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Medical Imaging Systems Andreas Maier 2018-08-02 This open access book gives a complete and comprehensive introduction to the fields of medical imaging systems, as designed for a broad range of applications. The authors of the book first explain the foundations of system theory and image processing, before highlighting several modalities in a dedicated chapter. The initial focus is on modalities that are closely related to traditional camera systems such as endoscopy and microscopy. This is followed by more complex image formation processes: magnetic resonance imaging, X-ray projection imaging, computed tomography, X-ray phase-contrast imaging, nuclear imaging, ultrasound, and optical coherence tomography.
Genome-Wide Association Studies and Genomic Prediction Cedric Gondro 2013-06-12 With the detailed genomic information that is now becoming available, we have a plethora of data that allows researchers to address questions in a variety of areas. Genome-wide association studies (GWAS) have become a vital approach to identify candidate regions associated with complex diseases in human medicine, production traits in agriculture, and variation in wild populations. Genomic prediction goes a step further, attempting to predict phenotypic variation in these traits from genomic information. Genome-Wide Association Studies and Genomic Prediction pulls together expert contributions to address this important area of study. The volume begins with a section covering the phenotypes of interest as well as design issues for GWAS, then moves on to discuss efficient computational methods to store and handle large datasets, quality control measures, phasing, haplotype inference, and imputation. Later chapters deal with statistical approaches to data analysis where the experimental objective is either to confirm the biology by identifying genomic regions associated to a trait or to use the data to make genomic predictions about a future phenotypic outcome (e.g. predict onset of disease). As part of the Methods in Molecular Biology series, chapters provide helpful, real-world implementation advice.
Privacy and Identity Management Michael Friedewald 2021-05-02 This book contains selected papers presented at the 15th IFIP WG 9.2, 9.6/11.7, 11.6/SIG 9.2.2 International Summer School on Privacy and Identity Management, held in Maribor,

Slovenia, in September 2020.* The 13 full papers included in this volume were carefully reviewed and selected from 21 submissions. Also included is a summary paper of a tutorial. As in previous years, one of the goals of the IFIP Summer School was to encourage the publication of thorough research papers by students and emerging scholars. The papers combine interdisciplinary approaches to bring together a host of perspectives, such as technical, legal, regulatory, socio-economic, social or societal, political, ethical, anthropological, philosophical, or psychological perspectives. *The summer school was held virtually.

Solving PDEs in Python Hans Petter Langtangen 2017-03-21 This book offers a concise and gentle introduction to finite element programming in Python based on the popular FEniCS software library. Using a series of examples, including the Poisson equation, the equations of linear elasticity, the incompressible Navier–Stokes equations, and systems of nonlinear advection–diffusion–reaction equations, it guides readers through the essential steps to quickly solving a PDE in FEniCS, such as how to define a finite variational problem, how to set boundary conditions, how to solve linear and nonlinear systems, and how to visualize solutions and structure finite element Python programs. This book is open access under a CC BY license.

The Genus Citrus Manuel Talon 2020-01-21 The Genus Citrus presents the enormous amount of new knowledge that has been generated in recent years on nearly all topics related to citrus. Beginning with an overview of the fundamental principles and understanding of citrus biology and behavior, the book provides a comprehensive view from Citrus evolution to current market importance. Reporting on new insights supported by the elucidation of the citrus genome sequence, it presents groundbreaking theories and fills in previous knowledge gaps. Because citrus is among the most difficult plants to improve through traditional breeding, citrus researchers, institutions and industries must quickly learn to adapt to new developments, knowledge and technologies to address the biological constraints of a unique fruit-tree such as citrus. Despite the challenges of working with citrus, tremendous progress has been made, mostly through advances in molecular biology and genomics. This book is valuable for all those involved with researching and advancing, producing, processing, and delivering citrus products. Includes the most current research on citrus genomic information Provides the first detailed description of citrus origin, a new proposal for citrus taxonomy, and a redefinition of the genus Citrus Details citrus challenges including climate change, global disease impacts, and plant improvement strategies

Artificial Intelligence in Education Elisabeth André 2017-06-22 This book constitutes the refereed proceedings of the 18th International Conference on Artificial Intelligence in Education, AIED 2017, held in Wuhan, China, in June/July 2017. The 36 revised full papers presented together with 4 keynotes, 37 poster, presentations, 4 doctoral consortium papers, 5 industry papers, 4 workshop abstracts, and 2 tutorial abstracts were carefully reviewed and selected from 159 submissions. The conference provides opportunities for the cross-fertilization of approaches, techniques and ideas from the many fields that comprise AIED, including computer science, cognitive and learning sciences, education, game design, psychology, sociology, linguistics as well as many domain-specific areas.

