

data science textbooks

data science textbooks are essential resources for anyone looking to deepen their understanding of this rapidly evolving field. These textbooks cover a wide array of topics, including statistical methods, machine learning algorithms, data visualization techniques, and ethical considerations in data science. As the demand for data science professionals continues to grow, the importance of well-structured and comprehensive educational materials becomes increasingly apparent. In this article, we will explore the various types of data science textbooks available, recommend some of the best titles, and discuss how to choose the right textbook based on your needs and expertise.

The following sections will guide you through the landscape of data science literature, providing insights into foundational concepts, advanced topics, and practical applications. We will also look at supplementary resources that can complement your learning journey.

- Introduction to Data Science Textbooks
- Types of Data Science Textbooks
- Recommended Data Science Textbooks
- How to Choose the Right Data Science Textbook
- Supplementary Resources for Data Science Learning
- Future Trends in Data Science Education

Types of Data Science Textbooks

Data science textbooks can be categorized into several types, each serving different educational purposes and audiences. Understanding these categories can help learners select the materials that best fit their needs.

Foundational Textbooks

Foundational textbooks are designed for beginners who are new to data science. These books typically cover the fundamental concepts, languages, and tools used in the field. They introduce readers to essential topics such as data manipulation, basic statistics, and introductory programming.

Advanced Textbooks

Advanced textbooks are intended for those with prior knowledge of data science who wish to delve deeper into specific areas. These books often cover complex topics such as machine learning, deep learning, big data technologies, and advanced statistical methods. They may also focus on specialized applications of data science in various industries.

Practical Guides

Practical guides emphasize hands-on learning and real-world applications of data science techniques. These textbooks often include case studies, coding examples, and exercises that allow readers to apply their knowledge. They are particularly valuable for practitioners looking to enhance their skills in a practical context.

Reference Books

Reference books serve as comprehensive resources that provide detailed information on specific subjects within data science. These books are typically used as a source of information rather than a primary learning tool. They can be invaluable for professionals who need to look up methodologies or frameworks quickly.

Recommended Data Science Textbooks

There are numerous data science textbooks available, each with its unique strengths and focus areas. Here are some of the most highly recommended titles:

1. "Python for Data Analysis" by Wes McKinney

This book is a must-read for anyone working with data in Python. Written by the creator of the Pandas library, it provides a thorough introduction to data manipulation and analysis using Python. The book covers key libraries such as NumPy and Pandas, making it essential for both beginners and experienced practitioners.

2. "An Introduction to Statistical Learning" by Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani

This textbook is ideal for those looking to understand statistical modeling and machine learning. It offers clear explanations of statistical concepts and practical guidance on implementing them in R. The book includes numerous examples and exercises, making it suitable for both students and professionals.

3. "Deep Learning" by Ian Goodfellow, Yoshua Bengio, and Aaron Courville

For readers interested in the cutting-edge field of deep learning, this textbook provides an in-depth exploration of neural networks and their applications. It covers theoretical foundations as well as practical implementation aspects, making it an essential resource for those pursuing advanced studies in artificial intelligence.

4. "Data Science for Business" by Foster Provost and Tom Fawcett

This book bridges the gap between data science and business strategy. It emphasizes how data-driven decision-making can be integrated into business practices. Readers will gain insights into predictive analytics and data mining techniques while understanding their implications in various business contexts.

5. "The Elements of Statistical Learning" by Trevor Hastie, Robert Tibshirani, and Jerome Friedman

Often considered a classic in the field, this book provides a comprehensive overview of statistical learning techniques. It is particularly beneficial for advanced learners and practitioners looking to deepen their understanding of machine learning algorithms and their applications.

How to Choose the Right Data Science Textbook

Selecting the right data science textbook can significantly impact your learning experience. Here are several factors to consider when making your choice:

Identify Your Learning Goals

Before selecting a textbook, it is crucial to clarify your learning objectives. Are you looking to gain foundational knowledge, or do you want to specialize in a particular area? Understanding your goals will help you narrow down your options.

