

## Text Mining Using Python Tro India

Algorithm Design Machine Learning for Data Streams Dynamical Systems with Applications Using Mathematica® Introduction to Python for the Computer and Data Sciences Solving PDEs in Python Geodetic Time Series Analysis in Earth Sciences Is That a Fish in Your Ear? Learning Computer Architecture with Raspberry Pi Seeing the Past with Computers Algorithms for Reinforcement Learning Programming Python Learning Python Innovative Security Solutions for Information Technology and Communications Speech and Computer Marine Hydrodynamics Proceedings of the 8th Python in Science Conference Mobile Health New Perspectives in Information Systems and Technologies Ten Strategies of a World-Class Cybersecurity Operations Center MPIText Mining for Qualitative Data Analysis in the Social Sciences Computational Conflict Research Python for Finance Mobile Lightweight Wireless Systems Digital Forensics and Cyber Crime Least Squares Support Vector Machines Machine Learning for Health Informatics Jupyter for Data Science Authorship Attribution Fitting Models to Biological Data Using Linear and Nonlinear Regression Mapping and the Citizen Sensor Industry 4.0 for SMEs Automatic Digital Document Processing and Management Introduction to RF Propagation Codeless Data Structures and Algorithms Semantic Similarity from Natural Language and Ontology Analysis Mastering Java Machine Learning R for Data Science Innovation in Medicine and Healthcare Systems, and Multimedia Hybrid Intelligent Systems

### **Algorithm Design**

Use your Raspberry Pi to get smart about computing fundamentals In the 1980s, the tech revolution was kickstarted by a flood of relatively inexpensive, highly programmable computers like the Commodore. Now, a second revolution in computing is beginning with the Raspberry Pi. Learning Computer Architecture with the Raspberry Pi is the premier guide to understanding the components of the most exciting tech product available. Thanks to this book, every Raspberry Pi owner can understand how the computer works and how to access all of its hardware and software capabilities. Now, students, hackers, and casual users alike can discover how computers work with Learning Computer Architecture with the Raspberry Pi. This book explains what each and every hardware component does, how they relate to one another, and how they correspond to the components of other computing systems. You'll also learn how programming works and how the operating system relates to the Raspberry Pi's physical components. Co-authored by Eben Upton, one of the creators of the Raspberry Pi, this is a companion volume to the Raspberry Pi User Guide An affordable solution for learning about computer system design considerations and experimenting with low-level programming Understandable descriptions of the functions of memory storage, Ethernet, cameras, processors, and more Gain knowledge of computer design and operation

in general by exploring the basic structure of the Raspberry Pi The Raspberry Pi was created to bring forth a new generation of computer scientists, developers, and architects who understand the inner workings of the computers that have become essential to our daily lives. Learning Computer Architecture with the Raspberry Pi is your gateway to the world of computer system design.

### **Machine Learning for Data Streams**

The financial industry has adopted Python at a tremendous rate recently, with some of the largest investment banks and hedge funds using it to build core trading and risk management systems. This hands-on guide helps both developers and quantitative analysts get started with Python, and guides you through the most important aspects of using Python for quantitative finance. Using practical examples through the book, author Yves Hilpisch also shows you how to develop a full-fledged framework for Monte Carlo simulation-based derivatives and risk analytics, based on a large, realistic case study. Much of the book uses interactive IPython Notebooks, with topics that include: Fundamentals: Python data structures, NumPy array handling, time series analysis with pandas, visualization with matplotlib, high performance I/O operations with PyTables, date/time information handling, and selected best practices Financial topics: mathematical techniques with NumPy, SciPy and SymPy such as regression and optimization; stochastics for Monte Carlo simulation, Value-at-Risk, and Credit-Value-at-Risk calculations;

statistics for normality tests, mean-variance portfolio optimization, principal component analysis (PCA), and Bayesian regression Special topics: performance Python for financial algorithms, such as vectorization and parallelization, integrating Python with Excel, and building financial applications based on Web technologies

### **Dynamical Systems with Applications Using Mathematica®**

Since its release in summer 1994, the Message Passing Interface (MPI) specification has become a standard for message-passing libraries for parallel computations. These volumes present a complete specification of both the MPI-1 and MPI-2 Standards.

### **Introduction to Python for the Computer and Data Sciences**

This book contains a selection of articles from The 2014 World Conference on Information Systems and Technologies (WorldCIST'14), held between the 15th and 18th of April in Funchal, Madeira, Portugal, a global forum for researchers and practitioners to present and discuss recent results and innovations, current trends, professional experiences and challenges of modern Information Systems and Technologies research, technological development and applications. The main

topics covered are: Information and Knowledge Management; Organizational Models and Information Systems; Intelligent and Decision Support Systems; Software Systems, Architectures, Applications and Tools; Computer Networks, Mobility and Pervasive Systems; Radar Technologies; Human-Computer Interaction; Health Informatics and Information Technologies in Education.

