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Understand, Manage, and Prevent Algorithmic Bias
A Guide for Business Users and Data Scientists

T. Baer, Kaufbeuren, Germany

About the book
Are algorithms friend or foe? The human mind is evolutionarily designed to take shortcuts in order to survive. We jump to conclusions because our brains want to keep us safe. A majority of our biases work in our favor, such as when we feel a car speeding in our direction is dangerous and we instantly move, or when we decide not take a bite of food that appears to have gone bad. However, inherent bias negatively affects work environments and the decision-making surrounding our communities. While the creation of algorithms and machine learning attempts to eliminate bias, they are, after all, created by human beings, and thus are susceptible to what we call algorithmic bias. In Understand, Manage, and Prevent Algorithmic Bias, author Tobias Baer helps you understand where algorithmic bias comes from, how to manage it as a business user or regulator, and how data science can prevent bias from entering statistical algorithms. Baer expertly addresses some of the 100+ varieties of natural bias such as confirmation bias, stability bias, pattern-recognition bias, and many others. Algorithmic bias mirrors—and originates in—these human tendencies. Baer dives into topics as diverse as anomaly detection, hybrid model structures, and self-improving machine learning. While most writings on algorithmic bias focus on the dangers, the core of this positive, fun book points toward a path where bias is kept at bay and even eliminated. You’ll come away with managerial techniques to develop unbiased algorithms, the ability to detect bias more quickly, and knowledge to create unbiased data.

- Teaches the many sources of algorithmic bias and shows the holistic measures you can use to manage and prevent bias
- Provides practical, proven techniques to effectively combat and eliminate bias
- Addresses both basic statistical concepts such as logistic regression and advanced techniques such as neural networks
- Discusses the impact of bias on society and possible regulatory responses

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About the author
Tobias Baer is a data scientist, psychologist, and top management consultant with over 20 years of experience in risk analytics. Until June 2018, he was Master Expert and Partner at McKinsey & Co., Inc., where he built McKinsey’s Risk Advanced Analytics Center of Competence in India in 2004, led the Credit Risk Advanced Analytics Service Line globally, and served clients in over 50 countries on topics such as the development of analytical decision models for credit underwriting, insurance pricing, and tax enforcement, as well as debiasing decisions. Tobias has been pursuing a research agenda around analytics and decision making both at McKinsey (e.g., on debiasing judgmental decisions and on leveraging machine learning to develop highly transparent predictive models) and at University [...]

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245 pp
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About the book

Stay motivated and overcome obstacles while learning to use Swift Playgrounds and Xcode 10.2 to become a great iOS developer. This book, fully updated for Swift 5, is perfect for those with no programming background, those with some programming experience but no object-oriented experience, or those that have a great idea for an app but haven’t programmed since school. Many people have a difficult time believing they can learn to write iOS apps. Swift 5 for Absolute Beginners will show you how to do so. You’ll learn Object-Oriented Programming (OOP) and be introduced to User Interface (UI) design following Apple’s Human Interface Guidelines (HIG) using storyboards and the Model-View-Controller (MVC) pattern before moving on to write your own iPhone and Apple Watch apps from scratch. What You’ll Learn Work with Swift classes, properties, and functions Examine proper User Interface (UI) and User Experience (UX) design Understand Swift data types: integers, floats, strings, and booleans Use Swift data collections: arrays and dictionaries Review Boolean logic, comparing data, and flow control Use the Xcode debugger to troubleshoot problems with your apps Store data in local app preferences and Core Data databases Who This Book Is For Anyone who wants to learn to develop apps for the Mac, iPhone, iPad, and Apple Watch using the Swift programming language. No previous programming experience is necessary.

- Use Swift Playgrounds to learn iOS development quickly
- Learn about Swift classes, properties, and functions
- Write iPhone and Apple Watch apps from scratch

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Ch. 1: Becoming a Great iOS Developer.- Ch. 2: Programming Basics.- Ch. 3: It’s All About the Data.- Ch. 4: Making Decisions, Program Flow, and App Design.- Ch. 5: Object-Oriented Programming with Swift.- Ch. 6: Learning Swift and Xcode.- Ch. 7: Swift Classes, Objects, and Methods.- Ch. 8: Programming Basics in Swift.- Ch. 9: Comparing Data.- Ch. 10: Creating User Interfaces.- Ch. 11: Storing Information.- Ch. 12: Protocols and Delegates.- Ch. 13: Introducing the Xcode Debugger.- Ch. 14: A Swift iPhone App.- Ch. 15: Apple Watch and WatchKit.

About the author

Stefan Kaczmarek is a software Engineer with over 20 years of experience specializing in mobile applications, large-scale software systems, project management, network protocols, encryption algorithms, and audio/video codecs. He has experience developing iOS software from webcams to fitness to education to point of sale. Stefan is also the author of Swift 4 For Absolute Beginners and Objective-C For Absolute Beginners.; Brad Lees has more than a decade of experience in application development and server management. He has specialized in creating and initiating software programs in real-estate development systems and financial institutions. His career has been highlighted by his positions as information systems manager at The Lyle Anderson Company, product development manager for [...]

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Advanced Applied Deep Learning
Convolutional Neural Networks and Object Detection
U. Michelucci, Dübendorf, Swaziland

About the book
Develop and optimize deep learning models with advanced architectures. This book teaches you the intricate details and subtleties of the algorithms that are at the core of convolutional neural networks. In Advanced Applied Deep Learning, you will study advanced topics on CNN and object detection using Keras and TensorFlow. Along the way, you will look at the fundamental operations in CNN, such as convolution and pooling, and then look at more advanced architectures such as inception networks, resnets, and many more. While the book discusses theoretical topics, you will discover how to work efficiently with Keras with many tricks and tips, including how to customize logging in Keras with custom callback classes, what is eager execution, and how to use it in your models. Finally, you will study how object detection works, and build a complete implementation of the YOLO (you only look once) algorithm in Keras and TensorFlow. By the end of the book you will have implemented various models in Keras and learned many advanced tricks that will bring your skills to the next level. What You Will Learn See how convolutional neural networks and object detection work Save weights and models on disk Pause training and restart it at a later stage Use hardware acceleration (GPUs) in your code Work with the Dataset TensorFlow abstraction and use pre-trained models and transfer learning Remove and add layers to pre-trained networks to adapt them to your specific project Apply pre-trained models such as Alexnet and VGG16 to new datasets Who This Book Is For Scientists and researchers with intermediate-to-advanced Python and machine learning know-how. Additionally, intermediate knowledge of Keras and TensorFlow is expected.