Embedded Software Development with C Kai Qian 2009-07-28 Embedded Software Development With C offers both an effectual reference for professionals and researchers, and a valuable learning tool for students by laying the groundwork for a solid foundation in the hardware and software aspects of embedded systems development. Key features include a resource for the fundamentals of embedded systems design and development with an emphasis on software, an exploration of the 8051 microcontroller as it pertains to embedded systems,

comprehensive tutorial materials for instructors to provide students with labs of varying lengths and levels of difficulty, and supporting website including all sample codes, software tools and links to additional online references.

Zeolite Characterization and Catalysis Arthur W. Chester 2009-10-03 The idea for putting together a tutorial on zeolites came originally from my co-editor, Eric Derouane, about 5 years ago. I ?rst met Eric in the mid-1980s when he spent 2 years working for Mobil R&D at our then Corporate lab at Princeton, NJ. He was on the senior technical staff with projects in the synthesis and characterization of new materials. At that time, I managed a group at our Paulsboro lab that was responsible for catalyst characterization in support of our catalyst and process development efforts, and also had a substantial group working on new material synthesis. Hence, our interests overlapped considerably and we met regularly. After Eric moved back to Namur (initially), we maintained contact, and in the 1990s, we met a number of times in Europe on projects of joint interest. It was after I retired from ExxonMobil in 2002 that we began to discuss the tutorial concept seriously. Eric had (semi-)retired and lived on the Algarve, the southern coast of Portugal. In January 2003, my wife and I spent 3 weeks outside of Lagos, and I worked parts of most days with Eric on the proposed content of the book. We decided on a comprehensive approach that ultimately amounted to some 20+ chapters covering all of zeolite chemistry and catalysis and gave it the title Zeolite Chemistry and Catalysis: An integrated Approach and Tutorial.

Fundamentals of Many-body Physics Wolfgang Nolting 2009-03-02 The goal of the present course on "Fundamentals of Theoretical Physics" is to be a direct accompaniment to the lower-division study of physics, and it aims at providing the ph- ical tools in the most straightforward and compact form as needed by the students in order to master theoretically more complex topics and problems in advanced studies and in research. The presentation is thus intentionally designed to be suf?ciently detailed and self-contained – sometimes, admittedly, at the cost of a certain elegance – to permit in- vidual study without reference to the secondary literature. This volume deals with the quantum theory of many-body systems. Building upon a basic knowledge of quantum mechanics and of statistical physics, modern techniques for the description of interacting many-particle systems are developed and applied to various real problems, mainly from the area of solid-state physics. A thorough revision should guarantee that the reader can access the relevant research literature without experiencing major problems in terms of the concepts and vocabulary, techniques and deductive methods found there. The world which surrounds us consists of very many particles interacting with one another, and their description requires in principle the solution of a corresponding number ofcoupledquantum-mechanicalequationsofmotion(Schrodinger̈ equations),which,h- ever, is possible only in exceptional cases in a mathematically strict sense. The concepts of elementary quantum mechanics and quantum statistics are therefore not directly applicable in the form in which we have thus far encountered them. They require an extension and restructuring, which is termed "many-body theory".

Control Theory Tutorial Steven A. Frank 2018-05-29 This open access Brief introduces the basic principles of control theory in a concise self-study guide. It complements the classic texts by emphasizing the simple conceptual unity of the subject. A novice can quickly see how and why the different parts fit together. The concepts build slowly and naturally one after another, until the reader soon has a view of the whole. Each concept is illustrated by detailed examples and graphics. The full software code for each example is available, providing the basis for experimenting with various assumptions, learning how to write programs for control analysis, and setting the stage for future research projects. The topics focus on robustness, design trade-offs, and optimality. Most

of the book develops classical linear theory. The last part of the book considers robustness with respect to nonlinearity and explicitly nonlinear extensions, as well as advanced topics such as adaptive control and model predictive control. New students, as well as scientists from other backgrounds who want a concise and easy-to-grasp coverage of control theory, will benefit from the emphasis on concepts and broad understanding of the various approaches.

Foundations of Security Analysis and Design Riccardo Focardi 2003-06-30 Security is a rapidly growing area of computer science, with direct and increasing relevance to real life applications such as Internet transactions, electronic commerce, information protection, network and systems integrity, etc. This volume presents thoroughly revised versions of lectures given by leading security researchers during the IFIP WG 1.7 International School on Foundations of Security Analysis and Design, FOSAD 2000, held in Bertinoro, Italy in September. Mathematical Models of Computer Security (Peter Y.A. Ryan); The Logic of Authentication Protocols (Paul Syversen and Iliano Cervesato); Access Control: Policies, Models, and Mechanisms (Pierangela Samarati and Sabrina de Capitani di Vimercati); Security Goals: Packet Trajectories and Strand Spaces (Joshua D. Guttman); Notes on Nominal Calculi for Security and Mobility (Andrew D. Gordon); Classification of Security Properties (Riccardo Focardi and Roberto Gorrieri).