### **Solving PDEs in Python**

This book focuses on Least Squares Support Vector Machines (LS-SVMs) which are reformulations to standard SVMs. LS-SVMs are closely related to regularization networks and Gaussian processes but additionally emphasize and exploit primal-dual interpretations from optimization theory. The authors explain the natural links between LS-SVM classifiers and kernel Fisher discriminant analysis. Bayesian inference of LS-SVM models is discussed, together with methods for imposing sparseness and employing robust statistics. The framework is further extended towards unsupervised learning by considering PCA analysis and its kernel version as a one-class modelling problem. This leads to new primal-dual support vector machine formulations for kernel PCA and kernel CCA analysis. Furthermore, LS-SVM formulations are given for recurrent networks and control. In general, support vector machines may pose heavy computational challenges for large data sets. For this purpose, a method of fixed size LS-SVM is proposed where the estimation is done in the primal space in relation to a Nystrom sampling with active selection of

support vectors. The methods are illustrated with several examples.

### **Geodetic Time Series Analysis in Earth Sciences**

Machine learning (ML) is the fastest growing field in computer science, and Health Informatics (HI) is amongst the greatest application challenges, providing future benefits in improved medical diagnoses, disease analyses, and pharmaceutical development. However, successful ML for HI needs a concerted effort, fostering integrative research between experts ranging from diverse disciplines from data science to visualization. Tackling complex challenges needs both disciplinary excellence and cross-disciplinary networking without any boundaries. Following the HCI-KDD approach, in combining the best of two worlds, it is aimed to support human intelligence with machine intelligence. This state-of-the-art survey is an output of the international HCI-KDD expert network and features 22 carefully selected and peer-reviewed chapters on hot topics in machine learning for health informatics; they discuss open problems and future challenges in order to stimulate further research and international progress in this field.

### **Is That a Fish in Your Ear?**

Become an advanced practitioner with this progressive set of master classes on

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application-oriented machine learning About This Book Comprehensive coverage of key topics in machine learning with an emphasis on both the theoretical and practical aspects More than 15 open source Java tools in a wide range of techniques, with code and practical usage. More than 10 real-world case studies in machine learning highlighting techniques ranging from data ingestion up to analyzing the results of experiments, all preparing the user for the practical, real-world use of tools and data analysis. Who This Book Is For This book will appeal to anyone with a serious interest in topics in Data Science or those already working in related areas: ideally, intermediate-level data analysts and data scientists with experience in Java. Preferably, you will have experience with the fundamentals of machine learning and now have a desire to explore the area further, are up to grappling with the mathematical complexities of its algorithms, and you wish to learn the complete ins and outs of practical machine learning. What You Will Learn Master key Java machine learning libraries, and what kind of problem each can solve, with theory and practical guidance. Explore powerful techniques in each major category of machine learning such as classification, clustering, anomaly detection, graph modeling, and text mining. Apply machine learning to real-world data with methodologies, processes, applications, and analysis. Techniques and experiments developed around the latest specializations in machine learning, such as deep learning, stream data mining, and active and semi-supervised learning. Build high-performing, real-time, adaptive predictive models for batch- and stream-based big data learning using the latest tools and methodologies. Get a deeper

understanding of technologies leading towards a more powerful AI applicable in various domains such as Security, Financial Crime, Internet of Things, social networking, and so on. In Detail Java is one of the main languages used by practicing data scientists; much of the Hadoop ecosystem is Java-based, and it is certainly the language that most production systems in Data Science are written in. If you know Java, Mastering Machine Learning with Java is your next step on the path to becoming an advanced practitioner in Data Science. This book aims to introduce you to an array of advanced techniques in machine learning, including classification, clustering, anomaly detection, stream learning, active learning, semi-supervised learning, probabilistic graph modeling, text mining, deep learning, and big data batch and stream machine learning. Accompanying each chapter are illustrative examples and real-world case studies that show how to apply the newly learned techniques using sound methodologies and the best Java-based tools available today. On completing this book, you will have an understanding of the tools and techniques for building powerful machine learning models to solve data science problems in just about any domain. Style and approach A practical guide to help you explore machine learning—and an array of Java-based tools and frameworks—with the help of practical examples and real-world use cases.