- The first book with extensive examples of advanced deep learning techniques including CNN
- Uses real-life datasets in the application of advanced techniques
- Guides you from easier examples to more advanced techniques stepping up the difficulty and focusing on advanced methods

Table of contents

About the author
Umberto Michelucci studied physics and mathematics. He is an expert in numerical simulation, statistics, data science, and machine learning. In addition to several years of research experience at the George Washington University (USA) and the University of Augsburg (DE), he has 15 years of practical experience in the fields of data warehouse, data science, and machine learning. His last book Applied Deep Learning – A Case-Based Approach to Understanding Deep Neural Networks was published by Apress in 2018. He is very active in research in the field of artificial intelligence and publishes his research results regularly in leading journals and gives regular talks at international conferences. He teaches as a lecturer at the Zurich University of Applied Sciences and at the HWZ […]

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Video Analytics Using Deep Learning
Building Applications with TensorFlow, Keras, and YOLO
D. Paul, Kolkata; C. Puvvala, Hyderabad

About the book
Build analytics for video using TensorFlow, Keras, and YOLO. This book guides you through the field of deep learning starting with neural networks, taking a deep dive into convolutional neural networks, recurrent neural networks, and long short-term memory (LSTM) networks. Video Analytics Using Deep Learning closes with practical examples of building image filters and video masking using generative models. The examples within the book cover topics from domains such as traffic recognition for self-driving cars; face recognition and emotion analysis for retail analytics; object and tamper detection for safety and security; and image filters and video masking for social networks and web applications. To enable you to make a smooth transition into deep learning, the book covers mathematical pre-requisites and includes an introduction to deep learning. You’ll also cover topics such as storage of large video content for processing on the cloud and working with the connectors involved. All the code and samples in the book are provided as iPython. What You Will Learn Master TensorFlow, Keras, and YOLO Work with face recognition, age detection, and gender identification Apply CNN, RNN and generative models in deep learning Use emotion analysis and gesture detection Carry out traffic recognition in real-time Who This Book Is For Data scientists and machine learning developers looking to build applications based on video in finance, healthcare, automotive, transport, safety/security, and home automation.

• Includes examples such as live face, age, gender, and emotion detection, and real-time object detection, fraud detection, and traffic vision for smart cars
• Focuses on cutting-edge deep learning models such as convolutional neural networks, recurrent neural networks and generative adversarial networks
• Covers examples from the healthcare, finance, automotive, and retail domains

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About the author
Charan Puvvala is a team builder and is technology agnostic. He is a speaker and lead for Hyderabad Machine Learning Group. Currently, he’s working on problems related to machine learning and deep learning, natural language understanding, conversational bots, video analytics, big data, data pipelines, and analytics. He has trained over 400 data engineers, data scientists, and software developers in corporate skill upgrade programs. His core competencies are deep learning/artificial neural networks, supervised learning, unsupervised learning, enterprise search architecture, large scale crawling, and natural language processing.
Mastering Machine Learning with Python in Six Steps
A Practical Implementation Guide to Predictive Data Analytics Using Python

M. Swamynathan, Bangalore, India

About the book
Explore fundamental to advanced Python 3 topics in six steps, all designed to make you a worthy practitioner. This updated version's approach is based on the “six degrees of separation” theory, which states that everyone and everything is a maximum of six steps away and presents each topic in two parts: theoretical concepts and practical implementation using suitable Python 3 packages. You’ll start with the fundamentals of Python 3 programming language, machine learning history, evolution, and the system development frameworks. Key data mining/analysis concepts, such as exploratory analysis, feature dimension reduction, regressions, time series forecasting and their efficient implementation in Scikit-learn are covered as well. You’ll also learn commonly used model diagnostic and tuning techniques. These include optimal probability cutoff point for class creation, variance, bias, bagging, boosting, ensemble voting, grid search, random search, Bayesian optimization, and the noise reduction technique for IoT data. Finally, you’ll review advanced text mining techniques, recommender systems, neural networks, deep learning, reinforcement learning techniques and their implementation. All the code presented in the book will be available in the form of iPython notebooks to enable you to try out these examples and extend them to your advantage. What You’ll Learn Understand machine learning development and frameworks Assess model diagnosis and tuning in machine learning Examine text mining, natural language processing (NLP), and recommender systems Review reinforcement learning and CNN Who This Book Is For Python developers, data engineers, and machine learning engineers looking to expand their knowledge or career into machine learning area.

- Compares different machine learning framework implementations for each topic
- Covers Reinforcement Learning and Convolutional Neural Networks
- Explains best practices for model tuning for better model accuracy

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About the author
Manohar Swamynathan is a data science practitioner and an avid programmer, with over 14+ years of experience in various data science related areas that include data warehousing, Business Intelligence (BI), analytical tool development, ad-hoc analysis, predictive modeling, data science product development, consulting, formulating strategy and executing analytics programs. He’s had a career covering life cycle of data across different domains such as US mortgage banking, retail/e-commerce, insurance, and industrial IoT. He has a bachelor’s degree with a specialization in physics, mathematics, computers, and a master’s degree in project management. He’s currently living in Bengaluru, the silicon valley of India.
Artificial Intelligence Basics

A Non-Technical Introduction

T. Taulli, Monrovia, CA, USA

About the book

Artificial intelligence touches nearly every part of your day. While you may initially assume that technology such as smart speakers and digital assistants are the extent of it, AI has in fact rapidly become a general-purpose technology, reverberating across industries including transportation, healthcare, financial services, and many more. In our modern era, an understanding of AI and its possibilities for your organization is essential for growth and success. Artificial Intelligence Basics has arrived to equip you with a fundamental, timely grasp of AI and its impact. Author Tom Taulli provides an engaging, non-technical introduction to important concepts such as machine learning, deep learning, natural language processing (NLP), robotics, and more. In addition to guiding you through real-world case studies and practical implementation steps, Taulli uses his expertise to expand on the bigger questions that surround AI. These include societal trends, ethics, and future impact AI will have on world governments, company structures, and daily life. Google, Amazon, Facebook, and similar tech giants are far from the only organizations on which artificial intelligence has had—and will continue to have—an incredibly significant result. AI is the present and the future of your business as well as your home life. Strengthening your prowess on the subject will prove invaluable to your preparation for the future of tech, and Artificial Intelligence Basics is the indispensable guide that you’ve been seeking.

What You Will Learn

- Study the core principles for AI approaches such as machine learning, deep learning, and NLP (Natural Language Processing)
- Discover the best practices to successfully implement AI by examining case studies including Uber, Facebook, Waymo, UiPath, and Stitch Fix
- Understand how AI capabilities for robots can improve business
- Deploy chatbots and Robotic Processing Automation (RPA) to save costs and improve customer service
- Avoid costly gotchas
- Recognize ethical concerns and other risk factors of using artificial intelligence
- Examine the secular trends and how they may impact your business

Who This Book Is For

Readers without a technical background, such as managers, looking to understand AI to evaluate solutions.

