

## A Concise Introduction To Data Structures Using Java Crc

In this short and very practical 2002 introduction to econometrics Philip Hans Franses guides the reader through the essential concepts of econometrics. Central to the book are practical questions in various economic disciplines, which can be answered using econometric methods and models. The book focuses on a limited number of the essential, most widely used methods, before going on to review the basics of econometrics. The book ends with a number of case studies drawn from recent empirical work to provide an intuitive illustration of what econometricians do when faced with practical questions. Throughout the book Franses emphasises the importance of specification, evaluation and implementation of models appropriate to the data. Assuming basic familiarity only with matrix algebra and calculus the book is designed to appeal as either a short stand-alone introduction for students embarking on an empirical research project or as a supplement to any standard introductory textbook.

AN INTRODUCTION TO MACHINE LEARNING THAT INCLUDES THE FUNDAMENTAL TECHNIQUES, METHODS, AND APPLICATIONS PROSE Award Finalist 2019 Association of American Publishers Award for Professional and Scholarly Excellence Machine Learning: a Concise Introduction offers a comprehensive introduction to the core concepts, approaches, and applications of machine learning. The author—an expert in the field—presents fundamental ideas, terminology, and techniques for solving applied problems in classification, regression, clustering, density estimation, and dimension reduction. The design principles behind the techniques are emphasized, including the bias-variance trade-off and its influence on the design of ensemble methods. Understanding these principles leads to more flexible and successful applications. Machine Learning: a Concise Introduction also includes methods for optimization, risk estimation, and model selection— essential elements of most applied projects. This important resource: Illustrates many classification methods with a single, running example, highlighting similarities and differences between methods Presents R source code which shows how to apply and interpret many of the techniques covered Includes many thoughtful exercises as an integral part of the text, with an appendix of selected solutions Contains useful information for effectively communicating with clients A volume in the popular Wiley Series in Probability and Statistics, Machine Learning: a Concise Introduction offers the practical information needed for an understanding of the methods and application of machine learning. STEVEN W. KNOX holds a Ph.D. in Mathematics from the University of Illinois and an M.S. in Statistics from Carnegie Mellon University. He has over twenty years' experience in using Machine Learning, Statistics, and Mathematics to solve real-world problems. He currently serves as Technical Director of Mathematics Research and Senior Advocate for Data Science at the National Security Agency.

The main goal of this book is to give the reader a concise introduction to the basic paradigms in creating efficient algorithms: greedy algorithms, divide-and-conquer, dynamic programming, and network flow. The book was written for a course Algorithms, Data Structures, and Complexity, created by Professor Thore Husfeldt (thorehusfeldt.net), which the book's author was assigned to teach in Lund, and the selection of contents is to a large extent influenced by this course. Additional material include for instance Tarjan's algorithn for finding the strongly connected components of a directed graph. The book should be suitable for self study, especially if the reader solves thelaboratory exercises available from Professor Husfeldt's github page, as well as from the book's home page at concise-algorithms.netCompared with the classic introductory texts on algorithms, our aim is not to present an encyclopedia of algorithms but to give the reader, in as short reading time as possibleboth an understanding of the fundamental paradigms mentioned above, and knowledge about many classic algorithms, including the above mentioned Tarjan's algorithm which is not so frequently included in other text books.

A Concise Introduction to Programming in Python, Second Edition provides a hands-on and accessible introduction to writing software in Python, with no prior programming experience required. The Second Edition was thoroughly reorganized and rewritten based on classroom experience to incorporate: A spiral approach, starting with turtle graphics, and then revisiting concepts in greater depth using numeric, textual, and image data Clear, concise explanations written for beginning students, emphasizing core principles A variety of accessible examples, focusing on key concepts Diagrams to help visualize new concepts New sections on recursion and exception handling, as well as an earlier introduction of lists, based on instructor feedback The text offers sections designed for approximately one class period each, and proceeds gradually from procedural to object-oriented design. Examples, exercises, and projects are included from diverse application domains, including finance, biology, image processing, and textual analysis. It also includes a brief "How-To" sections that introduce optional topics students may be interested in exploring. The text is written to be read, making it a good fit in flipped classrooms. Designed for either classroom use or self-study, all example programs and solutions to odd-numbered exercises (except for projects) are available at: http://www.central.edu/go/conciseintro/.