Consider Your Current Skill Level

Your current expertise in data science should guide your selection. Beginners may benefit from foundational texts, while experienced practitioners might prefer advanced textbooks that delve into specialized topics.

Evaluate the Content Structure

Look for textbooks with clear organization and well-defined sections. Consider whether the book includes practical exercises, case studies, and examples that can enhance your understanding and application of the material.

Read Reviews and Recommendations

Consult reviews from other readers and recommendations from instructors or professionals in the field. Feedback can provide valuable insights into the effectiveness and quality of the textbook.

Supplementary Resources for Data Science Learning

In addition to textbooks, there are various supplementary resources that can enhance your data science education. These resources can provide additional context, examples, and practical experience.

Online Courses and Tutorials

Many platforms offer online courses in data science that complement the content found in textbooks. These courses often include video lectures, quizzes, and hands-on projects.

Webinars and Workshops

Participating in webinars and workshops can provide exposure to the latest trends and technologies in data science. These events often feature industry experts sharing their insights and experiences.

Research Papers and Journals

Reading academic research papers and journals can deepen your understanding of advanced topics in data science. These publications often present cutting-edge research and emerging methodologies.

Future Trends in Data Science Education

As technology and methodologies in data science continue to evolve, so too does the landscape of data science education. Emerging trends include the integration of artificial intelligence into learning platforms and the emphasis on practical, hands-on experience through project-based courses.

Moreover, the increasing importance of data ethics and responsible data usage is likely to influence the content of future textbooks, ensuring that learners are well-equipped to navigate the ethical challenges in the field.

Finally, the rise of interdisciplinary approaches in data science education means that future textbooks may increasingly incorporate insights from fields such as social sciences, computer science, and information technology, providing a more holistic understanding of the subject.

Q: What are the best textbooks for beginners in data science?

A: Some of the best textbooks for beginners include "Python for Data Analysis" by Wes McKinney and "An Introduction to Statistical Learning" by Gareth James et al. These books cover fundamental concepts and provide practical guidance for newcomers.

Q: Are there any textbooks focused on machine learning?

A: Yes, "Deep Learning" by Ian Goodfellow and "The Elements of Statistical Learning" by Trevor Hastie et al. are excellent resources that focus specifically on machine learning techniques and their applications.

Q: How can I effectively use a data science textbook for self-study?

A: To effectively use a data science textbook for self-study, set clear learning goals, create a study schedule, engage with exercises and examples, and consider supplementing your reading with online courses or tutorials.

Q: What is the role of ethics in data science textbooks?

A: The role of ethics in data science textbooks is becoming increasingly significant, with many texts now addressing ethical considerations, data privacy, and responsible data usage to prepare learners for real-world challenges.

Q: Can I learn data science without a formal textbook?

A: While a formal textbook can provide structured learning, it is possible to learn data science through online courses, tutorials, and practical projects. However, textbooks often provide comprehensive coverage of foundational concepts that can enhance your understanding.

Q: How often should I update my data science textbooks?

A: Given the rapid evolution of data science, it is advisable to update your textbooks every few years to incorporate the latest methods, tools, and industry standards. Keeping abreast of new editions will ensure you have access to current information.

Q: Are there textbooks that cover data visualization techniques?

A: Yes, there are several textbooks dedicated to data visualization, such as "The Visual Display of Quantitative Information" by Edward Tufte and "Storytelling with Data" by Cole Nussbaumer Knaflic, which provide foundational principles and practical techniques for effective visualization.

Q: What is the significance of programming languages in data science textbooks?

A: Programming languages, such as Python and R, are integral to data science practices. Textbooks often emphasize these languages to teach data manipulation, statistical analysis, and machine learning, showcasing their practical applications in the field.

Q: How can I find the right balance between theory and practice in data science textbooks?

A: Look for textbooks that offer a blend of theoretical concepts and practical examples. Books with exercises, case studies, and real-world applications will help you achieve a balanced understanding of the subject.