Contextualize case studies from companies who are leveraging AI to transform their businesses

Learn how to deal with some of the inherent risks like bias, data quality and employee resistance

Review valuable frameworks, tools, and languages such as Python, TensorFlow, and PyTorch

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Chapter 1: AI Foundations: History Lessons
- Chapter 2: Data: The Fuel for AI
- Chapter 3: Machine Learning: Mining Insights from Data
- Chapter 4: Deep Learning: The Revolution in AI
- Chapter 5: Robotic Process Automation (RPA): An Easier Path to AI
- Chapter 6: Natural Language Processing (NLP): How Computers Talk
- Chapter 7: Physical Robots: The Ultimate Manifestation of AI
- Chapter 8: Implementation of AI: Moving the Needle for Your Company
- Chapter 9: The Future of AI: The Pros and Cons

Appendix: AI Resources

Glossary

About the author

Tom Taulli has been developing software since the 1980s. In college, he started his first company, which focused on the development of e-learning systems. He created other companies as well, including Hypermart.net that was sold to InfoSpace in 1996. Along the way, Tom has written columns for online publications such as BusinessWeek.com, TechWeb.com, and Bloomberg.com. He also writes posts on Artificial Intelligence for Forbes.com and is the advisor to various companies in the space. You can reach Tom on Twitter (@ttaulli) or through his website (Taulli.com) where he has an online course on AI.
Managing Your Data Science Projects
Learn Salesmanship, Presentation, and Maintenance of Completed Models
R. de Graaf, Kingsville, VIC, Australia

About the book
At first glance, the skills required to work in the data science field appear to be self-explanatory. Do not be fooled. Impactful data science demands an interdisciplinary knowledge of business philosophy, project management, salesmanship, presentation, and more. In Managing Your Data Science Projects, author Robert De Graaf explores important concepts that are frequently overlooked in much of the instructional literature that is available to data scientists new to the field. If your completed models are to be used and maintained most effectively, you must be able to present and sell them within your organization in a compelling way. The value of data science within an organization cannot be overstated. Thus, it is vital that strategies and communication between teams are dexterously managed. Three main ways that data science strategy is used in a company is to research its customers, assess risk analytics, and log operational measurements. These all require different managerial instincts, backgrounds, and experiences, and de Graaf cogently breaks down the unique reasons behind each. They must align seamlessly to eventually be adopted as dynamic models. Data science is a relatively new discipline, and as such, internal processes for it are not as well-developed within an operational business as others. With Managing Your Data Science Projects, you will learn how to create products that solve important problems for your customers and ensure that the initial success is sustained throughout the product’s intended life. Your users will trust you and your models, and most importantly, you will be a more well-rounded and effectual data scientist throughout your career. Who This Book Is For Early-career data scientists, managers of data scientists, and those interested in entering the field of data science

- Explores how you can use business strategies within your data science projects to best harness your technical skills
- Teaches you how to contextualize and present your technical data science with end users in mind
- Covers salesmanship, project estimation, and presentation and maintenance of completed models for best results

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Chapter 1: Data Science Team Strategy · Chapter 2: Data Science Strategy for Projects · Chapter 3: Data Science Sales Technique · Chapter 4: Believable Models · Chapter 5: Reliable Models · Chapter 6: Promoting Your Data Science Work · Chapter 7: Team Efficiency · Chapter 8: Afterword

About the author
Robert de Graaf is currently a data scientist at RightShip, and was central to the development of the algorithm currently used in the Qi platform to predict maritime accidents, among other models. He initially began his career as an engineer, at different times working in quality assurance, project engineering, and design, but soon became interested in applying statistics to business problems and completed his education with a master’s degree in statistics. He is passionate about producing data solutions that solve the right problem for the end user.
Data Wrangling
Munging in R with SQL and MongoDB for Financial Applications
P. Houlihan, Hoboken, USA; A. Moreno, Bergenfield, NJ, USA

About the book
Use R to gather, clean, and manage financial data in structured and unstructured databases. Learn how to read and write the increasing volume and complexity of data from and between SQL and MongoDB databases. Data Wrangling teaches practitioners and students of financial data analysis the SQL and MongoDB database management skills they need to succeed in their analytic work. The authors, who have deep experience in the financial industry as well as in teaching quantitative finance, take most of the operational and programming examples that enrich their book from the financial arena, including both market data and text-based data. The concepts presented through these examples are nonetheless applicable to a wide range of fields, so data analysts from all industries will profit from this book. What You’ll Learn Use a rich feature set of R for financial data analytics Employ an integrated comparison-based learning approach to SQL and NoSQL database management, including query and insert constructs Understand data wrangling best practices and solutions Be exposed to cutting-edge database technologies such as text-based analytics and their financial applications Study an abundance of practical examples from the real world of finance Who This Book Is For Data analysts in the financial industry, data analysts in nonfinancial fields, and those who deal with data in their professional or academic work

- Teaches practitioners and students how to gather, clean, and manage financial data in R for data analysis of SQL and MongoDB databases
- Covers data wrangling, the most universally portable skill set in the realm of data science because it is a prerequisite of any real-world data analysis task

About the author
Patrick Houlihan is a Lecturer in Quantitative Finance at the Stevens Institute of Technology, with 15 years of professional industry experience. He was a quantitative analyst for Jefferies LLC; senior field applications engineer for Nvidia supporting GPU and compute products for Dell Consumer (Dimension); senior field applications engineer for Altera, covering Hewlett Packard’s workstation and server lines and field application engineering roles at Altium and Arrow Electronics. Patrick received an MSFE from Stevens Institute of Technology and an MBA in Investment Management and BSEE in Electrical Engineering from Drexel University. He is pursuing his doctorate in Financial Engineering at Stevens.
Data versus Democracy
How Big Data Algorithms Shape Opinions and Alter the Course of History
K. Shaffer, Colorado, USA

About the book
Human attention is in the highest demand it has ever been. The drastic increase in available information has compelled individuals to find a way to sift through the media that is literally at their fingertips. Content recommendation systems have emerged as the technological solution to this social and informational problem, but they’ve also created a bigger crisis in confirming our biases by showing us only, and exactly, what it predicts we want to see. Data versus Democracy investigates and explores how, in the era of social media, human cognition, algorithmic recommendation systems, and human psychology are all working together to reinforce (and exaggerate) human bias. The dangerous confluence of these factors is driving media narratives, influencing opinions, and possibly changing election results.

In this book, algorithmic recommendations, clickbait, familiarity bias, propaganda, and other pivotal concepts are analyzed and then expanded upon via fascinating and timely case studies: the 2016 US presidential election, Ferguson, GamerGate, international political movements, and more events that come to affect every one of us. What are the implications of how we engage with information in the digital age? Data versus Democracy explores this topic and an abundance of related crucial questions.

Who This Book Is For
Individuals who are curious about how social media algorithms work and how they can be manipulated to influence culture. Social media managers, data scientists, data administrators, and educators will find this book particularly relevant to their work.

- Teaches the impact of the attention economy and algorithmic information delivery on media production and consumption
- Shows how regulations, business practices, and consumer safeguards have been slow to catch up to technological advances, leaving information platforms open to manipulation
- Covers how both foreign and domestic operatives leveraged big-data analytics to win (or hack) elections
- Includes information about social movements that have used participatory media to steer the narrative of mainstream media
- Shares how “troll armies” have used automated social media accounts (bots) to harass and abuse individuals and communities

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About the author
Kris Shaffer, Ph.D., is a data scientist and Senior Computational Disinformation Analyst for New Knowledge. He co-authored „The Tactics and Tropes of the Internet Research Agency,” a report prepared for the United States Senate Select Committee on Intelligence about Russian interference in the 2016 US presidential election on social media. He has consulted for multiple US government agencies, non-profits, and universities on matters related to digital disinformation, data ethics, and digital pedagogy. In a former (professional) life, Kris was an academic and digital humanist. He has taught courses in music theory and cognition, computer science, and digital studies at Yale University, University of Colorado–Boulder, University of Mary Washington, and Charleston Southern University. He […]
Inclusive Design for a Digital World
Designing with Accessibility in Mind
R. Gilbert, New York, NY, USA