A Concise Introduction Using Java

Open Data Structures

A Concise Introduction to the Theory of Integration

A Practical Introduction

A Concise Introduction to Machine Learning

An Introduction

Addressing frontline librarians lobbying for increased programming or staff, as well as administrators marshalling statistics to stem the tide of budget cuts and prevent library closure, this vital new book explores the whys and hows of using data to build a better picture of library needs and success.

Introduction to Algorithms for Data Mining and Machine Learning introduces the essential ideas behind all key algorithms and techniques for data mining and machine learning, along with optimization techniques. Its strong formal mathematical approach, well selected examples, and practical software recommendations help readers develop confidence in their data modeling skills so they can process and interpret data for classification, clustering, curve-fitting and predictions. Masterfully balancing theory and practice, it is especially useful for those who need relevant, well explained, but not rigorous (proofs based) background theory and clear guidelines for working with big data. Presents an informal, theorem-free approach with concise, compact coverage of all fundamental topics Includes worked examples that help users increase confidence in their understanding of key algorithms, thus encouraging self-study Provides algorithms and techniques that can be implemented in any programming language, with each chapter including notes about relevant software packages

AN INTRODUCTION TO MACHINE LEARNING THAT INCLUDES THE FUNDAMENTAL TECHNIQUES, METHODS, AND APPLICATIONS Machine Learning: a Concise Introduction offers a comprehensive introduction to the core concepts, approaches, and applications of machine learning. The author—an expert in the field—presents fundamental ideas, terminology, and techniques for solving applied problems in classification, regression, clustering, density estimation, and dimension reduction. The design principles behind the techniques are emphasized, including the bias-variance trade-off and its influence on the design of ensemble methods. Understanding these principles leads to more flexible and successful applications. Machine Learning: a Concise Introduction also includes methods for optimization, risk estimation, and model selection— essential elements of most applied projects. This important resource: Illustrates many classification methods with a single, running example, highlighting similarities and differences between methods Presents R source code which shows how to apply and interpret many of the techniques covered Includes many thoughtful exercises as an integral part of the text, with an appendix of selected solutions Contains useful information for effectively communicating with clients A volume in the popular Wiley Series in Probability and Statistics, Machine Learning: a Concise Introduction offers the practical information needed for an understanding of the methods and application of machine learning. STEVEN W. KNOX holds a Ph.D. in Mathematics from the University of Illinois and an M.S. in Statistics from Carnegie Mellon University. He has over twenty years' experience in using Machine Learning, Statistics, and Mathematics to solve real-world problems. He currently serves as Technical Director of Mathematics Research and Senior Advocate for Data Science at the National Security Agency.

Introduction -- Array-based lists -- Linked lists -- Skiplists -- Hash tables -- Binary trees -- Random binary search trees -- Scapegoat trees -- Red-black trees -- Heaps -- Sorting algorithms -- Graphs -- Data structures for integers -- External memory searching.

Introduction to Algorithms for Data Mining and Machine Learning

Advanced Data Structures

Handbook of Data Compression

Concise Guide to Databases

Theory of Spatial Statistics

A Concise Introduction to Scientific Visualization

Mathematical logic developed into a broad discipline with many applications in mathematics, informatics, linguistics and philosophy. This text introduces the fundamentals of this field, and this new edition has been thoroughly expanded and revised.

An introductory course on Software Engineering remains one of the hardest subjects to teach largely because of the wide range of topics the area enc- passes. I have believed for some time that we often tend to teach too many concepts and topics in an introductory course resulting in shallow knowledge and little insight on application of these concepts. And Software Engineering is ?nally about application of concepts to e?ciently engineer good software solutions. Goals I believe that an introductory course on Software Engineering should focus on imparting to students the knowledge and skills that are needed to successfully execute a commercial project of a few person-months e?ort while employing proper practices and techniques. It is worth pointing out that a vast majority of the projects executed in the industry today fall in this scope—executed by a small team over a few months. I also believe that by carefully selecting the concepts and topics, we can, in the course of a semester, achieve this. This is the motivation of this book. The goal of this book is to introduce to the students a limited number of concepts and practices which will achieve the following two objectives: – Teach the student the skills needed to execute a smallish commercial project.