### **Learning Computer Architecture with Raspberry Pi**

Following the success of the First MOBILIGHT 2009 in Athens, Greece, the Second

International Conference on Mobile Lightweight Systems (MOBILIGHT) was held in Barcelona, Spain on May 10-12, 2010. It was not an easy decision to carry on organizing a scientific event on wireless communications, where competition is really enormous. This decision was motivated by discussion with many colleagues about the current unprecedented demand for lightweight, wireless communication devices with high usability and performance able to support added-value services in a highly mobile environment. Such devices follow the users everywhere they go (at work, at home, while travelling, in a classroom, etc. ) and result in exciting research, development and business opportunities. Such scenarios clearly demand significant upgrades to the existing communication paradigm in terms of infrastructure, devices and services to support the “anytime, anywhere, any device” philosophy, providing novel and fast-evolving requirements and expectations on - search and development in the field of information and communication technologies. The core issue is to support wireless users' desire for 24/7 network availability and transparent access to "their own" services. In this context, we continue to envision an international forum where practitioners and researchers coming from the many areas involved in lightweight wireless systems' design and deployment would be able to interact and exchange experiences.

### **Seeing the Past with Computers**

A hands-on approach to tasks and techniques in data stream mining and real-time

analytics, with examples in MOA, a popular freely available open-source software framework. Today many information sources—including sensor networks, financial markets, social networks, and healthcare monitoring—are so-called data streams, arriving sequentially and at high speed. Analysis must take place in real time, with partial data and without the capacity to store the entire data set. This book presents algorithms and techniques used in data stream mining and real-time analytics. Taking a hands-on approach, the book demonstrates the techniques using MOA (Massive Online Analysis), a popular, freely available open-source software framework, allowing readers to try out the techniques after reading the explanations. The book first offers a brief introduction to the topic, covering big data mining, basic methodologies for mining data streams, and a simple example of MOA. More detailed discussions follow, with chapters on sketching techniques, change, classification, ensemble methods, regression, clustering, and frequent pattern mining. Most of these chapters include exercises, an MOA-based lab session, or both. Finally, the book discusses the MOA software, covering the MOA graphical user interface, the command line, use of its API, and the development of new methods within MOA. The book will be an essential reference for readers who want to use data stream mining as a tool, researchers in innovation or data stream mining, and programmers who want to create new algorithms for MOA.

### **Algorithms for Reinforcement Learning**

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An introduction to RF propagation that spans all wireless applications. This book provides readers with a solid understanding of the concepts involved in the propagation of electromagnetic waves and of the commonly used modeling techniques. While many books cover RF propagation, most are geared to cellular telephone systems and, therefore, are limited in scope. This title is comprehensive—it treats the growing number of wireless applications that range well beyond the mobile telecommunications industry, including radar and satellite communications. The author's straightforward, clear style makes it easy for readers to gain the necessary background in electromagnetics, communication theory, and probability, so they can advance to propagation models for near-earth, indoor, and earth-space propagation. Critical topics that readers would otherwise have to search a number of resources to find are included:

- \* RF safety chapter provides a concise presentation of FCC recommendations, including application examples, and prepares readers to work with real-world propagating systems
- \* Antenna chapter provides an introduction to a wide variety of antennas and techniques for antenna analysis, including a detailed treatment of antenna polarization and axial ratio; the chapter contains a set of curves that permit readers to estimate polarization loss due to axial ratio mismatch between transmitting and receiving antennas without performing detailed calculations
- \* Atmospheric effects chapter provides curves of typical atmospheric loss, so that expected loss can be determined easily
- \* Rain attenuation chapter features a summary of how to apply the ITU and Crane rain models
- \* Satellite communication chapter provides the details of earth-space

propagation analysis including rain attenuation, atmospheric absorption, path length determination and noise temperature determination. Examples of widely used models provide all the details and information needed to allow readers to apply the models with confidence. References, provided throughout the book, enable readers to explore particular topics in greater depth. Additionally, an accompanying Wiley ftp site provides supporting MathCad files for select figures in the book. With its emphasis on fundamentals, detailed examples, and comprehensive coverage of models and applications, this is an excellent text for upper-level undergraduate or graduate students, or for the practicing engineer who needs to develop an understanding of propagation phenomena.

### **Programming Python**

Get a comprehensive, in-depth introduction to the core Python language with this hands-on book. Based on author Mark Lutz's popular training course, this updated fifth edition will help you quickly write efficient, high-quality code with Python. It's an ideal way to begin, whether you're new to programming or a professional developer versed in other languages. Complete with quizzes, exercises, and helpful illustrations, this easy-to-follow, self-paced tutorial gets you started with both Python 2.7 and 3.3—the latest releases in the 3.X and 2.X lines—plus all other releases in common use today. You'll also learn some advanced language features that recently have become more common in Python code. Explore Python's major

built-in object types such as numbers, lists, and dictionaries Create and process objects with Python statements, and learn Python's general syntax model Use functions to avoid code redundancy and package code for reuse Organize statements, functions, and other tools into larger components with modules Dive into classes: Python's object-oriented programming tool for structuring code Write large programs with Python's exception-handling model and development tools Learn advanced Python tools, including decorators, descriptors, metaclasses, and Unicode processing