About the book
What is inclusive design? It is simple. It means that your product has been created with the intention of being accessible to as many different users as possible. For a long time, the concept of accessibility has been limited in terms of only defining physical spaces. However, change is afoot: personal technology now plays a part in the everyday lives of most of us, and thus it is a responsibility for designers of apps, web pages, and more public-facing tech products to make them accessible to all. Our digital era brings progressive ideas and paradigm shifts – but they are only truly progressive if everybody can participate. In Inclusive Design for a Digital World, multiple crucial aspects of technological accessibility are confronted, followed by step-by-step solutions from User Experience Design professor and author Regine Gilbert. Think about every potential user who could be using your product. Could they be visually impaired? Have limited motor skills? Be deaf or hard of hearing? This book addresses a plethora of web accessibility issues that people with disabilities face. Your app might be blocking out an entire sector of the population without you ever intending or realizing it. For example, is your instructional text full of animated words and Emoji icons? This makes it difficult for a user with vision impairment to use an assistive reading device, such as a speech synthesizer, along with your app correctly. In Inclusive Design for a Digital World, Gilbert covers the Web Content Accessibility Guidelines (WCAG) 2.1 requirements, emerging technologies such as VR and AR, best practices for web development, and more. As a creator in the modern digital era, your aim should be to make products that are inclusive of all people. Technology has, overall, increased connection and information equality around the world. To continue its impact, access and usability of such technology must be made a priority, and there is no better place to get started than Inclusive Design for a Digital World. What You’ll Learn The moral, ethical, and high level legal reasons for accessible design Tools and best practices for user research and web developers The different types of designs for disabilities on various platforms Familiarize yourself with web compliance guidelines Test products and usability best practices Understand past innovations and future opportunities for continued improvement Who This Book Is For Practitioners of product design, product development, content, and design can benefit from this book

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Chapter 1. Designing with accessibility in mind
Chapter 2. HTML, CSS, and the land of Accessible Rich Internet Applications (ARIA)
Chapter 3. If it’s annoying, it’s probably not inclusive design
Chapter 4. Web Compliance
Chapter 5. Design Principles for People with Disabilities
Chapter 6. Users & User Research
Chapter 7. Case Studies & Solutions
Chapter 8. Planning and Implementation of inclusive design
Chapter 9. Usability and Usability Testing
Chapter 10. Beyond the web, innovation, the future and you!

About the author
Regine Gilbert is a user experience designer, educator, and international public speaker with over 10 years of experience working in the technology arena. Her passion for accessibility stems from growing up with family who were disabled. Since working in technology she has spearheaded accessibility initiatives within the organizations in which she worked including creation of guidelines and training. She has a strong belief in making the world a more accessible place—one that starts and ends with the user; Regine is an Adjunct Professor at NYU Tandon School of Engineering, teaching User Experience Design to students in the Integrated Digital Media Program. In addition, she teaches the part time User Experience Design course at General Assembly. Some of the companies Regine has had the […]
Python, PyGame, and Raspberry Pi Game Development

2nd Edition

S. Kelly, Niagara Falls, ON

About the book

Expand your basic knowledge of Python and use PyGame to create fast-paced video games with great graphics and sounds. This second edition shows how you can integrate electronic components with your games using the build-in general purpose input/output (GPIO) pins and some Python code to create two new games. You’ll learn about object-oriented programming (OOP) as well as design patterns, such as model-view-controller (MVC) and finite-state machines (FSMs). Whether using Windows, macOS, Linux, or a Raspberry Pi, you can unleash the power of Python and PyGame to create great looking games. The book also includes complete code listings and explanations for „Bricks,” „Snake,” and „Invaders”—three fully working games. These allow you to get started in making your own great games and then modify them or build your own exciting titles. The concepts are further explained using games such as “Copycat,” where the player must concentrate and repeat the sequence of lights and sounds, and “Couch Quiz,” in which PyGame and electronic components create a quiz game for 2–4 players. What You’ll Learn Gain basic knowledge of Python and employ it for game development Study projects you can use as templates, such as Bricks, Snake, and Invaders Work with user-defined functions, inheritance, composition, and aggregation Implement finite state machines Integrate your game with electronics using the GPIO pins

Who This Book Is For Experienced coders or game developers new to Python, PyGame and Raspberry Pi would find this book helpful. It is also for beginners interested in getting into game development.

- Introduction to the PyGame framework and its workings
- Use Python to access the GPIOs
- Design a game from a code perspective

Table of contents


About the author

Sloan Kelly has worked in the games industry for nearly 12 years. He has worked on a number of AAA and indie titles and currently works for an educational game company. He lives in Ontario, Canada with his wife and children. Sloan is on Twitter @codehoose and makes YouTube videos in his spare time.
Explore a complex mechanical system where electronics and mechanical engineers work together as a cross-functional team. Using a working example, this book is a practical "how to" guide to designing a drone system. As system design becomes more and more complicated, systematic, and organized, there is an increasingly large gap in how system design happens in the industry versus what is taught in academia. While the system design basics and fundamentals mostly remain the same, the process, flow, considerations, and tools applied in industry are far different than that in academia. Designing Drone Systems takes you through the entire flow from system conception to design to production, bridging the knowledge gap between academia and the industry as you build your own drone systems. What You’ll Learn Gain a high level understanding of drone systems Design a drone systems and elaborating the various aspects and considerations of design Review the principles of the industrial system design process/flow, and the guidelines for drone systems Look at the challenges, limitations, best practices, and patterns of system design Who This Book Is For Primarily for beginning or aspiring system design experts, recent graduates, and system design engineers. Teachers, trainers, and system design mentors can also benefit from this content.

- Practical, end to end, guide for building a real done system design of your choice
- Learn the system architecture for drone system design
- Discusses and elaborates the specifics of drone system design

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About the author
Neeraj Kumar Singh has been a Platform Architect for Intel Client platforms for more than 12 years. His areas of expertise are hardware software co-design, SoC system/platform architecture, and system software design and development. Neeraj is the author of System on Chip Interfaces for Low Power Design and The Impact of Loop Unrolling on Controller Delay in High Level Synthesis ; Porselvan Muthukrishnan has been a Hardware/System Design Engineer for Intel IOT platforms for over 10 years. His areas of expertise are hardware/system design. Porselvan is currently working on System Designs for Connected Home, Connected Cars and Other IoT devices.
Spring Cloud Data Flow
Native Cloud Orchestration Services for Microservice Applications on Modern Runtimes
F. Gutierrez, Albuquerque, NM

About the book
Work with big data applications by using Spring Cloud Data Flow as a unified, distributed and extensible system for data ingestion and integration, real-time analytics and data processing pipelines, batch processing, and data export. With this book, you will develop a foundation for creating applications that use real-time data streaming by combining different technologies and use the full power of Spring Cloud Data Flow. The first part of the book begins with an overview of the cloud, microservices, and big data, before moving on to the Spring projects essential to modern big data applications in Java: Spring Integration, Spring Batch, Spring Cloud Stream, and Spring Cloud Task. The second part of the book covers the internals of Spring Cloud Data Flow, giving you the insights and knowledge required to build the applications you need. You'll learn how to use Spring Data Flow’s DSL and how to integrate with third-party cloud platform solutions, such as Cloud Foundry and Kubernetes. Finally, the book covers Spring Cloud Data Flow applications to impart practical, useful skills for real-world applications of the technologies covered throughout the rest of the book. What you will learn: See the Spring Cloud Data Flow internals Master Spring Cloud Data Flow architecture, data processing, and DSL Integrate Spring Cloud Data Flow with Cloud Foundry, and Kubernetes Use Spring Cloud Data Flow local server, Cloud Foundry, and more Discover the Spring Cloud Data Flow applications and how to use them Work with source, processor, sink, tasks, Spring Flo and its GUI, and analytics via the new Micrometer stack for realtime visibility with Prometheus and Grafana Who is this book for: Those with some experience with the Spring Framework, Microservices and Cloud Native Applications; Java experience preferred.

