use them wisely in the software development process
Contains lots of carefully selected examples to illustrate the usage of the various UML diagram types

 Complemented by a Web site with teaching slides, video lectures, exercises, and further teaching material

This textbook mainly addresses beginners and readers with a basic knowledge of object-oriented programming languages like Java or C#, but with little or no modeling or software engineering experience - thus reflecting the majority of students in introductory courses at universities. Using UML, it introduces basic modeling concepts in a highly precise manner, while refraining from the interpretation of rare special cases. After a brief explanation of why modeling is an indispensable part of software development, the authors introduce the individual diagram types of UML (the class and object diagram, the sequence diagram, the state machine ...

#### Contents

1 Introduction.- 2 A Short Tour of UML.- 3 The Use Case Diagram.- 4 The Class Diagram.- 5 The State Machine Diagram.- 6 The Sequence Diagram.- 7 The Activity Diagram.- 8 All Together Now.- 9 Further Topics.

#### **Fields of Interest**

Software Engineering; Management of Computing and Information Systems

#### **Content Level**

Lower undergraduate

#### Product category

Undergraduate textbook

Available

#### Bibliography

2015,XII, 206 p.(Undergraduate Topics in Computer Science) Softcover

Medium Type Book

Imprint Springer

**Order Quantity** 



ISBN: 978-1-84800-069-8

Skiena, Steven S, Stony Brook University Department of Computer Science, Stony Brook, NY, USA

# **The Algorithm Design Manual**

Unique, handy reference package with a practical, hands-on appeal to a wide audience
This classic bestseller has been expanded and updated with twice the original tutorial material and exercises

• Contains a highly unique catalog of the 75 most important algorithmic problems

This newly expanded and updated second edition of the best-selling classic continues to take the "mystery" out of designing algorithms, and analyzing their efficacy and efficiency. Expanding on the first edition, the book now serves as the primary textbook of choice for algorithm design courses while maintaining its status as the premier practical reference guide to algorithms for programmers, researchers, and students. The reader-friendly Algorithm Design Manual provides straightforward access to combinatorial algorithms technology, stressing design over analysis. The first part, Techniques, provides accessible instruction on methods for ...

#### Contents

Practical Algorithm Design.- to Algorithm Design.- Algorithm Analysis.- Data Structures.- Sorting and Searching.- Graph Traversal.- Weighted Graph Algorithms.-Combinatorial Search and Heuristic Methods.- Dynamic Programming.-Intractable Problems and Approximation Algorithms.- How to Design Algorithms.- The Hitchhiker's Guide to Algorithms.- A Catalog of Algorithmic Problems.- Data Structures.-Numerical Problems.- Combinatorial Problems.- Graph Problems: Polynomial-Time.- Graph Problems: Hard Problems.-Computational Geometry.- Set and String Problems.- Algorithmic Resources.

#### **Fields of Interest**

Software Engineering/Programming and Operating Systems; Programming Techniques; Algorithm Analysis and Problem Complexity; Theory of Computation; Algorithms; Discrete Mathematics in Computer Science

**Content Level** Professional/practitioner

#### Product category

Graduate/advanced undergraduate textbook

Available

#### Bibliography

2nd ed. 2008,XVI, 730 p. 115 illus. With online files/update. Hardcover

#### Medium Type

Book w. online files / update

#### Imprint

Springer

#### **Order Quantity**



ISBN: 978-3-540-77973-5

de Berg, M., Cheong, O., van Kreveld, M., Overmars, M., Technische Universiteit Eindhoven Department of Computer Science, Eindhoven, The Netherlands

#### **Computational Geometry**

#### **Algorithms and Applications**

• A broad overview of the major algorithms and data structures of the field

Motivated from applications

• Covers concepts and techniquesto be presented in any course on computational geometry

Computational geometry emerged from the ?eld of algorithms design and analysis in the late 1970s. It has grown into a recognized discipline with its own journals, conferences, and a large community of active researchers. The success of the ?eld as a research discipline can on the one hand be explained from the beauty of the problems studied and the solutions obtained, and, on the other hand, by the many application domains—computer graphics, geographic information systems (GIS), robotics, and others—in which geometric algorithms play a fundamental role. For many geometric problems the early algorithmic solutions were either slow or dif?cult ...

#### Contents

Computational Geometry: Introduction.- Line Segment Intersection: Thematic Map Overlay.- Polygon Triangulation: Guarding an Art Gallery.- Linear Programming: Manufacturing with Molds.- Orthogonal Range Searching: Querying a Database.- Point Location: Knowing Where You Are.- Voronoi Diagrams: The Post Office Problem.-Arrangements and Duality: Supersampling in Ray Tracing.- Delaunay Triangulations: Height Interpolation.- More Geometric Data Structures: Windowing.- Convex Hulls: Mixing Things.- Binary Space Partitions: The Painter's Algorithm.- Robot Motion Planning: Getting Where You Want to Be.- Ouadtrees: Non-Uniform Mesh Generation.- ...