Data Science Textbooks

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data science textbooks: An Introduction to Data Science Jeffrey S. Saltz, Jeffrey M. Stanton, 2017-08-25 An Introduction to Data Science is an easy-to-read, gentle introduction for advanced undergraduate, certificate, and graduate students coming from a wide range of backgrounds into the world of data science. After introducing the basic concepts of data science, the book builds on these foundations to explain data science techniques using the R programming language and RStudio® from the ground up. Short chapters allow instructors to group concepts together for a semester course and provide students with manageable amounts of information for each concept. By taking students systematically through the R programming environment, the book takes the fear out of data science and familiarizes students with the environment so they can be successful when performing advanced functions. The authors cover statistics from a conceptual standpoint, focusing on how to use and interpret statistics, rather than the math behind the statistics. This text then demonstrates how to use data effectively and efficiently to construct models, predict outcomes, visualize data, and make decisions. Accompanying digital resources provide code and datasets for instructors and learners to perform a wide range of data science tasks.

data science textbooks: Data Science from Scratch Joel Grus, 2015-04-25 This is a first-principles-based, practical introduction to the fundamentals of data science aimed at the mathematically-comfortable reader with some programming skills. The book covers: The important parts of Python to know The important parts of Math / Probability / Statistics to know The basics of data science How commonly-used data science techniques work (learning by implementing them) What is Map-Reduce and how to do it in Python Other applications such as NLP, Network Analysis, and more

data science textbooks: Data Science John D. Kelleher, Brendan Tierney, 2018-04-13 A concise introduction to the emerging field of data science, explaining its evolution, relation to machine learning, current uses, data infrastructure issues, and ethical challenges. The goal of data science is to improve decision making through the analysis of data. Today data science determines the ads we see online, the books and movies that are recommended to us online, which emails are filtered into our spam folders, and even how much we pay for health insurance. This volume in the MIT Press Essential Knowledge series offers a concise introduction to the emerging field of data science, explaining its evolution, current uses, data infrastructure issues, and ethical challenges. It has never been easier for organizations to gather, store, and process data. Use of data science is driven by the rise of big data and social media, the development of high-performance computing, and the emergence of such powerful methods for data analysis and modeling as deep learning. Data science

encompasses a set of principles, problem definitions, algorithms, and processes for extracting non-obvious and useful patterns from large datasets. It is closely related to the fields of data mining and machine learning, but broader in scope. This book offers a brief history of the field, introduces fundamental data concepts, and describes the stages in a data science project. It considers data infrastructure and the challenges posed by integrating data from multiple sources, introduces the basics of machine learning, and discusses how to link machine learning expertise with real-world problems. The book also reviews ethical and legal issues, developments in data regulation, and computational approaches to preserving privacy. Finally, it considers the future impact of data science and offers principles for success in data science projects.

data science textbooks: Data Science for Beginners Prof John Smith, 2018-12-12 DATA SCIENCE FOR BEGINNERS Introduction to Data Science: Python,Coding, Application, Statistics,Decision Tree, Neural Network, and Linear Algebra WHAT THIS BOOK WILL DO FOR YOU We will talk about what is the need for data science and then what exactly is data science some definitions and understand. The differences between data science and business intelligence,Then we will talk about the prerequisites for learning data science, and then what does the data scientist do. What are the activities performed by a data scientist as a part of his daily life and then we will talk about the data science lifecycle witha quick example and briefly touch upon the demand or ever-increasing demand for data scientist. Benefits of Data science Data Science: Automobile Data science: Aviation Data science can also be used to make promotional offers. Chapters Data science: Its Advantage Data science: Its Definition Process in data science Difference between business intelligence and data science Prerequisites for data science Machine learning. Data science: Tools and skills in data science. Data Science: Machine-learning algorithms Data science: Life cycle of a data science Data science: Exploratory data analysis Data science: Techniques for exploratory data analysis