### **Learning Python**

This book highlights recent research on Hybrid Intelligent Systems and their various practical applications. It presents 56 selected papers from the 18th International Conference on Hybrid Intelligent Systems (HIS 2018), which was held at the Instituto Superior de Engenharia do Porto (ISEP), Porto, Portugal from December 13 to 15, 2018. A premier conference in the field of Artificial Intelligence, HIS 2018 brought together researchers, engineers and practitioners whose work involves intelligent systems and their applications in industry. Including contributions by authors from over 30 countries, the book offers a valuable reference guide for all researchers, students and practitioners in the fields of Computer Science and Engineering.

## **Innovative Security Solutions for Information Technology and Communications**

This text reviews the issues involved in handling and processing digital documents. Examining the full range of a document's lifetime, the book covers acquisition, representation, security, pre-processing, layout analysis, understanding, analysis of single components, information extraction, filing, indexing and retrieval. Features: provides a list of acronyms and a glossary of technical terms; contains appendices covering key concepts in machine learning, and providing a case study on building an intelligent system for digital document and library management; discusses issues of security, and legal aspects of digital documents; examines core issues of document image analysis, and image processing techniques of particular relevance to digitized documents; reviews the resources available for natural language processing, in addition to techniques of linguistic analysis for content handling; investigates methods for extracting and retrieving data/information from a document.

## **Speech and Computer**

This open access book brings together a set of original studies that use cutting-edge computational methods to investigate conflict at various geographic scales

and degrees of intensity and violence. Methodologically, this book covers a variety of computational approaches from text mining and machine learning to agent-based modelling and social network analysis. Empirical cases range from migration policy framing in North America and street protests in Iran to violence against civilians in Congo and food riots world-wide. Supplementary materials in the book include a comprehensive list of the datasets on conflict and dissent, as well as resources to online repositories where the annotated code and data of individual chapters can be found and where (agent-based) models can be re-produced and altered. These materials are a valuable resource for those wishing to retrace and learn from the analyses described in this volume and adapt and apply them to their own research interests. By bringing together novel research through an international team of scholars from a range of disciplines, Computational Conflict Research pioneers and maps this emerging field. The book will appeal to students, scholars, and anyone interested in the prospects of using computational social sciences to advance our understanding of conflict dynamics.

### **Marine Hydrodynamics**

This book constitutes the proceedings of the 21st International Conference on Speech and Computer, SPECOM 2019, held in Istanbul, Turkey, in August 2019. The 57 papers presented were carefully reviewed and selected from 86 submissions. The papers present current research in the area of computer speech processing

including audio signal processing, automatic speech recognition, speaker recognition, computational paralinguistics, speech synthesis, sign language and multimodal processing, and speech and language resources.

### **Proceedings of the 8th Python in Science Conference**

A textbook that offers a unified treatment of the applications of hydrodynamics to marine problems. The applications of hydrodynamics to naval architecture and marine engineering expanded dramatically in the 1960s and 1970s. This classic textbook, originally published in 1977, filled the need for a single volume on the applications of hydrodynamics to marine problems. The book is solidly based on fundamentals, but it also guides the student to an understanding of engineering applications through its consideration of realistic configurations. The book takes a balanced approach between theory and empirics, providing the necessary theoretical background for an intelligent evaluation and application of empirical procedures. It also serves as an introduction to more specialized research methods. It unifies the seemingly diverse problems of marine hydrodynamics by examining them not as separate problems but as related applications of the general field of hydrodynamics. The book evolved from a first-year graduate course in MIT's Department of Ocean Engineering. A knowledge of advanced calculus is assumed. Students will find a previous introductory course in fluid dynamics helpful, but the book presents the necessary fundamentals in a self-

contained manner. The 40th anniversary of this pioneering book offers a foreword by John Grue. Contents Model Testing • The Motion of a Viscous Fluid • The Motion of an Ideal Fluid • Lifting Surfaces • Waves and Wave Effects • Hydrodynamics of Slender Bodies

### **Mobile Health**

The proceedings of the 8th annual Python for Scientific Computing conference.

### **New Perspectives in Information Systems and Technologies**

Authorship Attribution surveys the history and present state of the discipline, presenting some comparative results where available. It also provides a theoretical and empirically-tested basis for further work. Many modern techniques are described and evaluated, along with some insights for application for novices and experts alike.