Visual Research: A Concise Introduction to Thinking Visually is the first text to present a concise overview of the significant ethical, theoretical, and practical considerations for conducting research with images. The capacity to take photos and video on handheld devices and the ability to store, post, and share such imagery online all offer tremendous opportunities for social research. The rapid development and popularity of such technology means that little technological proficiency is required, and even less theoretical and ethical consideration. This book provides an accessible introduction to doing visual research in the social sciences. Beginning with ethical considerations, this book highlights the importance of thinking visually before engaging in visual research. Further themes involve creating, organizing, and using images and are presented so as to help readers think about and work with their own visual data. Boxed case studies and further reading suggestions enhance the utility of this primer. Concise and highly focused, Visual Research will be an invaluable resource for visual, media, and communications students and researchers and others interested in visual research in the social sciences.

A self-contained introduction to the fundamentals of mathematical analysis Mathematical Analysis: A Concise Introduction presents the foundations of analysis and illustrates its role in mathematics. By focusing on the essentials, reinforcing learning through exercises, and featuring a unique "learn by doing" approach, the book develops the reader's proof writing skills and establishes fundamental comprehension of analysis that is essential for further exploration of pure and applied mathematics. This book is directly applicable to areas such as differential equations, probability theory, numerical analysis, differential geometry, and functional analysis. Mathematical Analysis is composed of three parts: ?Part One presents the analysis of functions of one variable, including sequences, continuity, differentiation, Riemann integration, series, and the Lebesgue integral. A detailed explanation of proof writing is provided with specific attention devoted to standard proof techniques. To facilitate an efficient transition to more abstract settings, the results for single variable functions are proved using methods that translate to metric spaces. ?Part Two explores the more abstract counterparts of the concepts outlined earlier in the text. The reader is introduced to the fundamental spaces of analysis, including Lp spaces, and the book successfully details how appropriate definitions of integration, continuity, and differentiation lead to a powerful and widely applicable foundation for further study of applied mathematics. The interrelation between measure theory, topology, and differentiation is then examined in the proof of the Multidimensional Substitution Formula. Further areas of coverage in this section include manifolds, Stokes' Theorem, Hilbert spaces, the convergence of Fourier series, and Riesz' Representation Theorem. ?Part Three provides an overview of the motivations for analysis as well as its applications in various subjects. A special focus on ordinary and partial differential equations presents some theoretical and practical challenges that exist in these areas. Topical coverage includes Navier-Stokes equations and the finite element method. Mathematical Analysis: A Concise Introduction includes an extensive index and over 900 exercises ranging in level of difficulty, from conceptual questions and adaptations of proofs to proofs with and without hints. These opportunities for reinforcement, along with the overall concise and well-organized treatment of analysis, make this book essential for readers in upper-undergraduate or beginning graduate mathematics courses who would like to build a solid foundation in analysis for further work in all analysis-based branches of mathematics.

Python 3 and Data Analytics Pocket Primer

Algorithms: a Concise Introduction

A Concise Introduction to Software Engineering

A Concise Introduction to Data Compression

An Intuitive Guide

Past, Present, and Future

As part of the best-selling Pocket Primer series, this book is designed to introduce the reader to the basic concepts of data analytics using Python 3. It is intended to be a fast-paced introduction to some basic features of data analytics and also covers statistics, data visualization, and data cleaning. The book includes numerous code samples using NumPy, Pandas, Matplotlib, Seaborn, and features an appendix on regular expressions. Companion files with source code and color figures are available. FEATURES: Includes a concise introduction to Python 3 Provides a thorough introduction to data and data cleaning Covers NumPy and Pandas Introduces statistical concepts and data visualization (Matplotlib/Seaborn) Features an appendix on regular expressions Includes companion files with source code and figures