#### **Fields of Interest**

Theory of Computation; Geometry; Math Applications in Computer Science; Earth Sciences, general; Computer Graphics; Algorithm Analysis and Problem Complexity

Content Level Research

#### Product category

Graduate/advanced undergraduate textbook

Available

**Bibliography** 3rd ed. 2008,XII, 386 p. 370 illus. Hardcover

Medium Type Book

Imprint Springer

**Order Quantity** 



ISBN: 978-3-319-57881-1

Duchowski, Andrew T., Clemson University,

Clemson, SC, USA

# **Eye Tracking Methodology**

# **Theory and Practice**

• Provides detailed practical advice on how to set up, operate and develop eye tracking systems

A pioneering book in the field, this third edition has been extensively revised and extended to cover advanced methods
Covers gaze analytics and includes numerous practical examples Includes informative programming examples, that enable fast development of analytical techniques

This book focuses on video-based, cornealreflection eye trackers – the most widely available and affordable type of system, and takes a look at a number of interesting and challenging applications in human factors, collaborative systems, virtual reality, marketing and advertising. The third edition has been extensively revised and extended, and includes new chapters on calibration accuracy, precision and correction; advanced eye movement analysis; binocular eye movement analysis; practical gaze analytics; design; GIS. Opening with useful background information, including an introduction to the human visual system and key issues in visual

#### Contents

Part I Introduction to the Human Visual System (HVS).- 2 Neurological Substrate of the HVS.- 3 Visual Psychophysics.- 4 Taxonomy and Models of Eye Movements.-Part II Eye Tracking Systems.- 5 Eye Tracking Techniques.- 6 Head-Mounted System Hardware Installation.- 7 Head-Mounted System Software Development.- 8 Head-Mounted System Calibration.- 9 Table-Mounted System Hardware Installation.- 10 Table-Mounted System Software **Development.- 11 Table-Mounted System** Calibration.- 12 Using an Open Source Application Program Interface.- 13 Eye Movement Analysis.- 14 Advanced Eye Movement Analysis.- 15 The Gaze Analytics Pipeline.- 16 Eye Movement ...

#### **Fields of Interest**

User Interfaces and Human Computer Interaction; Computer Graphics; Special Purpose and Application-Based Systems; Computer Appl. in Social and Behavioral Sciences

# Content Level

Graduate

#### Product category

Graduate/advanced undergraduate textbook

Available

#### **Bibliography**

3rd ed. 2017,XL, 366 p. 133 illus., 62 illus. in color. Softcover

Medium Type Book

**Imprint** Springer

Order Quantity



#### ISBN: 978-1-4471-5133-3

Ritter, F.E., Baxter, G.D., Churchill, E.F., The Pennsylvania State University, University Park, PA, USA

# Foundations for Designing User-Centered Systems

# What System Designers Need to Know about People

All of the chapters are self-contained, each providing an introduction to specific aspects of users and noting why these aspects are relevant to the area of system design
Provides several frameworks for developing the critical knowledge and skills required for the design of user-centered systems
Contains hands-on exercises and examples to illustrate the application of concepts introduced within the text

Foundations for Designing User-Centered Systems introduces the fundamental human capabilities and characteristics that influence how people use interactive technologies. Organized into four main areas—anthropometrics, behaviour, cognition and social factors—it covers basic research and considers the practical implications of that research on system design. Applying what you learn from this book will help you to design interactive systems that are more usable, more useful and more effective. The authors have deliberately developed Foundations for Designing User-Centered Systems to appeal to system designers and developers, as well as to ...

Page 20

#### Contents

Endorsements.- Foreword by Barry Boehm.-Part I - Introduction: Aims, Motivations, and Introduction to Human-Centered Design.-Introducing the Foundations of User-Centered Systems Design.- User-Centered Systems Design: A Brief History.- Part II -Design Relevant User Characteristics: The ABCS.- Anthropometrics: Important Aspects of Users' Bodies.- Behavioral: Basic Psychology of the User.- Cognitive: Memory, Attention, and Learning.- Cognitive: Mental Representations, Problem Solving, and Decision Making.- Cognitive: Human-Computer Communication.- Social: Social Cognition and Teamwork.- Social: Networks.-Summary of Users with Respect to ...

#### **Fields of Interest**

User Interfaces and Human Computer Interaction; Software Engineering

#### Content Level

Upper undergraduate

# Product category

Undergraduate textbook

Available

**Bibliography** 2014,XXX, 442 p. 108 illus. Softcover

Medium Type Book

#### Imprint Springer

**Order Quantity** 



ISBN: 978-3-319-47830-2

Datta, Dilip, Tezpur University Mechanical Engineering Dept, Tezpur

# LaTeX in 24 Hours

#### A Practical Guide for Scientific Writing

• Provides insight into LaTeX for scientific writers with little or no prior technical

#### experience

Presents easy and understandable exercises and examples to get to grips with LaTeX fast
Demystifies the intricacies of working with LaTeX for academic writing

This book presents direct and concise explanations and examples to many LaTeX syntax and structures, allowing students and researchers to quickly understand the basics that are required for writing and preparing book manuscripts, journal articles, reports, presentation slides and academic theses and dissertations for publication. Unlike much of the literature currently available on LaTeX, which takes a more technical stance, focusing on the details of the software itself, this book presents a user-focused guide that is concerned with its application to everyday tasks and scenarios. It is packed with exercises and looks at topics like ...

#### Contents

Introduction.- Fonts Selection.- Formatting Texts I.- Formatting Texts II.- Page Layout and Style.- Listing and Tabbing Texts.- Table Preparation I.- Table Preparation II.- Figure Insertion 77.- Figure Drawing.- Equation Writing I.- Equation Writing II.- User-Defined Macros.- Bibliographies with LATEX.-Bibliographies with BIBTEX.- Lists of Contents and Indexes.- Miscellaneous I.- Miscellaneous II.- Letters and Articles.- Book and Report.-Slide Preparation I.- Slide Preparation II.- Error and Warning Messages.- Exercises- Appendix A: Symbols and Notations.

#### **Fields of Interest**

Popular Computer Science; Natural Language Processing (NLP); Programming Techniques

#### Content Level

Professional/practitioner

#### Product category

Graduate/advanced undergraduate textbook

Available

**Bibliography** 1st ed. 2017,XXV, 296 p. 7 illus. Softcover

Medium Type Book

Imprint Springer