### **Ten Strategies of a World-Class Cybersecurity Operations Center**

For introductory-level Python programming and/or data-science courses. A

groundbreaking, flexible approach to computer science and data science The Deitels' Introduction to Python for Computer Science and Data Science: Learning to Program with AI, Big Data and the Cloud offers a unique approach to teaching introductory Python programming, appropriate for both computer-science and data-science audiences. Providing the most current coverage of topics and applications, the book is paired with extensive traditional supplements as well as Jupyter Notebooks supplements. Real-world datasets and artificial-intelligence technologies allow students to work on projects making a difference in business, industry, government and academia. Hundreds of examples, exercises, projects (EEPs), and implementation case studies give students an engaging, challenging and entertaining introduction to Python programming and hands-on data science. The book's modular architecture enables instructors to conveniently adapt the text to a wide range of computer-science and data-science courses offered to audiences drawn from many majors. Computer-science instructors can integrate as much or as little data-science and artificial-intelligence topics as they'd like, and data-science instructors can integrate as much or as little Python as they'd like. The book aligns with the latest ACM/IEEE CS-and-related computing curriculum initiatives and with the Data Science Undergraduate Curriculum Proposal sponsored by the National Science Foundation.

### **MPI**

This book provides an introduction to the theory of dynamical systems with the aid of the Mathematica® computer algebra package. The book has a very hands-on approach and takes the reader from basic theory to recently published research material. Emphasized throughout are numerous applications to biology, chemical kinetics, economics, electronics, epidemiology, nonlinear optics, mechanics, population dynamics, and neural networks. Theorems and proofs are kept to a minimum. The first section deals with continuous systems using ordinary differential equations, while the second part is devoted to the study of discrete dynamical systems.

### **Text Mining for Qualitative Data Analysis in the Social Sciences**

This book contains the proceedings of the KES International conferences on Innovation in Medicine and Healthcare (KES-InMed-19) and Intelligent Interactive Multimedia Systems and Services (KES-IIMSS-19), held on 17–19 June 2019 and co-located in St. Julians, on the island of Malta, as part of the KES Smart Digital Futures 2019 multi-theme conference. The major areas covered by KES-InMed-19 include: Digital IT Architecture in Healthcare; Advanced ICT for Medical and Healthcare; Biomedical Engineering, Trends, Research and Technologies and Healthcare Support System. The major areas covered by KES-IIMSS-19 were: Interactive Technologies; Artificial Intelligence and Data Analytics; Intelligent Services and Architectures and Applications. This book is of use to researchers in

these vibrant areas, managers, industrialists and anyone wishing to gain an overview of the latest research in these fields.

### **Computational Conflict Research**

A guide to Python, the object-oriented scripting language, discusses the use of Python in Internet and web programming; address Python's C intergration tools; and features many examples that expand as new topics are introduced. Original. (Intermediate/Advanced)

### **Python for Finance**

This is the eBook of the printed book and may not include any media, website access codes, or print supplements that may come packaged with the bound book. Algorithm Design introduces algorithms by looking at the real-world problems that motivate them. The book teaches students a range of design and analysis techniques for problems that arise in computing applications. The text encourages an understanding of the algorithm design process and an appreciation of the role of algorithms in the broader field of computer science. August 6, 2009 Author, Jon Kleinberg, was recently cited in the New York Times for his statistical analysis research in the Internet age.

## **Mobile Lightweight Wireless Systems**

This book provides an essential appraisal of the recent advances in technologies, mathematical models and computational software used by those working with geodetic data. It explains the latest methods in processing and analyzing geodetic time series data from various space missions (i.e. GNSS, GRACE) and other technologies (i.e. tide gauges), using the most recent mathematical models. The book provides practical examples of how to apply these models to estimate sea level rise as well as rapid and evolving land motion changes due to gravity (ice sheet loss) and earthquakes respectively. It also provides a necessary overview of geodetic software and where to obtain them.

## **Digital Forensics and Cyber Crime**

Ten Strategies of a World-Class Cyber Security Operations Center conveys MITRE's accumulated expertise on enterprise-grade computer network defense. It covers ten key qualities of leading Cyber Security Operations Centers (CSOCs), ranging from their structure and organization, to processes that best enable smooth operations, to approaches that extract maximum value from key CSOC technology investments. This book offers perspective and context for key decision points in structuring a CSOC, such as what capabilities to offer, how to architect large-scale

data collection and analysis, and how to prepare the CSOC team for agile, threat-based response. If you manage, work in, or are standing up a CSOC, this book is for you. It is also available on MITRE's website, [www.mitre.org](http://www.mitre.org).

### **Least Squares Support Vector Machines**

In the era of self-taught developers and programmers, essential topics in the industry are frequently learned without a formal academic foundation. A solid grasp of data structures and algorithms (DSA) is imperative for anyone looking to do professional software development and engineering, but classes in the subject can be dry or spend too much time on theory and unnecessary readings.