This is the ideal companion for those needing guidance when carrying out a research project in a management or a business-related subject. The text is succinct and concise, written with modular courses in mind for the reader to quickly gain an overall perspective of the fundamental areas and identify the key points that need to be addressed. This clear and practical book also covers the requirements of more general areas of business research and consultancy. New to this edition is a chapter devoted to the analysis of qualitative data - an area many students find they want to focus on. A new accompanying student website also gives practical guidance on some of the problems students face: assistance with writing a research proposal; the structure of a dissertation; collecting data - how much is enough; citing references; links to other resources. Dissertations and projects form an integral part of many MBA and degree programmes and this text is invaluable when tackling this area for the first time. The authors approach the research task in a step-by-step manner, covering areas such as data collection, observational methods, and data analysis.

A Concise and Practical Introduction to Programming Algorithms in Java has two main goals. The first is for novice programmers to learn progressively the basic concepts underlying most imperative programming languages using Java. The second goal is to introduce new programmers to the very basic principles of thinking the algorithmic way and turning the algorithms into programs using the programming concepts of Java. The book is divided into two parts and includes: The fundamental notions of variables, expressions and assignments with type checking - Conditional and loop statements - Explanation of the concepts of functions with pass-by-value arguments and recursion - Fundamental sequential and bisection search techniques - Basic iterative and recursive sorting algorithms. Each chapter of the book concludes with a set of exercises to enable students to practice concepts covered.

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 addition to skill-building, hands-on exercises; introduces the fundamental concepts and technologies in database systems, placing these in an historic context; describes the challenges faced by database professionals; reviews the use of a variety of database types in business environments; discusses areas for further research within this fast-moving domain.

A Concise Introduction to Decentralized POMDPs

R for Data Science

A Concise Introduction to Mathematical Logic

Concise Computer Vision

Public Policy

Say it with Data

**A concise introduction to the emerging field of data science, explaining its evolution, relation to machine learning, current uses, data infrastructure issues, and ethical challenges. The goal of data science is to improve decision making through the analysis of data. Today data science determines the ads we see online, the books and movies that are recommended to us online, which emails are filtered into our spam folders, and even how much we pay for health insurance. This volume in the MIT Press Essential Knowledge series offers a concise introduction to the emerging field of data science, explaining its evolution, current uses, data infrastructure issues, and ethical challenges. It has never been easier for organizations to gather, store, and process data. Use of data science is driven by the rise of big data and social media, the development of high-performance computing, and the emergence of such powerful methods for data analysis and modeling as deep learning. Data science encompasses a set of principles, problem definitions, algorithms, and processes for extracting non-obvious and useful patterns from large datasets. It is closely related to the fields of data mining and machine learning, but broader in scope. This book offers a brief history of the field, introduces fundamental data concepts, and describes the stages in a data science project. It considers data infrastructure and the challenges posed by integrating data from multiple sources, introduces the basics of machine learning, and discusses how to link machine learning expertise with real-world problems. The book also reviews ethical and legal issues, developments in data regulation, and computational approaches to preserving privacy. Finally, it considers the future impact of data science and offers principles for success in data science projects.**

Taken literally, the title "All of Statistics" is an exaggeration. But in spirit, the title is apt, as the book does cover a much broader range of topics than a typical introductory book on mathematical statistics. This book is for people who want to learn probability and statistics quickly. It is suitable for graduate or advanced undergraduate students in computer science, mathematics, statistics, and related disciplines. The book includes modern topics like non-parametric curve estimation, bootstrapping, and classification, topics that are usually relegated to follow-up courses. The reader is presumed to know calculus and a little linear algebra. No previous knowledge of probability and statistics is required. Statistics, data mining, and machine learning are all concerned with collecting and analysing data.

This book introduces multiagent planning under uncertainty as formalized by decentralized partially observable Markov decision processes (Dec-POMDPs). The intended audience is researchers and graduate students working in the fields of artificial intelligence related to sequential decision making: reinforcement learning, decision-theoretic planning for single agents, classical multiagent planning, decentralized control, and operations research.