Automated Machine Learning Frank Hutter 2019-05-17 This open access book presents the first comprehensive overview of general methods in Automated Machine Learning (AutoML), collects descriptions of existing systems based on these methods, and discusses the first series of international challenges of AutoML systems. The recent success of commercial ML applications and the rapid growth of the field has created a high demand for off-the-shelf ML methods that can be used easily and without expert knowledge. However, many of the recent machine learning successes crucially rely on human experts, who manually select appropriate ML architectures (deep learning architectures or more traditional ML workflows) and their hyperparameters. To overcome this problem, the field of AutoML targets a progressive automation of machine learning, based on principles from optimization and machine learning itself. This book serves as a point of entry into this quickly-developing field for researchers and advanced students alike, as well as providing a reference for practitioners aiming to use AutoML in their work.

Search Methodologies Edmund K. Burke 2013-10-18 The first edition of Search Methodologies: Introductory Tutorials in Optimization and Decision Support Techniques was originally put together to offer a basic introduction to the various search and optimization techniques that students might need to use during their research, and this new edition continues this tradition. Search Methodologies has been expanded and brought completely up to date, including new chapters covering scatter search, GRASP, and very large neighborhood search. The chapter authors are drawn from across Computer Science and Operations Research and include some of the world's leading authorities in their field. The book provides useful guidelines for implementing the methods and frameworks described and offers valuable tutorials to students and researchers in the field. "As I embarked on the pleasant journey of reading through the chapters of this book, I became convinced that this is one of the best sources of introductory material on the search methodologies topic to be found. The book's subtitle, "Introductory Tutorials in Optimization and Decision Support Techniques", aptly describes its aim, and the editors and contributors to this volume have achieved this aim with remarkable success. The chapters in this book are exemplary in giving useful guidelines for implementing the methods and frameworks described." Fred Glover, Leeds School of Business, University of Colorado Boulder, USA "[The book] aims to present a series of well written tutorials by the leading experts in their fields.

Moreover, it does this by covering practically the whole possible range of topics in the discipline. It enables students and practitioners to study and appreciate the beauty and the power of some of the computational search techniques that are able to effectively navigate through search spaces that are sometimes inconceivably large. I am convinced that this second edition will build on the success of the first edition and that it will prove to be just as popular." Jacek Blazewicz, Institute of Computing Science, Poznan University of Technology and Institute of Bioorganic Chemistry, Polish Academy of Sciences
Encyclopedia of Machine Learning Claude Sammut 2011-03-28 This comprehensive encyclopedia, in A-Z format, provides easy access to relevant information for those seeking entry into any aspect within the broad field of Machine Learning. Most of the entries in this preeminent work include useful literature references.
Building Machine Learning and Deep Learning Models on Google Cloud Platform Ekaba Bisong 2019-09-27 Take a systematic approach to understanding the fundamentals of machine learning and deep learning from the ground up and how they are applied in practice. You will use this comprehensive guide for building and deploying learning models to address complex use cases while leveraging the computational resources of Google Cloud Platform. Author Ekaba Bisong shows you how machine learning tools and techniques are used to predict or classify events based on a set of interactions between variables known as features or attributes in a particular dataset. He teaches you how deep learning extends the machine learning algorithm of neural networks to learn complex tasks that are difficult for computers to perform, such as recognizing faces and understanding languages. And you will know how to leverage cloud computing to accelerate data science and machine learning deployments. Building Machine Learning and Deep Learning Models on Google Cloud Platform is divided into eight parts that cover the fundamentals of machine learning and

deep learning, the concept of data science and cloud services, programming for data science using the Python stack, Google Cloud Platform (GCP) infrastructure and products, advanced analytics on GCP, and deploying end-to-end machine learning solution pipelines on GCP. What You'll Learn Understand the principles and fundamentals of machine learning and deep learning, the algorithms, how to use them, when to use them, and how to interpret your resultsKnow the programming concepts relevant to machine and deep learning design and development using the Python stack Build and interpret machine and deep learning models Use Google Cloud Platform tools and services to develop and deploy large-scale machine learning and deep learning products Be aware of the different facets and design choices to consider when modeling a learning problem Productionalize machine learning models into software products Who This Book Is For Beginners to the practice of data science and applied machine learning, data scientists at all levels, machine learning engineers, Google Cloud Platform data engineers/architects, and software developers
An Introduction to Statistical Learning Gareth James 2013-06-24 An Introduction to Statistical Learning provides an accessible overview of the field of statistical learning, an essential toolset for making sense of the vast and complex data sets that have emerged in fields ranging from biology to finance to marketing to astrophysics in the past twenty years. This book presents some of the most important modeling and prediction techniques, along with relevant applications. Topics include linear regression, classification, resampling methods, shrinkage approaches, tree-based methods, support vector machines, clustering, and more. Color graphics and real-world examples are used to illustrate the methods presented. Since the goal of this textbook is to facilitate the use of these statistical learning techniques by practitioners in science, industry, and other fields, each chapter contains a tutorial on implementing the analyses and