Regardless of your programming language background, *Codeless Data Structures and Algorithms* has you covered. In this book, author Armstrong Subero will help you learn DSAs without writing a single line of code. Straightforward explanations and diagrams give you a confident handle on the topic while ensuring you never have to open your code editor, use a compiler, or look at an integrated development environment. Subero introduces you to linear, tree, and hash data structures and gives you important insights behind the most common algorithms that you can directly apply to your own programs. *Codeless Data Structures and Algorithms* provides you with the knowledge about DSAs that you will need in the professional programming world, without using any complex mathematics or irrelevant information. Whether you are a new developer seeking a basic

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understanding of the subject or a decision-maker wanting a grasp of algorithms to apply to your projects, this book belongs on your shelf. Quite often, a new, refreshing, and unpretentious approach to a topic is all you need to get inspired. What You'll Learn Understand tree data structures without delving into unnecessary details or going into too much theory Get started learning linear data structures with a basic discussion on computer memory Study an overview of arrays, linked lists, stacks and queues Who This Book Is For This book is for beginners, self-taught developers and programmers, and anyone who wants to understand data structures and algorithms but don't want to wade through unnecessary details about quirks of a programming language or don't have time to sit and read a massive book on the subject. This book is also useful for non-technical decision-makers who are curious about how algorithms work.

### **Machine Learning for Health Informatics**

This open access book explores the concept of Industry 4.0, which presents a considerable challenge for the production and service sectors. While digitization initiatives are usually integrated into the central corporate strategy of larger companies, smaller firms often have problems putting Industry 4.0 paradigms into practice. Small and medium-sized enterprises (SMEs) possess neither the human nor financial resources to systematically investigate the potential and risks of introducing Industry 4.0. Addressing this obstacle, the international team of

authors focuses on the development of smart manufacturing concepts, logistics solutions and managerial models specifically for SMEs. Aiming to provide methodological frameworks and pilot solutions for SMEs during their digital transformation, this innovative and timely book will be of great use to scholars researching technology management, digitization and small business, as well as practitioners within manufacturing companies.

### **Jupyter for Data Science**

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.

### **Authorship Attribution**

This book constitutes the thoroughly refereed proceedings of the 11th International Conference on Security for Information Technology and Communications, SecITC 2018, held in Bucharest, Romania, in November 2018. The 35 revised full papers presented together with 3 invited talks were carefully reviewed and selected from 70 submissions. The papers present advances in the theory, design, implementation, analysis, verification, or evaluation of secure systems and algorithms.

### **Fitting Models to Biological Data Using Linear and Nonlinear Regression**

Maps are a fundamental resource in a diverse array of applications ranging from everyday activities, such as route planning through the legal demarcation of space to scientific studies, such as those seeking to understand biodiversity and inform the design of nature reserves for species conservation. For a map to have value, it should provide an accurate and timely representation of the phenomenon depicted and this can be a challenge in a dynamic world. Fortunately, mapping activities have benefitted greatly from recent advances in geoinformation technologies. Satellite remote sensing, for example, now offers unparalleled data acquisition and authoritative mapping agencies have developed systems for the routine production of maps in accordance with strict standards. Until recently, much mapping activity

was in the exclusive realm of authoritative agencies but technological development has also allowed the rise of the amateur mapping community. The proliferation of inexpensive and highly mobile and location aware devices together with Web 2.0 technology have fostered the emergence of the citizen as a source of data. Mapping presently benefits from vast amounts of spatial data as well as people able to provide observations of geographic phenomena, which can inform map production, revision and evaluation. The great potential of these developments is, however, often limited by concerns. The latter span issues from the nature of the citizens through the way data are collected and shared to the quality and trustworthiness of the data. This book reports on some of the key issues connected with the use of citizen sensors in mapping. It arises from a European Co-operation in Science and Technology (COST) Action, which explored issues linked to topics ranging from citizen motivation, data acquisition, data quality and the use of citizen derived data in the production of maps that rival, and sometimes surpass, maps arising from authoritative agencies.

### **Mapping and the Citizen Sensor**

Artificial Intelligence federates numerous scientific fields in the aim of developing machines able to assist human operators performing complex treatments---most of which demand high cognitive skills (e.g. learning or decision processes). Central to this quest is to give machines the ability to estimate the likeness or similarity