Advanced Data Structures presents a comprehensive look at the ideas, analysis, and implementation details of data structures as a specialized topic in applied algorithms. Data structures are how data is stored within a computer, and how one can go about searching for data within. This text examines efficient ways to search and update sets of numbers, intervals, or strings by various data structures, such as search trees, structures for sets of intervals or piece-wise constant functions, orthogonal range search structures, heaps, union-find structures, dynamization and persistence of structures, structures for strings, and hash tables. This is the first volume to show data structures as a crucial algorithmic topic, rather than relegating them as trivial material used to illustrate object-oriented programming methodology, filling a void in the ever-increasing computer science market. Numerous code examples in C and more than 500 references make Advanced Data Structures an indispensable text. topic. Numerous code examples in C and more than 500 references make Advanced Data Structures an indispensable text.

A Concise Introduction to Data Structures using Java

A Concise Introduction to Programming in Python

## Import, Tidy, Transform, Visualize, and Model Data Introduction to Data Compression

### A Concise Introduction to Thinking Visually Guide to Data Structures

*Introduction to Functional Data Analysis provides a concise textbook introduction to the field. It explains how to analyze functional data, both at exploratory and inferential levels. It also provides a systematic and accessible exposition of the methodology and the required mathematical framework. The book can be used as textbook for a semester-long course on FDA for advanced undergraduate or MS statistics majors, as well as for MS and PhD students in other disciplines, including applied mathematics, environmental science, public health, medical research, geophysical sciences and economics. It can also be used for self-study and as a reference for researchers in those fields who wish to acquire solid understanding of FDA methodology and practical guidance for its implementation. Each chapter contains plentiful examples of relevant R code and theoretical and data analytic problems. The material of the book can be roughly divided into four parts of approximately equal length: 1) basic concepts and techniques of FDA, 2) functional regression models, 3) sparse and dependent functional data, and 4) introduction to the Hilbert space framework of FDA. The book assumes advanced undergraduate background in calculus, linear algebra, distributional probability theory, foundations of statistical inference, and some familiarity with R programming. Other required statistics background is provided in scalar settings before the related functional concepts are developed. Most chapters end with references to more advanced research for those who wish to gain a more in-depth understanding of a specific topic.*

Scientific visualization has always been an integral part of discovery, starting first with simplified drawings of the pre-Enlightenment and progressing to present day. Mathematical formalism often supersedes visual methods, but their use is at the core of the mental process. As historical examples, a spatial description of flow led to electromagnetic theory, and without visualization of crystals, structural chemistry would not exist. With the advent of computer graphics technology, visualization has become a driving force in modern computing. A Concise Introduction to Scientific Visualization – Past, Present, and Future serves as a primer to visualization without assuming prior knowledge. It discusses both the history of visualization in scientific endeavour, and how scientific visualization is currently shaping the progress of science as a multi-disciplinary domain.

Learn how to use R to turn raw data into insight, knowledge, and understanding. This book introduces you to R, RStudio, and the tidyverse, a collection of R packages designed to work together to make data science fast, fluent, and fun. Suitable for readers with no previous programming experience, R for Data Science is designed to get you doing data science as quickly as possible. Authors Hadley Wickham and Garrett Golemund guide you through the steps of importing, wrangling, exploring, and modeling your data and communicating the results. You'll get a complete, big-picture understanding of the data science cycle, along with basic tools you need to manage the details. Each section of the book is paired with exercises to help you practice what you've learned along the way. You'll learn how to: Wrangle–transform your datasets into a form convenient for analysis Program–learn powerful R tools for solving data problems with greater clarity and ease Explore–examine your data, generate hypotheses, and quickly test them Model–provide a low-dimensional summary that captures true "signals" in your dataset Communicate–learn R Markdown for integrating prose, code, and results

A student-friendly text, *A Concise Introduction to Data Structures Using Java* takes a developmental approach, starting with simpler concepts first and then building toward greater complexity. Important topics, such as linked lists, are introduced gradually and revisited with increasing depth. More code and guidance are provided at the beginning, allowing students time to adapt to Java while also beginning to learn data structures. As students develop fluency in Java, less code is provided and more algorithms are outlined in pseudocode. The text is designed to support a second course in computer science with an emphasis on elementary data structures. The clear, concise explanations encourage students to read and engage with the material, while partial implementations of most data structures give instructors the flexibility to develop some methods as examples and assign others as exercises. The book also supplies an introductory chapter on Java basics that allows students who are unfamiliar with Java to quickly get up to speed. The book helps students become familiar with how to use, design, implement, and analyze data structures, an important step on the path to becoming skilled software developers.