methods presented in R, an extremely popular open source statistical software platform. Two of the authors co-wrote The Elements of Statistical Learning (Hastie, Tibshirani and Friedman, 2nd edition 2009), a popular reference book for statistics and machine learning researchers. An Introduction to Statistical Learning covers many of the same topics, but at a level accessible to a much broader audience. This book is targeted at statisticians and non-statisticians alike who wish to use cutting-edge statistical learning techniques to analyze their data. The text assumes only a previous course in linear regression and no knowledge of matrix algebra.

Learn Android App Development Wallace Jackson 2013-08-20 Learn Android App Development is a hands-on tutorial and useful reference. You'll quickly get up to speed and master the Android SDK and the Java that you need for your Android Apps. The Android SDK offers powerful features, and this book is the fastest path to mastering them—and the rest of the Andorid SDK—for programmers with some experience who are new to Android smartphone and tablet apps development. Many books introduce the Android SDK, but very few explain how to develop apps optimally. This book teaches both core Java language concepts and how to wisely but rapidly employ the design patterns and logic using the Android SDK, which is based on Java APIs. You'll also learn best practices that ensure your code will be efficient and perform well. Get an accelerated but complete enough treatment of the fundamentals of Java necessary to get you started. Design your first app using prototyping and other design methods. Build your first Android app using the code given over the course of the book. Finally, debug and distribute your first app on Google Play or other Android app store. After reading this book, you'll have your first app ready and on the app store, earning you the prestige and the money you seek.

Data Science for Healthcare Sergio Consoli 2019-02-23 This book seeks to promote the exploitation of data science in healthcare systems. The focus is on advancing the automated analytical methods used to extract new knowledge from data for healthcare applications. To do so, the book draws on several interrelated disciplines, including machine learning, big data analytics, statistics, pattern recognition, computer vision, and Semantic Web technologies, and focuses on their direct application to healthcare. Building on three tutorial-like chapters on data science in healthcare, the following eleven chapters highlight success stories on the application of data science in healthcare, where data science and artificial intelligence technologies have proven to be very promising. This book is primarily intended for data scientists involved in the healthcare or medical sector. By reading this book, they will gain essential insights into the modern data science technologies needed to advance innovation for both healthcare businesses and patients. A basic grasp of data science is recommended in order to fully benefit from this book.

Beginning Rust Carlo Milanesi 2018-03-22 Learn to program with Rust in an easy, step-by-step manner on Unix, Linux shell, macOS and the Windows command line. As you read this book, you'll build on the knowledge you gained in previous chapters and see what Rust has to offer. Beginning Rust starts with the basics of Rust, including how to name objects, control execution flow, and handle primitive types. You'll see how to do arithmetic, allocate memory, use iterators, and handle input/output. Once you have mastered these core skills, you'll work on handling errors and using the object-oriented features of Rust to build robust Rust applications in no time. Only a basic knowledge of programming is required, preferably in C or C++. To understand this book, it's enough to know what integers and floating-point numbers are, and to distinguish identifiers from string literals. After reading this book, you'll be ready to build Rust applications. What You'll Learn Get started programming with Rust Understand heterogeneous data structures and data sequences Define functions, generic functions,

structs, and more Work with closures, changeable strings, ranges and slices Use traits and learn about lifetimes Who This Book Is For Those who are new to Rust and who have at least some prior experience with programming in general: some C/C++ is recommended particularly.

Biomedical Visualisation Paul M. Rea 2019-03-27 This edited volume explores the use of technology to enable us to visualise the life sciences in a more meaningful and engaging way. It will enable those interested in visualisation techniques to gain a better understanding of the applications that can be used in imaging and analysis, education, engagement and training. The reader will be able to explore the utilisation of technologies from a number of fields to enable an engaging and meaningful visual representation of the life sciences. This use of technology-enhanced learning will be of benefit for the learner, trainer, in patient care and the wider field of education and engagement. By examining a range of techniques in image capture (photogrammetery, stereophotogrammetry, microphotogrammetry and autostereoscopy), this book will showcase the wide range of tools we can use. Researchers in this field will be able to find something suitable to apply to their work to enhance user engagement through improved visual means using the technologies we have available to us today. It will highlight the uses of these technologies to examine many aspects of the human body, and enable improved ways to enhance visual and tactile learning, including 3D printing. By demonstrating co-design processes, working directly with the end-stage users (including patients), it will also highlight successes in adopting tools like hand motion tracking rehabilitation for patients with conditions like multiple sclerosis. The book will also discuss the applications of immersive environments including virtual, augmented and mixed reality. The ultimate aim is to show how, by using these tools, we can enhance communication, mobile applications, health literacy and illustration of both normal and pathological processes in the body.