between things in the way human beings estimate the similarity between stimuli. In this context, this book focuses on semantic measures: approaches designed for comparing semantic entities such as units of language, e.g. words, sentences, or concepts and instances defined into knowledge bases. The aim of these measures is to assess the similarity or relatedness of such semantic entities by taking into account their semantics, i.e. their meaning---intuitively, the words tea and coffee, which both refer to stimulating beverage, will be estimated to be more semantically similar than the words toffee (confection) and coffee, despite that the last pair has a higher syntactic similarity. The two state-of-the-art approaches for estimating and quantifying semantic similarities/relatedness of semantic entities are presented in detail: the first one relies on corpora analysis and is based on Natural Language Processing techniques and semantic models while the second is based on more or less formal, computer-readable and workable forms of knowledge such as semantic networks, thesauri or ontologies. Semantic measures are widely used today to compare units of language, concepts, instances or even resources indexed by them (e.g., documents, genes). They are central elements of a large variety of Natural Language Processing applications and knowledge-based treatments, and have therefore naturally been subject to intensive and interdisciplinary research efforts during last decades. Beyond a simple inventory and categorization of existing measures, the aim of this monograph is to convey novices as well as researchers of these domains toward a better understanding of semantic similarity estimation and more generally semantic measures. To this end,

we propose an in-depth characterization of existing proposals by discussing their features, the assumptions on which they are based and empirical results regarding their performance in particular applications. By answering these questions and by providing a detailed discussion on the foundations of semantic measures, our aim is to give the reader key knowledge required to: (i) select the more relevant methods according to a particular usage context, (ii) understand the challenges offered to this field of study, (iii) distinguish room of improvements for state-of-the-art approaches and (iv) stimulate creativity toward the development of new approaches. In this aim, several definitions, theoretical and practical details, as well as concrete applications are presented

### **Industry 4.0 for SMEs**

Most biologists use nonlinear regression more than any other statistical technique, but there are very few places to learn about curve-fitting. This book, by the author of the very successful *Intuitive Biostatistics*, addresses this relatively focused need of an extraordinarily broad range of scientists.

### **Automatic Digital Document Processing and Management**

Reinforcement learning is a learning paradigm concerned with learning to control a

system so as to maximize a numerical performance measure that expresses a long-term objective. What distinguishes reinforcement learning from supervised learning is that only partial feedback is given to the learner about the learner's predictions. Further, the predictions may have long term effects through influencing the future state of the controlled system. Thus, time plays a special role. The goal in reinforcement learning is to develop efficient learning algorithms, as well as to understand the algorithms' merits and limitations. Reinforcement learning is of great interest because of the large number of practical applications that it can be used to address, ranging from problems in artificial intelligence to operations research or control engineering. In this book, we focus on those algorithms of reinforcement learning that build on the powerful theory of dynamic programming. We give a fairly comprehensive catalog of learning problems, describe the core ideas, note a large number of state of the art algorithms, followed by the discussion of their theoretical properties and limitations.

### **Introduction to RF Propagation**

Gregor Wiedemann evaluates text mining applications for social science studies with respect to conceptual integration of consciously selected methods, systematic optimization of algorithms and workflows, and methodological reflections relating to empirical research. In an exemplary study, he introduces workflows to analyze a corpus of around 600,000 newspaper articles on the subject of “democratic

demarcation” in Germany. He provides a valuable resource for innovative measures to social scientists and computer scientists in the field of applied natural language processing.

### **Codeless Data Structures and Algorithms**

Your one-stop guide to building an efficient data science pipeline using Jupyter  
About This Book Get the most out of your Jupyter notebook to complete the trickiest of tasks in Data Science Learn all the tasks in the data science pipeline—from data acquisition to visualization—and implement them using Jupyter Get ahead of the curve by mastering all the applications of Jupyter for data science with this unique and intuitive guide Who This Book Is For This book targets students and professionals who wish to master the use of Jupyter to perform a variety of data science tasks. Some programming experience with R or Python, and some basic understanding of Jupyter, is all you need to get started with this book. What You Will Learn Understand why Jupyter notebooks are a perfect fit for your data science tasks Perform scientific computing and data analysis tasks with Jupyter Interpret and explore different kinds of data visually with charts, histograms, and more Extend SQL's capabilities with Jupyter notebooks Combine the power of R and Python 3 with Jupyter to create dynamic notebooks Create interactive dashboards and dynamic presentations Master the best coding practices and deploy your Jupyter notebooks efficiently In Detail Jupyter Notebook

is a web-based environment that enables interactive computing in notebook documents. It allows you to create documents that contain live code, equations, and visualizations. This book is a comprehensive guide to getting started with data science using the popular Jupyter notebook. If you are familiar with Jupyter notebook and want to learn how to use its capabilities to perform various data science tasks, this is the book for you! From data exploration to visualization, this book will take you through every step of the way in implementing an effective data science pipeline using Jupyter. You will also see how you can utilize Jupyter's features to share your documents and codes with your colleagues. The book also explains how Python 3, R, and Julia can be integrated with Jupyter for various data science tasks. By the end of this book, you will comfortably leverage the power of Jupyter to perform various tasks in data science successfully. Style and approach This book is a perfect blend of concepts and practical examples, written in a way that is very easy to understand and implement. It follows a logical flow where you will be able to build on your understanding of the different Jupyter features with every chapter.