data science textbooks: The Data Science Handbook Field Cady, 2024-10-31 Practical, accessible guide to becoming a data scientist, updated to include the latest advances in data science and related fields. Becoming a data scientist is hard. The job focuses on mathematical tools, but also demands fluency with software engineering, understanding of a business situation, and deep understanding of the data itself. This book provides a crash course in data science, combining all the necessary skills into a unified discipline. The focus of The Data Science Handbook is on practical applications and the ability to solve real problems, rather than theoretical formalisms that are rarely needed in practice. Among its key points are: An emphasis on software engineering and coding skills, which play a significant role in most real data science problems. Extensive sample code, detailed discussions of important libraries, and a solid grounding in core concepts from computer science (computer architecture, runtime complexity, and programming paradigms). A broad overview of important mathematical tools, including classical techniques in statistics, stochastic modeling, regression, numerical optimization, and more. Extensive tips about the practical realities of working as a data scientist, including understanding related jobs functions, project life cycles, and the varying roles of data science in an organization. Exactly the right amount of theory. A solid conceptual foundation is required for fitting the right model to a business problem, understanding a tool's limitations, and reasoning about discoveries. Data science is a quickly evolving field, and this 2nd edition has been updated to reflect the latest developments, including the revolution in AI that has come from Large Language Models and the growth of ML Engineering as its own discipline. Much of data science has become a skillset that anybody can have, making this book not only for aspiring data scientists, but also for professionals in other fields who want to use analytics as a force multiplier in their organization.

data science textbooks: The Data Science Design Manual Steven S. Skiena, 2017-07-01 This engaging and clearly written textbook/reference provides a must-have introduction to the rapidly emerging interdisciplinary field of data science. It focuses on the principles fundamental to becoming a good data scientist and the key skills needed to build systems for collecting, analyzing, and interpreting data. The Data Science Design Manual is a source of practical insights that

highlights what really matters in analyzing data, and provides an intuitive understanding of how these core concepts can be used. The book does not emphasize any particular programming language or suite of data-analysis tools, focusing instead on high-level discussion of important design principles. This easy-to-read text ideally serves the needs of undergraduate and early graduate students embarking on an "Introduction to Data Science" course. It reveals how this discipline sits at the intersection of statistics, computer science, and machine learning, with a distinct heft and character of its own. Practitioners in these and related fields will find this book perfect for self-study as well. Additional learning tools: Contains "War Stories," offering perspectives on how data science applies in the real world Includes "Homework Problems," providing a wide range of exercises and projects for self-study Provides a complete set of lecture slides and online video lectures at www.data-manual.com Provides "Take-Home Lessons," emphasizing the big-picture concepts to learn from each chapter Recommends exciting "Kaggle Challenges" from the online platform Kaggle Highlights "False Starts," revealing the subtle reasons why certain approaches fail Offers examples taken from the data science television show "The Quant Shop" (www.quant-shop.com)

data science textbooks: Foundations of Data Science Avrim Blum, John Hopcroft, Ravindran Kannan, 2020-01-23 This book provides an introduction to the mathematical and algorithmic foundations of data science, including machine learning, high-dimensional geometry, and analysis of large networks. Topics include the counterintuitive nature of data in high dimensions, important linear algebraic techniques such as singular value decomposition, the theory of random walks and Markov chains, the fundamentals of and important algorithms for machine learning, algorithms and analysis for clustering, probabilistic models for large networks, representation learning including topic modelling and non-negative matrix factorization, wavelets and compressed sensing. Important probabilistic techniques are developed including the law of large numbers, tail inequalities, analysis of random projections, generalization guarantees in machine learning, and moment methods for analysis of phase transitions in large random graphs. Additionally, important structural and complexity measures are discussed such as matrix norms and VC-dimension. This book is suitable for both undergraduate and graduate courses in the design and analysis of algorithms for data.