*A Concise Guide to Market Research*

*Computer Science*

*A Concise Guide to Statistics*

### *A Concise Introduction*

#### *A Concise Course in Statistical Inference*

*Data compression is one of the most important fields and tools in modern computing. From archiving data, to CD-ROMs, and from coding theory to image analysis, many facets of modern computing rely upon data compression. This book provides a comprehensive reference for the many different types and methods of compression. Included are a detailed and helpful taxonomy, analysis of most common methods, and discussions on the use and comparative benefits of methods and description of "how to" use them. Detailed descriptions and explanations of the most well-known and frequently used compression methods are covered in a self-contained fashion, with an accessible style and technical level for specialists and non-specialists.*

*The text gives a concise introduction into fundamental concepts in statistics. Chapter 1: Short exposition of probability theory, using generic examples. Chapter 2: Estimation in theory and practice, using biologically motivated examples. Maximum-likelihood estimation in covered, including Fisher information and power computations. Methods for calculating confidence intervals and robust alternatives to standard estimators are given. Chapter 3: Hypothesis testing with emphasis on concepts, particularly type-I , type-II errors, and interpreting test results. Several examples are provided. T-tests are used throughout, followed important other tests and robust/nonparametric alternatives. Multiple testing is discussed in more depth, and combination of independent tests is explained. Chapter 4: Linear regression, with computations solely based on R. Multiple group comparisons with ANOVA are covered together with linear contrasts, again using R for computations.*

Each edition of *Introduction to Data Compression* has widely been considered the best introduction and reference text on the art and science of data compression, and the third edition continues in this tradition. *Data compression techniques and technology are ever-evolving with new applications in image, speech, text, audio, and video. The third edition includes all the cutting edge updates the reader will need during the work day and in class. Khalid Sayood provides an extensive introduction to the theory underlying today's compression techniques with detailed instruction for their applications using several examples to explain the concepts. Encompassing the entire field of data compression Introduction to Data Compression, includes lossless and lossy compression, Huffman coding, arithmetic coding, dictionary techniques, context based compression, scalar and vector quantization. Khalid Sayood provides a working knowledge of data compression, giving the reader the tools to develop a complete and concise compression package upon completion of his book. New content added on the topic of audio compression including a description of the mp3 algorithm New video coding standard and new facsimile standard explained Completely explains established and emerging standards in depth including JPEG 2000, JPEG-LS, MPEG-2, Group 3 and 4 faxes, JBIG 2, ADPCM, LPC, CELP, and MELP Source code provided via companion web site that gives readers the opportunity to build their own algorithms, choose and implement techniques in their own applications*

*This accessible and engaging textbook/guide provides a concise introduction to data structures and associated algorithms. Emphasis is placed on the fundamentals of data structures, enabling the reader to quickly learn the key concepts, and providing a strong foundation for later studies of more complex topics. The coverage includes discussions on stacks, queues, lists, (using both arrays and links), sorting, and elementary binary trees, heaps, and hashing. This content is also a natural continuation from the material provided in the separate Springer title Guide to Java by the same authors.Topics and features: reviews the preliminary concepts, and introduces stacks and queues using arrays, along with a discussion of array-based lists; examines linked lists, the implementation of stacks and queues using references, binary trees, a range of varied sorting techniques, heaps, and hashing; presents both primitive and generic data types in each chapter, and makes use of contour diagrams to illustrate object-oriented concepts; includes chapter summaries, and asks the reader questions to help them interact with the material; contains numerous examples and illustrations, and one or more complete program in every chapter; provides exercises at the end of each chapter, as well as solutions to selected exercises, and a glossary of important terms. This clearly-written work is an ideal classroom text for a second semester course in programming using the Java programming language, in preparation for a subsequent advanced course in data structures and algorithms. The book is also eminently suitable as a self-study guide in either academe or industry.*