- Demonstrates how to use Spring Cloud Data Flow for data ingestion, analytics, batch processing, and export
- Integrates Spring Cloud Data flow with Apache Mesos, Yarn, and Kubernetes
- Shows how to create applications that use real time data streaming

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About the author
Felipe Gutierrez is a solutions software architect, with a bachelors and master degree in computer science from Instituto Tecnologico y de Estudios Superiores de Monterrey Campus Ciudad de Mexico. With over 20 years of IT experience, during which time he developed programs for companies in multiple vertical industries, such as government, retail, healthcare, education, and banking. Right now, he is currently working as a principal technical instructor for Pivotal, specializing in Cloud Foundry, Spring Framework, Spring Cloud Native Applications, Groovy, and RabbitMQ, among other technologies. He has worked as a solutions architect for big companies like Nokia, Apple, Redbox, and Qualcomm, among others. He is also the author of Introducing Spring Framework , Pro Spring Boot and Spring […]
About the book

Get started with Spring Framework 5 and its ecosystem, with a guide to the working practices in modern development. This book will teach you how to use the Spring Framework to build Java-based applications, web applications, and microservices. You’ll see how Spring has drastically and positively affected the way we program and design applications in Java. Beginning Spring 5 discusses how you can build apps with the Spring mindset and what the benefits of that mindset are. Along the way you will learn many aspects of the Spring ecosystem with easy-to-understand applications designed to teach you not only the technology, but also the practices that benefit the most from Spring. What You Will Learn Discover the most common use cases encountered in the real world Create reliable, tested, modular software, building skills that will translate well across all languages and environments. Integrate and use data access and persistence frameworks such as Hibernate, JPA, and MongoDB Program functional or reactive Java with the latest Spring 5 features including WebFlux Who This Book Is For Those who are new to Spring or for those who have experience with Spring but want to learn what’s new in Spring 5. This book assumes you have some prior coding experience in Java at least.

- Includes chapters on developing modern Java apps with reactive and functional programming using Spring
- Written by Joseph B. Ottinger, former editor in-chief at TheServerSide and tech evangelist for such companies as Red Hat and GigaSpaces
- Includes insights on how Spring Framework 5 is used in real projects

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About the author

Joseph B. Ottinger (@josephbottinger) is a distributed systems architect with experience in many cloud platforms. He was the editor-in-chief of both Java Developer Journal and TheServerSide.com, and has also contributed to many, many publications, open source projects, and commercial projects over the years, using many different languages (but primarily Java, Python, and JavaScript). He’s also a previously published author online (with too many publications to note individually) and in print, through Apress.; Andrew Lombardi (@kinabalu) is a veteran entrepreneur and systems engineer. He’s run the successful boutique consulting firm Mystic Coders for 18 years. With his team they’ve helped companies as large as Walmart and firms with problems as interesting as helicopter simulation. A […]
Migrating ASP.NET Microservices to ASP.NET Core

By Example
I. Classon, 29 Gothenburg, Sweden

About the book
Migrate your existing microservice cluster from ASP.NET to ASP.NET Core. While improved performance and cross-platform support are evident, this book helps you cut through the noise to determine how, when, and to what extent a migration is needed. Microsoft’s introduction of .NET Core has created a lot of excitement, but also a lot of confusion for developers accustomed to ASP applications and services. This book gives you specific steps to embark on a partial or full SaaS microservices system migration, factoring in limited resources, time, and finances. In addition to practical advice and real-world examples, many mishaps will be shared, providing you with a complete 360-degree view of a migration. As a developer intimately familiar with the migration process, author Iris Classon shares prescriptive guidance on every part of the system—from code, dependencies, editors, integration, and the deployment pipeline to a distribution model. You will come away with all the information you need to plan and prepare your migration to ASP.NET Core. What You’ll Learn Conduct an in-depth, pre-migration analysis of your system Know the differences between ASP.NET and ASP.NET Core Plan for and execute a full or partial migration to ASP.NET Core Understand the continuous integration and deployment process Gain insight on tools and templates that will accelerate and facilitate the migration process Leverage a real-world migration example, complete with genuine challenges Migrate specific components such as logging, authentication, data access, and more Who This Book Is For Developers who are considering or are tasked with migrating an existing microservice cluster from ASP.NET to ASP.NET Core. Experience with C#, Web API, ASP.NET, Visual Studio, and PowerShell is helpful.

• Facilitates your company’s migration of services as .NET Core’s popularity grows so your process is effective and efficient
• Teaches from a hands-on existing system, complete with all the bugs, hacks, and retired libraries that cause migration headaches
• Written by a highly sought-after presenter on the topic of ASP.NET migration who is available online, in help forums, and out in the community where she teaches, troubleshoots, and encourages good code practices

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Chapter 1: The SaaS System in Question.- Chapter 2: Should We Migrate?- Chapter 3: Phase 1: Analysis.- Chapter 4: Phase 2: Planning the Architecture.- Chapter 5: Phase 3: Migration.- Chapter 6: Phase 4: Upgrading the Deployment Pipeline.- Chapter 7: Maintenance and Resources.-

About the author
Iris Classon is a force of nature. Her unique and engaging methods of teaching complex topics have garnered her considerable respect from the developer community and a great deal of media attention—Channel 9, Hanselminutes, Computer Sweden, and Developer Magazine—just to name a few. She is a Microsoft MVP and holds multiple certifications. Currently a freelance developer with her company, In Love With Code LTD, Iris can be found consulting for large enterprises and working on back-end systems and operations for startups. She often speaks at conferences such as TechDays and NDC, and at user groups. Her passion for teaching code extends to her tweets @ IrisClasson, her popular blog StackOverflow, MSDN, and a myriad of other social media sites.
Machine Learning with Microsoft Technologies