data science textbooks: Data Science for Beginners Alex Campbell, 2021-01-12 Do you wonder what the fascination is around data these days? How do we obtain insights from this data? Do you know what a data scientist does? What is artificial intelligence and machine learning? Are these the same as data science? What does it take to become a data scientist? If you have ever wondered about these questions, you have come to the right place! There are many resources and courses online that you can use to learn more about data science, but with so much information available, it can become overwhelming. One of the best ways to learn about data science is to understand different machine learning concepts, statistics, and artificial intelligence to help you design models to perform an analysis. This book has all the information you need to learn what data science is, and what the prerequisites are to become a data scientist. If you're a beginner or if you already have experience in data science, this book will have something for you. In this book, you will: Learn what data science is about. Discover the difference between data science and business intelligence. Explore the tools required for data science. Find out the technical and non-technical skills every data scientist must have. Figure out how to create a visualization of the data set with clear and easy examples. Get advice on developing a Predictive Model Using R. Uncover detailed applications of data science. And much more! The book has been structured with easy-to-understand sections to help you learn everything you need to know about data science. In this book you will learn about the prerequisites of data science and the skills you need to become a data scientist. So, what are you waiting for? Grab your copy of this comprehensive guide now

data science textbooks: Statistical Foundations of Data Science Jianqing Fan, Runze Li, Cun-Hui Zhang, Hui Zou, 2020-09-20 Statistical Foundations of Data Science gives a thorough introduction to commonly used statistical models, contemporary statistical machine learning techniques and algorithms, along with their mathematical insights and statistical theories. It aims to

serve as a graduate-level textbook and a research monograph on high-dimensional statistics, sparsity and covariance learning, machine learning, and statistical inference. It includes ample exercises that involve both theoretical studies as well as empirical applications. The book begins with an introduction to the stylized features of big data and their impacts on statistical analysis. It then introduces multiple linear regression and expands the techniques of model building via nonparametric regression and kernel tricks. It provides a comprehensive account on sparsity explorations and model selections for multiple regression, generalized linear models, quantile regression, robust regression, hazards regression, among others. High-dimensional inference is also thoroughly addressed and so is feature screening. The book also provides a comprehensive account on high-dimensional covariance estimation, learning latent factors and hidden structures, as well as their applications to statistical estimation, inference, prediction and machine learning problems. It also introduces thoroughly statistical machine learning theory and methods for classification, clustering, and prediction. These include CART, random forests, boosting, support vector machines, clustering algorithms, sparse PCA, and deep learning.

data science textbooks: *Introducing Data Science* Davy Cielen, Arno Meysman, 2016-05-02
Summary *Introducing Data Science* teaches you how to accomplish the fundamental tasks that occupy data scientists. Using the Python language and common Python libraries, you'll experience firsthand the challenges of dealing with data at scale and gain a solid foundation in data science. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Many companies need developers with data science skills to work on projects ranging from social media marketing to machine learning. Discovering what you need to learn to begin a career as a data scientist can seem bewildering. This book is designed to help you get started. About the Book *Introducing Data Science* explains vital data science concepts and teaches you how to accomplish the fundamental tasks that occupy data scientists. You'll explore data visualization, graph databases, the use of NoSQL, and the data science process. You'll use the Python language and common Python libraries as you experience firsthand the challenges of dealing with data at scale. Discover how Python allows you to gain insights from data sets so big that they need to be stored on multiple machines, or from data moving so quickly that no single machine can handle it. This book gives you hands-on experience with the most popular Python data science libraries, Scikit-learn and StatsModels. After reading this book, you'll have the solid foundation you need to start a career in data science. What's Inside Handling large data Introduction to machine learning Using Python to work with data Writing data science algorithms About the Reader This book assumes you're comfortable reading code in Python or a similar language, such as C, Ruby, or JavaScript. No prior experience with data science is required. About the Authors Davy Cielen, Arno D. B. Meysman, and Mohamed Ali are the founders and managing partners of Optimately and Maiton, where they focus on developing data science projects and solutions in various sectors. Table of Contents Data science in a big data world The data science process Machine learning Handling large data on a single computer First steps in big data Join the NoSQL movement The rise of graph databases Text mining and text analytics Data visualization to the end user