*A Concise and Practical Introduction to Programming Algorithms in Java*

*Data Science*

*a Concise Introduction*

*All of Statistics*

*Mathematical Analysis*

*A Concise Introduction to Mechanics of Rigid Bodies*

*A Concise Introduction to Data Structures using JavaCRC Press*

Computer Science: *A Concise Introduction* covers the fundamentals of computer science. The book describes micro-, mini-, and mainframe computers and their uses; the ranges and types of computers and peripherals currently available; applications to numerical computation; and commercial data processing and industrial control processes. The functions of data preparation, data control, computer operations, applications programming, systems analysis and design, database administration, and network control are also encompassed. The book then discusses batch, on-line, and real-time systems; the basic concepts of computer architecture; and the characteristics of main memory and backing storage. The main characteristics of common types of input, output, and input/output devices used in commercial computer applications and data transmission system are also considered. The book tackles the organization and accessing of serial, sequential, and indexed sequential file; file processing and management; and the concepts and functions of operating systems. The text describes on-line and off-line programming methods as well. Computer science students will find the book useful.

This little book is the outgrowth of a one semester course which I have taught for each of the past four years at M. 1. T. Although this class used to be one of the standard courses taken by essentially every first year gradu ate student of mathematics, in recent years (at least in those when I was the instructor), the clientele has shifted from first year graduate students of mathematics to more advanced graduate students in other disciplines. In fact, the majority of my students have been from departments of engi neering (especially electrical engineering) and most of the rest have been economists. Whether this state of affairs is a reflection on my teaching, the increased importance of mathematical analysis in other disciplines, the superior undergraduate preparation of students coming to M. 1. T in mathematics, or simply the lack of enthusiasm that these students have for analysis, I have preferred not to examine too closely. On the other hand, the situation did force me to do a certain amount of thinking about what constitutes an appropriate course for a group of non-mathematicians who are courageous (foolish?) enough to sign up for an introduction to in tegration theory offered by the department of mathematics. In particular, I had to figure out what to do about that vast body of material which, in standard mathematics offerings, is "assumed to have been covered in your advanced calculus course".

This updated second edition broadens the explanation of rotational kinematics and dynamics — the most important aspect of rigid body motion in three-dimensional space and a topic of much greater complexity than linear motion. It expands treatment of vector and matrix, and includes quaternion operations to describe and analyze rigid body motion which are found in robot control, trajectory planning, 3D vision system calibration, and hand-eye coordination of robots in assembly work, etc. It features updated treatments of concepts in all chapters and case studies. The textbook retains its comprehensiveness in coverage and compactness in size, which make it easily accessible to the readers from multidisciplinary areas who want to grasp the key concepts of rigid body mechanics which are usually scattered in multiple volumes of traditional textbooks. Theoretical concepts are explained through examples taken from across engineering disciplines and links to applications and more advanced courses (e.g. industrial robotics) are provided. Ideal for students and practitioners, this book provides readers with a clear path to understanding rigid body mechanics and its significance in numerous sub-fields of mechanical engineering and related areas.

Research Methods

Multidisciplinary Engineering

An Introduction into Theory and Algorithms

A Concise Introduction to Econometrics

The Process, Data, and Methods Using IBM SPSS Statistics

A Concise Introduction to Data Structures Using Java

*This textbook provides an accessible general introduction to the essential topics in computer vision. Classroom-tested programming exercises and review questions are also supplied at the end of each chapter. Features: provides an introduction to the basic notation and mathematical concepts for describing an image and the key concepts for mapping an image into an image; explains the topologic and geometric basics for analysing image regions and distributions of image values and discusses identifying patterns in an image; introduces optic flow for representing dense motion and various topics in sparse motion analysis; describes special approaches for image binarization and segmentation of still images or video frames; examines the basic components of a computer vision system; reviews different techniques for vision-based 3D shape reconstruction; includes a discussion of stereo matchers and the phase-congruency model for image features; presents an introduction into classification and learning.*