Selecting the Right Architecture and Tools for Your Project

L. Etaati, Auckland, Auckland, New Zealand

About the book

Know how to do machine learning with Microsoft technologies. This book teaches you to do predictive, descriptive, and prescriptive analyses with Microsoft Power BI, Azure Data Lake, SQL Server, Stream Analytics, Azure Databricks, HD Insight, and more. The ability to analyze massive amounts of real-time data and predict future behavior of an organization is critical to its long-term success. Data science, and more specifically machine learning (ML), is today’s game changer and should be a key building block in every company’s strategy. Managing a machine learning process from business understanding, data acquisition and cleaning, modeling, and deployment in each tool is a valuable skill set. Machine Learning with Microsoft Technologies is a demo-driven book that explains how to do machine learning with Microsoft technologies. You will gain valuable insight into designing the best architecture for development, sharing, and deploying a machine learning solution. This book simplifies the process of choosing the right architecture and tools for doing machine learning based on your specific infrastructure needs and requirements. Detailed content is provided on the main algorithms for supervised and unsupervised machine learning and examples show ML practices using both R and Python languages, the main languages inside Microsoft technologies. What You’ll Learn Choose the right Microsoft product for your machine learning solution Create and manage Microsoft’s tool environments for development, testing, and production of a machine learning project Implement and deploy supervised and unsupervised learning in Microsoft products Set up Microsoft Power BI, Azure Data Lake, SQL Server, Stream Analytics, Azure Databricks, and HD Insight to perform machine learning Set up a data science virtual machine and test-drive installed tools, such as Azure ML Workbench, Azure ML Server Developer, Anaconda Python, Jupyter Notebook, Power BI Desktop, Cognitive Services, machine learning and data analytics tools, and more Architect a machine learning solution factoring in all aspects of self service, enterprise, [...]
Essential TypeScript
From Beginner to Pro
A. Freeman, Broad Mead Farm, London, UK

About the book
Work with TypeScript and get the most from this versatile open source language. Author Adam Freeman begins this book by describing TypeScript and the benefits it offers, and goes on to show you how to use TypeScript in realistic scenarios, going in-depth to give you the knowledge you need. Starting from the nuts-and-bolts and building up to the most advanced and sophisticated features, you will learn how TypeScript builds on the JavaScript type system to create a safer and more productive development experience and understand how TypeScript can be used to create applications using popular frameworks, including Node.js, Angular, React, and Vue.js. Each topic is covered clearly and concisely and is packed with the details you need to learn to be truly effective. The most important features are given a no-nonsense in-depth treatment and chapters include common problems and details of how to avoid them. What You Will Learn Gain a solid understanding of the TypeScript language and tools Use TypeScript for client- and server-side development Extend and customize TypeScript Debug and unit test your TypeScript code Who This Book Is For Developers who want to start using TypeScript, for example to create rich web applications using Angular, React, or Vue.js Adam Freeman is an experienced IT professional who has held senior positions in a range of companies, most recently serving as chief technology officer and chief operating officer of a global bank. Now retired, he spends his time writing and long-distance running.

- Puts TypeScript into context
- Includes information on TypeScript tools, types, classes, interfaces and more
- Applies TypeScript with Node and Express, ASP.NET Core, DOM, Angular, and React

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About the author
Adam Freeman is an experienced IT professional who has held senior positions in a range of companies, most recently serving as chief technology officer and chief operating officer of a global bank. Now retired, he spends his time writing and long-distance running.
Beginning Security with Microsoft Technologies
Protecting Office 365, Devices, and Data

V. Lakshmi, Bangalore, India

About the book
Secure and manage your Azure cloud infrastructure, Office 365, and SaaS-based applications and devices. This book focuses on security in the Azure cloud, covering aspects such as identity protection in Azure AD, network security, storage security, unified security management through Azure Security Center, and many more. Beginning Security with Microsoft Technologies begins with an introduction to some common security challenges and then discusses options for addressing them. You will learn about Office Advanced Threat Protection (ATP), the importance of device-level security, and about various products such as Device Guard, Intune, Windows Defender, and Credential Guard. As part of this discussion you’ll cover how secure boot can help an enterprise with pre-breach scenarios. Next, you will learn how to set up Office 365 to address phishing and spam, and you will gain an understanding of how to protect your company’s Windows devices. Further, you will also work on enterprise-level protection, including how advanced threat analytics aids in protection at the enterprise level. Finally, you’ll see that there are a variety of ways in which you can protect your information. After reading this book you will be able to understand the security components involved in your infrastructure and apply methods to implement security solutions. What You Will Learn Keep corporate data and user identities safe and secure Identify various levels and stages of attacks Safeguard information using Azure Information Protection, MCAS, and Windows Information Protection, regardless of your location Use advanced threat analytics, Azure Security Center, and Azure ATP

Strings together different aspects of security for the modern workplace, cloud infrastructure and cloud apps Discusses Microsoft Office 365 features that can protect devices and prevent data loss Covers the security stack of Microsoft’s cloud

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About the author
Vasantha Lakshmi works at Microsoft, India as a partner technical consultant. She has been working on various security products within Microsoft for the last three years. She has more than 8 years’ experience working as an architect for end-to-end solutions for Microsoft Office 365. She has created many integrated security solutions for the modern workplace that seamlessly integrate advanced threat analytics, Windows Defender Advanced Threat Protection, Microsoft cloud app security, Intune, and Office ATP.
Beginning Azure Functions
Building Scalable and Serverless Apps
R. Sawhney, Hyderabad, India

About the book
Create highly scalable apps and monitor Azure functions in production using Azure Functions 2.0. This book takes you through durable functions for statefulness and covers not only the basics, but also how to create bindings in durable functions. It is a deep dive into the Azure Functions serverless API and will guide you through the process of converting monolithic applications to use Azure functions. The author starts by giving an overview of serverless architecture and Azure functions along with Azure App Services. You will then learn to create basic Azure functions using the Azure portal and Visual Studio. Next, you will create a serverless API using Azure Functions and migrate an existing application to Azure Functions. Finally, you will deploy an Azure function and monitor it in production. Here you will deploy the Azure function using ARM templates and secure and configure CORS for Azure functions. After reading this book, you will be able to understand Azure functions and create them using the Azure portal and Visual Studio. What You Will Learn Understand and use triggers and bindings in an Azure function Create a serverless API using Azure Functions and OpenAPI Deploy an Azure function and monitor it in production Understand durable Azure functions, including scalability, disaster recovery, and geo-distribution

Who This Book Is For
Developers who want to get started with Azure Functions DevOps will also find value in the guidance for deploying and monitoring functions.

- Addresses complicated topics such as triggers, bindings, and webhooks with real-time examples
- Covers durable Azure functions
- Discusses creating Azure functions with examples and case studies

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Chapter 1: Introduction to Azure Functions - Chapter 2: Creating Azure Function - Chapter 3: Understanding Azure Functions Triggers And Bindings - Chapter 4: Serverless API Using Azure Function - Chapter 5: Azure Durable Functions for statefulness - Chapter 6: Deploying Azure Function - Chapter 7: Monitoring Azure Function in Production

About the author
Rahul works as a software developer with Microsoft, India and is a Microsoft certified Azure Developer and Architect. He has more than five years of experience in IT where he has worked in various software development roles. He has worked on various projects on ASP.Net Core, Entity Framework, Web API, AngularJS, SQL Server, and Azure. His cloud technologies exposure includes working on Azure Functions, Microservices, Azure AD, Azure Blob Storage, ARM Templates, Azure Storage Queues, App Service and Traffic Manager.
Introducing Azure Bot Service
Building Bots for Business
C. Waghmare, Matunga Labour Camp, Mumbai