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data science textbooks: Data Science Pallavi Chavan, Parikshit N. Mahalle, Ramchandra Mangrulkar, Idongesit Williams, 2022-07. The proposed book covers the topic of data science in a very comprehensive manner and synthesizes both fundamental and advanced topics of a research area that has now reached maturity. The book starts from the basic concepts of data science; it highlights the types of data, its use and its importance, followed by discussion on a wide range of applications of data science and widely used techniques in data science. Key features: provides an internationally respected collection of scientific research methods, technologies and applications in the area of data science, presents predictive outcomes by applying data science techniques on real life applications, provides readers with the tools, techniques and cases required to excel with modern artificial intelligence methods, and gives the reader variety of intelligent applications that can be designed using data science and its allied fields. The book is aimed primarily at advanced undergraduates and graduates studying machine learning and data science. Researchers and professionals will also find this book useful--

data science textbooks: Data Science for Business Foster Provost, Tom Fawcett, 2013-07-27. Written by renowned data science experts Foster Provost and Tom Fawcett, *Data Science for Business* introduces the fundamental principles of data science, and walks you through the data-analytic thinking necessary for extracting useful knowledge and business value from the data you collect. This guide also helps you understand the many data-mining techniques in use today. Based on an MBA course Provost has taught at New York University over the past ten years, *Data Science for Business* provides examples of real-world business problems to illustrate these principles. You'll not only learn how to improve communication between business stakeholders and data scientists, but also how to participate intelligently in your company's data science projects. You'll also discover how to think data-analytically, and fully appreciate how data science methods can support business decision-making. Understand how data science fits in your organization—and how you can use it for competitive advantage. Treat data as a business asset that requires careful investment if you're to gain real value. Approach business problems data-analytically, using the data-mining process to gather good data in the most appropriate way. Learn general concepts for actually extracting knowledge from data. Apply data science principles when interviewing data science job candidates.

data science textbooks: Practitioner's Guide to Data Science Nasir Ali Mirza, 2022-01-17. Covers Data Science concepts, processes, and the real-world hands-on use cases. **KEY FEATURES** ● Covers the journey from a basic programmer to an effective Data Science developer. ● Applied use of Data Science native processes like CRISP-DM and Microsoft TDSP. ● Implementation of MLOps using Microsoft Azure DevOps. **DESCRIPTION** How is the Data Science project to be implemented? has never been more conceptually sounding, thanks to the work presented in this book. This book provides an in-depth look at the current state of the world's data and how Data Science plays a pivotal role in everything we do. This book explains and implements the entire Data Science lifecycle using well-known data science processes like CRISP-DM and Microsoft TDSP. The book explains the significance of these processes in connection with the high failure rate of Data Science projects. The book helps build a solid foundation in Data Science concepts and related frameworks. It teaches how to implement real-world use cases using data from the HMDA dataset. It explains Azure ML Service architecture, its capabilities, and implementation to the DS team, who will then be prepared to implement MLOps. The book also explains how to use Azure DevOps to make the process repeatable while we're at it. By the end of this book, you will learn strong Python coding skills, gain a firm grasp of concepts such as feature engineering, create insightful visualizations and become acquainted with techniques for building machine learning models. **WHAT YOU WILL LEARN** ● Organize Data Science projects using CRISP-DM and Microsoft TDSP. ● Learn to acquire and explore data using

Python visualizations. ● Get well versed with the implementation of data pre-processing and Feature Engineering. ● Understand algorithm selection, model development, and model evaluation. ● Hands-on with Azure ML Service, its architecture, and capabilities. ● Learn to use Azure ML SDK and MLOps for implementing real-world use cases. WHO THIS BOOK IS FOR This book is intended for programmers who wish to pursue AI/ML development and build a solid conceptual foundation and familiarity with related processes and frameworks. Additionally, this book is an excellent resource for Software Architects and Managers involved in the design and delivery of Data Science-based solutions. TABLE OF CONTENTS 1. Data Science for Business 2. Data Science Project Methodologies and Team Processes 3. Business Understanding and Its Data Landscape 4. Acquire, Explore, and Analyze Data 5. Pre-processing and Preparing Data 6. Developing a Machine Learning Model 7. Lap Around Azure ML Service 8. Deploying and Managing Models