By applying a wide range of tools and technologies, this volume will highlight the wide range of applications in education, training and learning both for students and faculty, but also for patient care and education. Therefore, the work presented here can be accessed by a wide range of users from faculty and students involved in the design and development of these processes, by examining the pedagogy around these technologies. Importantly, it presents material, which will be of benefit for the patient, engaging them to become more involved with techniques like physiotherapy.

Dynamical Systems on Networks Mason Porter 2016-03-31 This volume is a tutorial for the study of dynamical systems on networks. It discusses both methodology and models, including spreading models for social and biological contagions. The authors focus especially on "simple" situations that are analytically tractable, because they are insightful and provide useful springboards for the study of more complicated scenarios. This tutorial, which also includes key pointers to the literature, should be helpful for junior and senior undergraduate students, graduate students, and researchers from mathematics, physics, and engineering who seek to study dynamical systems on networks but who may not have prior experience with graph theory or networks. Mason A. Porter is Professor of Nonlinear and Complex Systems at the Oxford Centre for Industrial and Applied Mathematics, Mathematical Institute, University of Oxford, UK. He is also a member of the CABDyN Complexity Centre and a Tutorial Fellow of Somerville College. James P. Gleeson is Professor of Industrial and Applied Mathematics, and co-Director of MACSI, at the University of Limerick, Ireland.

Metalearning Pavel Brazdil 2008-11-26 Metalearning is the study of principled methods that exploit metaknowledge to obtain efficient models and solutions by adapting machine learning and data mining processes. While the variety of machine learning and data mining techniques now available can, in principle, provide

good model solutions, a methodology is still needed to guide the search for the most appropriate model in an efficient way. Metalearning provides one such methodology that allows systems to become more effective through experience. This book discusses several approaches to obtaining knowledge concerning the performance of machine learning and data mining algorithms. It shows how this knowledge can be reused to select, combine, compose and adapt both algorithms and models to yield faster, more effective solutions to data mining problems. It can thus help developers improve their algorithms and also develop learning systems that can improve themselves. The book will be of interest to researchers and graduate students in the areas of machine learning, data mining and artificial intelligence.

Predictive Analytics with Microsoft Azure Machine Learning Valentine Fontama 2014-11-25 Data Science and Machine Learning are in high demand, as customers are increasingly looking for ways to glean insights from all their data. More customers now realize that Business Intelligence is not enough as the volume, speed and complexity of data now defy traditional analytics tools. While Business Intelligence addresses descriptive and diagnostic analysis, Data Science unlocks new opportunities through predictive and prescriptive analysis. The purpose of this book is to provide a gentle and instructionally organized introduction to the field of data science and machine learning, with a focus on building and deploying predictive models. The book also provides a thorough overview of the Microsoft Azure Machine Learning service using task oriented descriptions and concrete end-to-end examples, sufficient to ensure the reader can immediately begin using this important new service. It describes all aspects of the service from data ingress to applying machine learning and evaluating the resulting model, to deploying the resulting model as a machine learning web service. Finally, this book attempts to have minimal dependencies, so that you can fairly easily pick and choose chapters to read. When dependencies do exist, they are listed at the start and end of the chapter. The simplicity of this new service from Microsoft will help to take Data Science and Machine Learning to a much broader audience than existing products in this space. Learn how you can quickly build and deploy sophisticated predictive models as machine learning web services with the new Azure Machine Learning service from Microsoft.

First Leaves: A Tutorial Introduction to Maple V Bruce W. Char 2012-12-06 This tutorial shows how to use Maple both as a calculator with instant access to hundreds of high-level math routines and as a programming language for more demanding tasks. It covers topics such as the basic data types and statements in the Maple language. It explains the differences between numeric computation and symbolic computation and illustrates how both are used in Maple. Extensive "how-to" examples are used throughout the tutorial to show how common types of calculations can be expressed easily in Maple. The manual also uses many graphics examples to illustrate the way in which 2D and 3D graphics can aid in understanding the behavior of functions.

Modern Cryptology Gilles Brassard 1988 Cryptology is the art and science of secure communication over insecure channels. The primary aim of this book is to provide a self-contained overview of recent cryptologic achievements and techniques in a form that can be understood by readers having no previous acquaintance with cryptology. It can thus be used as independent reading by whoever wishes to get started on the subject. An extensive bibliography of 250 references is included to help the reader deepen his or her understanding and go beyond the topics treated here. This book can also be used as preliminary material for an introductory course on cryptology. Despite its simplicity, it covers enough state-of-the-art material to be nevertheless of interest to the specialist. After a survey of the main secret and public key techniques, various applications are discussed. The last chapter

describes 'quantum cryptography', a revolutionary approach to cryptography that remains secure even against an opponent with unlimited computing power. Quantum crytography is based on the principles of quantum physics.