About the book
See how custom chatbots and Azure Bot Service can resolve common business problems. This book takes you through the many possibilities of bot development from a business point of view, using Microsoft bot technology, and demonstrates how to connect, deploy, and manage them. Starting with an introduction to chatbots and their features you will go through the design and implementation of Azure chatbots. This will set the foundation for the rest of the book before you learn how to create and manage messages in chatbots. You’ll then see how to deploy your chatbot in different business scenarios and how to integrate Azure chatbots with different applications such as Facebook and Twitter. To really allow you to demonstrate business value, Introducing Azure Bot Service covers tips on enhancing customer satisfaction and developing insights by analyzing customer behavior. This knowledge will help you understand how artificial intelligence techniques such as chatbots help your organization undergo digital transformation. After reading this book, you will be ready to build chatbots using Microsoft Azure, deploy them in different business scenarios, and measure the benefits of chatbots. What You Will Learn Build time-saving chatbots using Azure Bot Service Engage in proactive customer interaction Integrate chatbots as a key aspect of your business strategy Improve customer satisfaction Ease into digital transformation using Azure chatbots Who This Book Is For Developers who are interested in building chatbots Shares tips and tricks for analyzing customer behavior Consists of examples implementing Azure chatbots Discusses integration with different websites and applications such as Facebook and Twitter

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Chapter 1: Azure Chatbots – An Introduction.
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Chapter 6: Demonstrate business benefits of using Azure Chatbots.
Chapter 7: Create and use reusable solutions using Chatbots.
Chapter 8: Create Digital Transformation.

About the author
Charles David Waghmare worked as Global Yammer Community Manager from 2011 until mid-2018 with Capgemini. Previously he was Community Manager of SAP-based communities at ATOS where he managed communities using TechnoWeb 2.0 – a Yammer-like platform. In this Communities of Practice (CoP) initiative, Charles was also responsible for managing community sites built in SharePoint. Further, at ATOS, Charles was global rollout manager for a structured document-management system built in SharePoint.

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R Data Science Quick Reference

A Pocket Guide to APIs, Libraries, and Packages

T. Mailund, Aarhus University, Aarhus, Denmark

About the book

In this handy, practical book you will cover each concept concisely, with many illustrative examples. You’ll be introduced to several R data science packages, with examples of how to use each of them. In this book, you’ll learn about the following APIs and packages that deal specifically with data science applications: readr, dibble, forecasts, lubridate, stringr, tidyr, magrittr, dplyr, purrr, ggplot2, modelr, and more. After using this handy quick reference guide, you’ll have the code, APIs, and insights to write data science-based applications in the R programming language. You’ll also be able to carry out data analysis. What You Will Learn Import data with readr Work with categories using forcats, time and dates with lubridate, and strings with stringr Format data using tidyr and then transform that data using magrittr and dplyr Write functions with R for data science, data mining, and analytics-based applications Visualize data with ggplot2 and fit data to models using modelr Who This Book Is For Programmers new to R’s data science, data mining, and analytics packages. Some prior coding experience with R in general is recommended.

- The first quick reference of its kind dealing with data science using R
- Covers the specific APIs and packages that let you build R-based data science applications
- Also covers how to use these packages to do data analysis using R

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9. Working with Factors: forcats
10. Working with Dates: lubridate
11. Working with Models: broom and modelr
12. Plotting: ggplot2
13. Conclusions

About the author

Thomas Mailund is an associate professor at Aarhus University, Denmark. He has a background in math and computer science. For the last decade, his main focus has been on genetics and evolutionary studies, particularly comparative genomics, speciation, and gene flow between emerging species. He has published Beginning Data Science in R, Functional Programming in R, and Metaprogramming in R with Apress as well as other books.
Learn Kotlin for Android Development
The Next Generation Language for Modern Android Apps Programming
P. Späth, Leipzig, Germany

About the book
Build Android apps and learn the essentials of the popular Kotlin programming language and APIs. This book will teach you the key Kotlin skills and techniques important for creating your very own Android apps. Apart from introducing Kotlin programming, Learn Kotlin for Android Development stresses clean code principles and introduces object-oriented and functional programming as a starting point for developing Android apps. After reading and using this book, you’ll have a foundation to take away and apply to your own Kotlin-based Android app development. You’ll be able to write useful and efficient Kotlin-based apps for Android, using most of the features Kotlin as a language has to offer. What You Will Learn Build your first Kotlin app that runs on Android Work with Kotlin classes and objects for Android Use constructs, loops, decisions, and scopes Carry out operations on data Master data containers, arrays, and collections Handle exceptions and access external libraries Who This Book Is For Very little programming experience is required: no prior knowledge of Kotlin needed.

- A comprehensive, modern introduction to Android app programming using only Kotlin
- Addresses a language with a growing attention in the developer community
- Treats Kotlin as a genuine programming language

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About the author
Peter Späth consults, trains/teaches and writes books on various subjects, with a primary focus on software development. With a wealth of experience in Java-related languages, the release of Kotlin for building Android Apps made him enthusiastic about writing books for Kotlin development in the Android environment. He also graduated in 2002 as a physicist and soon afterward became an IT consultant, mainly for Java related projects.

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### **About the book**

This quick reference is a condensed guide to the essential data structures, algorithms, and functions provided by the C++17 Standard Library. It does not explain the C++ language or syntax, but is accessible to anyone with basic C++ knowledge or programming experience. Even the most experienced C++ programmer will learn a thing or two from it and find it a useful memory-aid. It is hard to remember all the possibilities, details, and intricacies of the vast and growing Standard Library. This handy reference guide is therefore indispensable to any C++ programmer. It offers a condensed, well-structured summary of all essential aspects of the C++ Standard Library. No page-long, repetitive examples or obscure, rarely used features. Instead, everything you need to know and watch out for in practice is outlined in a compact, to-the-point style, interspersed with practical tips and well-chosen, clarifying examples. This new edition is updated to include all Standard Library changes in C++17, including the new vocabulary types std::string_view, any, optional, and variant; parallel algorithms; the file system library; specialized mathematical functions; and more. What You Will Learn Gain the essentials that the C++ Standard Library has to offer Use containers to efficiently store and retrieve your data Inspect and manipulate your data with algorithms See how lambda expressions allow for elegant use of algorithms Discover what the standard string class provides and how to use it Write localized applications Work with file and stream-based I/O Prevent memory leaks with smart pointers Write safe and efficient multi-threaded code using the threading libraries Who This Book Is For All C++ programmers, irrespective of their proficiency with the language or the Standard Library. A secondary audience is developers who are new to C++, but not new to programming, and who want to learn more about the C++ Standard Library in a quick, condensed manner.