data science textbooks: Data Science and Big Data Analytics EMC Education Services, 2014-12-19 Data Science and Big Data Analytics is about harnessing the power of data for new insights. The book covers the breadth of activities and methods and tools that Data Scientists use. The content focuses on concepts, principles and practical applications that are applicable to any industry and technology environment, and the learning is supported and explained with examples that you can replicate using open-source software. This book will help you: Become a contributor on a data science team Deploy a structured lifecycle approach to data analytics problems Apply appropriate analytic techniques and tools to analyzing big data Learn how to tell a compelling story with data to drive business action Prepare for EMC Proven Professional Data Science Certification Get started discovering, analyzing, visualizing, and presenting data in a meaningful way today!

data science textbooks: Data Science Fundamentals and Practical Approaches Dr. Gypsy Nandi, Dr. Rupam Kumar Sharma, 2020-06-02 Learn how to process and analysis data using Python KEY FEATURES - The book has theories explained elaborately along with Python code and corresponding output to support the theoretical explanations. The Python codes are provided with step-by-step comments to explain each instruction of the code. - The book is not just dealing with the background mathematics alone or only the programs but beautifully correlates the background mathematics to the theory and then finally translating it into the programs. - A rich set of chapter-end exercises are provided, consisting of both short-answer questions and long-answer questions. DESCRIPTION This book introduces the fundamental concepts of Data Science, which has proved to be a major game-changer in business solving problems. Topics covered in the book include fundamentals of Data Science, data preprocessing, data plotting and visualization, statistical data analysis, machine learning for data analysis, time-series analysis, deep learning for Data Science, social media analytics, business analytics, and Big Data analytics. The content of the book describes the fundamentals of each of the Data Science related topics together with illustrative examples as to how various data analysis techniques can be implemented using different tools and libraries of Python programming language. Each chapter contains numerous examples and illustrative output to explain the important basic concepts. An appropriate number of questions is presented at the end of each chapter for self-assessing the conceptual understanding. The references presented at the end of every chapter will help the readers to explore more on a given topic. WHAT WILL YOU LEARN Perform processing on data for making it ready for visual plot and understand the pattern in data over time. Understand what machine learning is and how learning can be incorporated into a program. Know how tools can be used to perform analysis on big data using python and other standard tools. Perform social media analytics, business analytics, and data analytics on any data of a company or organization. WHO THIS BOOK IS FOR The book is for readers with basic programming and mathematical skills. The book is for any engineering graduates that wish to apply data science in their projects or wish to build a career in this direction. The book can be read by anyone who has an interest in data analysis and would like to explore more out of interest or to apply it to certain real-life problems. TABLE OF CONTENTS 1. Fundamentals of Data Science 2. Data Preprocessing 3. Data Plotting and Visualization 4. Statistical Data Analysis 5. Machine Learning for Data Science 6. Time-Series Analysis 7. Deep Learning for Data Science 8.

Social Media Analytics 9. Business Analytics 10. Big Data Analytics

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data science textbooks: Learning Data Science Sam Lau, Joseph Gonzalez, Deborah Nolan, 2023-09-15 As an aspiring data scientist, you appreciate why organizations rely on data for important decisions--whether it's for companies designing websites, cities deciding how to improve services, or scientists discovering how to stop the spread of disease. And you want the skills required to distill a messy pile of data into actionable insights. We call this the data science lifecycle: the process of collecting, wrangling, analyzing, and drawing conclusions from data. Learning Data Science is the first book to cover foundational skills in both programming and statistics that encompass this entire lifecycle. It's aimed at those who wish to become data scientists or who already work with data scientists, and at data analysts who wish to cross the technical/nontechnical divide. If you have a basic knowledge of Python programming, you'll learn how to work with data using industry-standard tools like pandas. Refine a question of interest to one that can be studied with data Pursue data collection that may involve text processing, web scraping, etc. Glean valuable insights about data through data cleaning, exploration, and visualization Learn how to use modeling to describe the data Generalize findings beyond the data

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