Operational Modal Analysis of Civil Engineering Structures
Carlo Rainieri 2014-05-16 This book covers all aspects of operational modal analysis for civil engineering, from theoretical background to applications, including measurement hardware, software development, and data processing. In particular, this book provides an extensive description and discussion of OMA methods, their classification and relationship, and advantages and drawbacks. The authors cover both the well-established theoretical background of OMA methods and the most recent developments in the field, providing detailed examples to help the reader better understand the concepts and potentialities of the technique. Additional material is provided (data, software) to help practitioners and students become familiar with OMA. Covering a range of different aspects of OMA, always with the application in mind, the practical perspective adopted in this book makes it ideal for a wide range of readers from researchers to field engineers; graduate and undergraduate students; and technicians interested in structural dynamics, system identification, and Structural Health Monitoring. This book also: Analyzes OMA methods extensively, providing details on implementation not easily found in the literature Offers tutorial for development of customized measurement and data processing systems for LabView and National Instruments programmable hardware Discusses different solutions for automated OMA Contains many explanatory applications on real structures Provides detail on applications of OMA beyond system identification, such as (vibration based monitoring, tensile load estimation, etc.) Includes both theory and applications
Local Electrode Atom Probe Tomography David J. Larson 2013-12-12 This book is the first, single-source guide to successful experiments using the local electrode atom probe (LEAP®) microscope. Coverage is both comprehensive and user friendly, including the fundamentals of preparing specimens for the microscope from a variety of materials, the details of the instrumentation used in data collection, the parameters under which optimal data are collected, the current methods of data reconstruction, and selected methods of data analysis. Tricks of the trade are described that are often learned only through trial and error, allowing users to succeed much more quickly in the challenging areas of specimen preparation and data collection. A closing chapter on applications presents selected, state-of-the-art results using the LEAP microscope.
Maintaining and Troubleshooting Your 3D Printer Charles Bell 2014-09-17 Maintaining and Troubleshooting Your 3D Printer by Charles Bell is your guide to keeping your 3D printer running through preventive maintenance, repair, and diagnosing and solving problems in 3D printing. If you've bought or built a 3D printer such as a MakerBot only to be confounded by jagged edges, corner lift, top layers that aren't solid, or any of a myriad of other problems that plague 3D printer enthusiasts, then here is the book to help you get past all that and recapture the joy of creative fabrication. The book also includes valuable tips for builders and those who want to modify their printers to get the most out of their investment. Good fabrication begins with calibration. Aligning the print bed to support deposition of medium in three dimensions is critical. Even off-the-shelf machines that are pre-built must be aligned and periodically realigned throughout their life cycle. Maintaining and Troubleshooting Your 3D Printer helps you achieve and hold proper alignment. Maintaining and Troubleshooting Your 3D Printer also helps with software and hardware troubleshooting. You'll learn to diagnose and solve firmware calibration problems, filament and feed problems, chassis issues, and more. Finally there are regular maintenance and enhancements. You've invested significantly in your 3D

printer. Protect that investment using the guidance in this book. Learn to clean and lubricate your printer, to maintain the chassis, and know when realignment of the print bed is needed. Learn ways to master your craft and improve the quality of your prints through such things as post-print finishing and filament management. Don't let the challenges of 3D printing stand in the way of creativity. Maintaining and Troubleshooting Your 3D Printer by Charles Bell helps you conquer the challenges and get the most benefit from your expensive investment in personal fabrication.

Tutorials in Endovascular Neurosurgery and Interventional Neuroradiology James Vincent Byrne 2017-06-12 The new edition of this book updates an established text written for trainees and practicing endovascular therapists.The content is based on the curriculum of the Endovascular Neurosurgery MSc degree course at Oxford University and its tutorial system of teaching. The tutorial is a learning episode focused on a particular topic. The book is presented as a series of tutorials, which introduces and guides students through background literature, highlights relevant research data, and provides insights on treatments from an experienced practitioner. Each tutorial covers a different topic to provide a complete review of the subspecialty and its theoretical basis. It is intended to equip the reader with a foundation of knowledge on which to build their clinical practice and a reference base for further study. Its practical approach to endovascular therapy will help the reader to understand recent developments in this rapidly expanding field of medicine.