### **Semantic Similarity from Natural Language and Ontology Analysis**

Recent developments in computer technology are providing historians with new

ways to see—and seek to hear, touch, or smell—traces of the past. Place-based augmented reality applications are an increasingly common feature at heritage sites and museums, allowing historians to create immersive, multifaceted learning experiences. Now that computer vision can be directed at the past, research involving thousands of images can recreate lost or destroyed objects or environments, and discern patterns in vast datasets that could not be perceived by the naked eye. *Seeing the Past with Computers* is a collection of twelve thought-pieces on the current and potential uses of augmented reality and computer vision in historical research, teaching, and presentation. The experts gathered here reflect upon their experiences working with new technologies, share their ideas for best practices, and assess the implications of—and imagine future possibilities for—new methods of historical study. Among the experimental topics they explore are the use of augmented reality that empowers students to challenge the presentation of historical material in their textbooks; the application of seeing computers to unlock unusual cultural knowledge, such as the secrets of vaudevillian stage magic; hacking facial recognition technology to reveal victims of racism in a century-old Australian archive; and rebuilding the soundscape of an Iron Age village with aural augmented reality. This volume is a valuable resource for scholars and students of history and the digital humanities more broadly. It will inspire them to apply innovative methods to open new paths for conducting and sharing their own research.

## **Mastering Java Machine Learning**

This book constitutes the refereed proceedings of the 10th International Conference on Digital Forensics and Cyber Crime, ICDF2C 2018, held in New Orleans, LA, USA, in September 2018. The 11 reviewed full papers and 1 short paper were selected from 33 submissions and are grouped in topical sections on carving and data hiding, android, forensic readiness, hard drives and digital forensics, artefact correlation.

## **R for Data Science**

A New York Times Notable Book for 2011 One of The Economist's 2011 Books of the Year People speak different languages, and always have. The Ancient Greeks took no notice of anything unless it was said in Greek; the Romans made everyone speak Latin; and in India, people learned their neighbors' languages—as did many ordinary Europeans in times past (Christopher Columbus knew Italian, Portuguese, and Castilian Spanish as well as the classical languages). But today, we all use translation to cope with the diversity of languages. Without translation there would be no world news, not much of a reading list in any subject at college, no repair manuals for cars or planes; we wouldn't even be able to put together flat-pack furniture. *Is That a Fish in Your Ear?* ranges across the whole of human experience,

from foreign films to philosophy, to show why translation is at the heart of what we do and who we are. Among many other things, David Bellos asks: What's the difference between translating unprepared natural speech and translating Madame Bovary? How do you translate a joke? What's the difference between a native tongue and a learned one? Can you translate between any pair of languages, or only between some? What really goes on when world leaders speak at the UN? Can machines ever replace human translators, and if not, why? But the biggest question Bellos asks is this: How do we ever really know that we've understood what anybody else says—in our own language or in another? Surprising, witty, and written with great joie de vivre, this book is all about how we comprehend other people and shows us how, ultimately, translation is another name for the human condition.

### **Innovation in Medicine and Healthcare Systems, and Multimedia**

This book offers a comprehensive report on the technological aspects of Mobile Health (mHealth) and discusses the main challenges and future directions in the field. It is divided into eight parts: (1) preventive and curative medicine; (2) remote health monitoring; (3) interoperability; (4) framework, architecture, and software/hardware systems; (5) cloud applications; (6) radio technologies and

applications; (7) communication networks and systems; and (8) security and privacy mechanisms. The first two parts cover sensor-based and bedside systems for remotely monitoring patients' health condition, which aim at preventing the development of health problems and managing the prognosis of acute and chronic diseases. The related chapters discuss how new sensing and wireless technologies can offer accurate and cost-effective means for monitoring and evaluating behavior of individuals with dementia and psychiatric disorders, such as wandering behavior and sleep impairments. The following two parts focus on architectures and higher level systems, and on the challenges associated with their interoperability and scalability, two important aspects that stand in the way of the widespread deployment of mHealth systems. The remaining parts focus on telecommunication support systems for mHealth, including radio technologies, communication and cloud networks, and secure health-related applications and systems. All in all, the book offers a snapshot of the state-of-art in mHealth systems, and addresses the needs of a multidisciplinary audience, including engineers, computer scientists, healthcare providers, and medical professionals, working in both academia and the industry, as well as stakeholders at government agencies and non-profit organizations.

### **Hybrid Intelligent Systems**

"This book introduces you to R, RStudio, and the tidyverse, a collection of R

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packages designed to work together to make data science fast, fluent, and fun. Suitable for readers with no previous programming experience"--

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