*The emphasis of the book is on the question of Why – only if why an algorithm is successful is understood, can it be properly applied, and the results trusted. Algorithms are often taught side by side without showing the similarities and differences between them. This book addresses the commonalities, and aims to give a thorough and in-depth treatment and develop intuition, while remaining concise. This useful reference should be an essential on the bookshelves of anyone employing machine learning techniques. The author's webpage for the book can be accessed here.*

*This accessible, practice-oriented and compact text provides a hands-on introduction to market research. Using the market research process as a framework, it explains how to collect and describe data and presents the most important and frequently used quantitative analysis techniques, such as ANOVA, regression analysis, factor analysis and cluster analysis. The book describes the theoretical choices a market researcher has to make with regard to each technique, discusses how these are converted into actions in IBM SPSS version 22 and how to interpret the output. Each chapter concludes with a case study that illustrates the process using real-world data. A comprehensive Web appendix includes additional analysis techniques, datasets, video files and case studies. Tags in the text allow readers to quickly access Web content with their mobile device. The new edition features: Stronger emphasis on the gathering and analysis of secondary data (e.g., internet and social networking data) New material on data description (e.g., outlier detection and missing value analysis) Improved use of educational elements such as learning objectives, keywords, self-assessment tests, case studies, and much more Streamlined and simplified coverage of the data analysis techniques with more rules-of-thumb Uses IBM SPSS version 22*

*This clearly written book offers readers a succinct foundation to the most important topics in the field of data compression. Part I presents the basic approaches to data compression and describes a few popular techniques and methods that are commonly used to compress data. The reader will discover essential concepts. Part II concentrates on advanced techniques, such as arithmetic coding, orthogonal transforms, subband transforms and Burrows-Wheeler transform. This book is the perfect reference for advanced undergraduates in computer science and requires a minimum of mathematics. An author-maintained website provides errata and auxiliary material.*

*Visual Research*

*Introduction to Functional Data Analysis*

*A Concise Guide to Making Your Case and Getting Results*

*Machine Learning*

**Theory of Spatial Statistics:** A Concise Introduction presents the most important models used in spatial statistics, including random fields and point processes, from a rigorous mathematical point of view and shows how to carry out statistical inference. It contains full proofs, real-life examples and theoretical exercises. Solutions to the latter are available in an appendix. Assuming maturity in probability and statistics, these concise lecture notes are self-contained and cover enough material for a semester course. They may also serve as a reference book for researchers. Features \* Presents the mathematical foundations of spatial statistics. \* Contains worked examples from mining, disease mapping, forestry, soil and environmental science, and criminology. \* Gives pointers to the literature to facilitate further study. \* Provides example code in R to encourage the student to experiment. \* Offers exercises and their solutions to test and deepen understanding. The book is suitable for postgraduate and advanced undergraduate students in mathematics and statistics.

The emphasis of the book is on the question of Why – only if why an algorithm is successful is understood, can it be properly applied, and the results trusted. Algorithms are often taught side by side without showing the similarities and differences between them. This book addresses the commonalities, and aims to give a thorough and in-depth treatment and develop intuition, while remaining concise. This useful reference should be an essential on the bookshelves of anyone employing machine learning techniques.

**Public Policy:** A Concise Introduction, by Sara R. Rinfret, Denise Scheberle, and Michelle C. Pautz, is a student-friendly primer that quickly connects readers to the inner workings of public policy. The text condenses early chapters on theory and the policy-making process, allowing students to take up key policy challenges—such as immigration, education, and health care—much earlier in the semester. Structured chapter layouts of substantive policy areas allow instructors to supplement with their own examples seamlessly. The book’s emphasis on policy choices asks students to look beyond simple pros and cons to examine the multifaceted dimensions of decision making and the complexities inherent in real-world problem solving. Not every student starts out engaged in public policy, so place your students—both majors and non-majors alike—in the driver’s seat by fostering their analytical skills early, and spend the rest of the semester

discussing policy issues, examining data, and debating current policy examples that matter most to them.