Deep Learning in Natural Language Processing Li Deng 2018-05-23 In recent years, deep learning has fundamentally changed the landscapes of a number of areas in artificial intelligence, including speech, vision, natural language, robotics, and game playing. In particular, the striking success of deep learning in a wide variety of natural language processing (NLP) applications has served as a benchmark for the advances in one of the most important tasks in artificial intelligence. This book reviews the state of the art of deep learning research and its successful applications to major NLP tasks, including speech recognition and understanding, dialogue systems, lexical analysis, parsing, knowledge graphs, machine translation, question answering, sentiment analysis, social computing, and natural language generation from images. Outlining and analyzing various research frontiers of NLP in the deep learning era, it features self-contained, comprehensive chapters written by leading researchers in the field. A glossary of technical terms and commonly used acronyms in the intersection of deep learning and NLP is also provided. The book appeals to advanced undergraduate and graduate students, post-doctoral researchers, lecturers and industrial researchers, as well as anyone interested in deep learning and natural language processing.

Tutorial Distance Learning Alfred Bork 2012-12-06 Learning is a critical worldwide problem for humans, essential to create a peaceful and happy world. We have serious problems in learning in both wealthy and poor areas. New approaches to learning are needed, as the current system may not rise to the new challenges. This book proposes a new strategy for learning, worldwide and for all ages of students. Computer-based distance learning would be the major delivery mechanism, with very large numbers of students. The very frequent interactions between the student and the computer would be like that with a skilled human teacher. These interactions would take place in the student's native language, in both directions. A typical interaction would be a question to a student, and a free-form student response. Both voice and keyboard student input would be possible. The learning programs would work with each student until mastery is achieved, adapting to the needs of each. Students would be active learners. The book begins with the problems and goals of learning. It considers possible forms of distance learning, looking at the variables involved, current examples of distance learning, and possible future forms including examples from science fiction. It

then investigates student interactions, considering both frequency of interactions and the quality of each interaction. Programs developed in the Educational Technology Center at the University of California, Irvine, illustrate the critical idea of tutorial learning with computers. Production of tutorial learning material and costs for a student hour of learning is discussed. The book ends with suggestions for future progress. Current hardware and software is fully adequate for the tasks described. Development of all required learning units is a major activity. After this development, both better quality of learning and lower costs are very likely. Further experimental work is essential to understand the possibilities.

The Verilog® Hardware Description Language Donald Thomas 2008-09-11 XV From the Old to the New xvii Acknowledgments xx| Verilog A Tutorial Introduction Getting Started 2 A Structural Description 2 Simulating the binaryToESeg Driver 4 Creating Ports For the Module 7 Creating a Testbench For a Module 8 Behavioral Modeling of Combinational Circuits 11 Procedural Models 12 Rules for Synthesizing Combinational Circuits 13 Procedural Modeling of Clocked Sequential Circuits 14 Modeling Finite State Machines 15 Rules for Synthesizing Sequential Systems 18 Non-Blocking Assignment ("

Introduction to Glass Science L. Pye 2012-12-06 Glass technologists are fascinated by glass; explora tion as well as application of glass is expanding and the influx of documentation is bewildering. There were about 200 papers on just semi conduction in glasses in 1970 and one has to scan about 200 papers a month to sense the pulse of glass science. Yet there are many in industry and education in science or engineering who require or wish to have coher ent, comprehensive and contemporary information on this exciting material "glass. " The Tutorial Symposium offered as an Introduction to Glass Science in Alfred represents an earnest attempt to ful fill this need. It has been designed to provide both broad and technical instruction for participants and readers who are not specialists. Glass is not only a material but a condition of matter: the vitreous state. The topic, there fore, is introduced by a careful consideration of the nature of glass, or the vitreous state. The universality of the vitreous state is now generally recognized: not just a few, but very many structures can be obtained without appreciable crystallization. There is no restricted family of struc tures characteristic of glass formation: as long as crys tallization is avoided, every liquid will solidify to a non crystalline sUbstance. Structural analysis in each case is now to be postulated and has become increasingly successful. The Alfred "Introduction to Glass Science" offers a repre sentative overview of methods and results.

Genetic Algorithms and Genetic Programming in Computational Finance Shu-Heng Chen 2012-12-06 After a decade of development, genetic algorithms and genetic programming have become a widely accepted toolkit for computational finance. Genetic Algorithms and Genetic Programming in Computational Finance is a pioneering volume devoted entirely to a systematic and comprehensive review of this subject. Chapters cover various areas of computational finance, including financial forecasting, trading strategies development, cash flow management, option pricing, portfolio management, volatility modeling, arbitraging, and agent-based simulations of artificial stock markets. Two tutorial chapters are also included to help readers quickly grasp the essence of these tools. Finally, a menu-driven software program, Simple GP, accompanies the volume, which will enable readers without a strong programming background to gain hands-on experience in dealing with much of the technical material introduced in this work.

MATLAB for Psychologists Mauro Borgo 2012-03-24 The matrix laboratory interactive computing environment—MATLAB—has brought creativity to research in diverse disciplines, particularly in designing and programming experiments. More commonly used in mathematics and the sciences, it also lends itself to a variety of applications across the field of psychology. For the novice looking

to use it in experimental psychology research, though, becoming familiar with MATLAB can be a daunting task. MATLAB for Psychologists expertly guides readers through the component steps, skills, and operations of the software, with plentiful graphics and examples to match the reader's comfort level. Using an extended illustration, this concise volume explains the program's usefulness at any point in an experiment, without the limits imposed by other types of software. And the authors demonstrate the responsiveness of MATLAB to the individual's research needs, whether the task is programming experiments, creating sensory stimuli, running simulations, or calculating statistics for data analysis. Key features of the coverage: Thinking in a matrix way. Handling and plotting data. Guidelines for improved programming, sound, and imaging. Statistical analysis and signal detection theory indexes. The Graphical User Interface. The Psychophysics Toolbox. MATLAB for Psychologists serves a wide audience of advanced undergraduate and graduate level psychology students, professors, and researchers as well as lab technicians involved in programming psychology experiments.

Formal Methods Teaching João F. Ferreira 2021-11-23 This book constitutes the refereed proceedings of the 4th International Workshop and Tutorial, FMTea 2021, Held as Part of the 4th World Congress on Formal Methods, FM 2021, as a virtual event in November 2021. The 8 full papers presented together with 2 short papers were carefully reviewed and selected from 12 submissions. The papers are organized in topical sections named: experiences and proposals related with online FM learning and teaching, integrating/embedding FM teaching/thinking within other computer science courses, teaching FM for industry, and innovative learning and teaching methods for FM.

First-order and Stochastic Optimization Methods for Machine Learning Guanghui Lan 2020-05-15 This book covers not only foundational materials but also the most recent progresses made during the past few years on the area of

machine learning algorithms. In spite of the intensive research and development in this area, there does not exist a systematic treatment to introduce the fundamental concepts and recent progresses on machine learning algorithms, especially on those based on stochastic optimization methods, randomized algorithms, nonconvex optimization, distributed and online learning, and projection free methods. This book will benefit the broad audience in the area of machine learning, artificial intelligence and mathematical programming community by presenting these recent developments in a tutorial style, starting from the basic building blocks to the most carefully designed and complicated algorithms for machine learning.

A Practical Guide to TPM 2.0 Will Arthur 2015-01-28 A Practical Guide to TPM 2.0: Using the Trusted Platform Module in the New Age of Security is a straight-forward primer for developers. It shows security and TPM concepts, demonstrating their use in real applications that the reader can try out. Simply put, this book is designed to empower and excite the programming community to go out and do cool things with the TPM. The approach is to ramp the reader up quickly and keep their interest.A Practical Guide to TPM 2.0: Using the Trusted Platform Module in the New Age of Security explains security concepts, describes the TPM 2.0 architecture, and provides code and pseudo-code examples in parallel, from very simple concepts and code to highly complex concepts and pseudo-code. The book includes instructions for the available execution environments and real code examples to get readers up and talking to the TPM quickly. The authors then help the users expand on that with pseudo-code descriptions of useful applications using the TPM.

Reasoning Web. Declarative Artificial Intelligence Marco Manna 2020-10-17 This volume contains 8 lecture notes of the 16th Reasoning Web Summer School (RW 2020), held in Oslo, Norway, in June 2020. The Reasoning Web series of annual summer schools has become the prime educational event in the field of reasoning

techniques on the Web, attracting both young and established researchers. The broad theme of this year's summer school was "Declarative Artificial Intelligence" and it covered various aspects of ontological reasoning and related issues that are of particular interest to Semantic Web and Linked Data applications. The following eight lectures have been presented during the school: Introduction to Probabilistic Ontologies, On the Complexity of Learning Description Logic Ontologies, Explanation via Machine Arguing, Stream Reasoning: From Theory to Practice, First-Order Rewritability of Temporal Ontology-Mediated Queries, An Introduction to Answer Set Programming and Some of Its Extensions, Declarative Data Analysis using Limit Datalog Programs, and Knowledge Graphs: Research Directions.

Introduction to Evolutionary Computing Agoston E. Eiben 2013-03-14 The first complete overview of evolutionary computing, the collective name for a range of problem-solving techniques based on principles of biological evolution, such as natural selection and genetic inheritance. The text is aimed directly at lecturers and graduate and undergraduate students. It is also meant for those who wish to apply evolutionary computing to a particular problem or within a given application area. The book contains quick-reference information on the current state-of-the-art in a wide range of related topics, so it is of interest not just to evolutionary computing specialists but to researchers working in other fields.