- Compact reference of the essentials from the vast C++ Standard Library
- Covers all important aspects of the C++ Standard Library in a compact, to-the-point style
- Up to date with the latest C++17 standards

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### **About the author**

Marc Gregoire is a software engineer from Belgium. He graduated from the University of Leuven, Belgium, with a degree in “Burgerlijk ingenieur in de computer wetenschappen” (equivalent to Master of Science in engineering in computer science). The year after, he received the cum laude degree of master in artificial intelligence at the same university. After his studies, Marc started working for a software consultancy company called Ordina Belgium. As a consultant, he worked for Siemens and Nokia Siemens Networks on critical 2G and 3G software running on Solaris for telecom operators. This required working in international teams stretching from South America and USA to EMEA and Asia. Now, Marc is working for Nikon Metrology on industrial 3D laser scanning software. His main expertise is […]

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**Language Rights**

All Languages Rights Available
Clean Python
Elegant Coding in Python
S. Kapil, Sunnyvale, CA, USA

About the book
Discover the right way to code in Python. This book provides the tips and techniques you need to produce cleaner, error-free, and eloquent Python projects. Your journey to better code starts with understanding the importance of formatting and documenting your code for maximum readability, utilizing built-in data structures and Python dictionary for improved maintainability, and working with modules and meta-classes to effectively organize your code. You will then dive deep into the new features of the Python language and learn how to effectively utilize them. Next, you will decode key concepts such as asynchronous programming, Python data types, type hinting, and path handling. Learn tips to debug and conduct unit and integration tests in your Python code to ensure your code is ready for production. The final leg of your learning journey equips you with essential tools for version management, managing live code, and intelligent code completion. After reading and using this book, you will be proficient in writing clean Python code and successfully apply these principles to your own Python projects.

What You’ll Learn
- Use the right expressions and statements in your Python code
- Create and assess Python Dictionary
- Work with advanced data structures in Python
- Write better modules, classes, functions, and metaclasses
- Start writing asynchronous Python immediately
- Discover new features in Python

Who This Book Is For
Readers with a basic Python programming knowledge who want to improve their Python programming skills by learning the right way to code in Python.

- Enables readers to write clean, better Python code
- Enriches understanding of advanced Python concepts such as Decorators and Context Manager
- Illustrates effective use of Python metaclasses

Table of contents

About the author
Sunil Kapil has been in the software profession for the last ten years, writing production code in Python and several other languages. He has worked as a software engineer primarily on back-end services for web and mobile. He has developed, deployed, and maintained small to big projects in production that are being loved and used by millions of users. He has completed these projects with small to big teams in different professional environments for very well-known software companies around the world. He is also a passionate advocate of open source and continuously contributes to projects such as Zulip Chat and Black. He also works with non-profit organizations and contributes to their software projects on a volunteer basis.
About the book

Treat yourself to a lively, intuitive, and easy-to-follow introduction to computer programming in Python. The book was written specifically for biologists with little or no prior experience of writing code - with the goal of giving them not only a foundation in Python programming, but also the confidence and inspiration to start using Python in their own research. Virtually all of the examples in the book are drawn from across a wide spectrum of life science research, from simple biochemical calculations and sequence analysis, to modeling the dynamic interactions of genes and proteins in cells, or the drift of genes in an evolving population. Best of all, Python for the Life Sciences shows you how to implement all of these projects in Python, one of the most popular programming languages for scientific computing. If you are a life scientist interested in learning Python to jump-start your research, this is the book for you.

What You’ll Learn

- Write Python scripts to automate your lab calculations
- Search for important motifs in genome sequences
- Use object-oriented programming with Python
- Study mining interaction network data for patterns
- Review dynamic modeling of biochemical switches

Who This Book Is For

Life scientists with little or no programming experience, including undergraduate and graduate students, postdoctoral researchers in academia and industry, medical professionals, and teachers/lecturers.

“Brings together life science's and Python programming

Covers how to find sequences, automate boring calculations, build models, and generally have fun doing quantitative research with Python.

Covers Python with examples drawn from real life science research in a fun, engaging style

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17. Foxes Guarding Hen Houses
18. A Virtual Flu Epidemic
19. Retracing Life's Footsteps

About the author

Alex Lancaster is an evolutionary biologist, engineer, writer and consultant. Alex completed his Ph.D. in evolutionary biology at the University of California, Berkeley, and also holds bachelor's degrees in physics and electrical engineering. He has worked in research & development in both Australia and the United States with a major focus on evolutionary and systems biology. He has also worked extensively in genomics, analyzing next-generation sequencing data and has developed tools for clinical and population genomics, with a particular specialization in immunogenetic applications. He has held research and faculty positions in academia, as well as R&D positions in the broadcasting and IT industries. Alex has published many peer-reviewed papers and is interested in solving problems […]
Learn Algorithmic Trading with Python
Build Automated Electronic Trading Systems using Python
J. S. O’Garro, New York, NY, USA

About the book
Develop and deploy an automated electronic trading system with Python and the SciPy ecosystem. This book introduces you to the tools required to gather and analyze financial data through the techniques of data munging and data visualization using Python and its popular libraries: NumPy, pandas, scikit-learn, and Matplotlib. You will create a research environment using Jupyter Notebooks while leveraging open source back-testing software to analyze and experiment with several trading strategies. Next, you will measure the level of return and risk of a portfolio using measures such as Alpha, Beta, and the Sharpe Ratio. This will set the stage for the use of open source backtesting and scientific computing libraries such as zipline, NumPy, and scikit-learn to develop models that will help you identify, buy, and sell signals for securities in your portfolio and watch-list. With Learn Algorithmic Trading with Python you will explore key techniques used to analyze the performance of a portfolio and trading strategies and write unit tests on Python code that will send live orders to the market. What You’ll Learn Analyze financial data with Pandas Use Python libraries to perform statistical reviews Review algorithmic trading strategies Assess risk management with NumPy and StatsModels Perform paper and Live Trading with IB Python API Write unit tests and deploy your trading system to the Cloud Who This Book Is For Software developers, data scientists, or students interested in Python and the SciPy ecosystem

- Covers key trading strategies and portfolio management tips
- Applies Python to algorithmic trading and portfolio management
- Includes building financial models with NumPy and Pandas

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About the author
Jamal Sinclair O’Garro is a full-stack Python and Node.js developer with over 10 years of experience working at several top-tier bulge-bracket investment banks and asset managers including Goldman Sachs, Morgan Stanley, JPMorgan, BlackRock Financial Management, a multi-billion dollar hedge fund, and a major securities market maker. His primary focus is designing and building electronic trading software systems. He has experience developing semi-systematic trading, algorithmic trading, backtesting and data visualization programs on Wall Street. Jamal is also heavily involved in the NYC tech scene and runs two of New York City’s largest tech meetups. He has been invited to and has spoken at President Barack Obama’s White House, the United Nations, and New York University. Jamal has been […]
Python for Teenagers
Learn to Program like a Superhero!

J. R. Payne, Deerfield Beach, FL, USA

About the book
Discover everything you need to know about Python to turn your passion of programming into a job you’ll love. Fueled by fun and practical examples, this book gives high schoolers who want to learn an easy programming language ideas for how to leverage them in the workforce. Start with the basics and before you know it, you’ll be building your own web sites, doing white-hat hacking, finding code bugs and errors, and creating games, including using Python to roll characters for RPGs. Every chapter is relaxed and informal, like learning with a cool teacher all the time. Computers, phones and the web are your playground, and you’ll be ready to join the party with your own content. Going beyond posts and uploads means learning to program, and Python is a great choice to get started. It’s quick to learn, it’s flexible, and if you want, it may get you a Python job that pays more than minimum wage when you’re out of school. Python for Teenagers is the most fun you’ll have while learning. What You’ll Learn Review programming basics — you gotta start somewhere Code applications that follow directions and make decisions Understand Classes and objects — when a program is a child Make games with graphics and animation Who This Book Is For High schoolers who want learn an easy programming language.

- A fun approach to inspire teenagers to a lifelong love of programming and Python
- Shows how to make your own Python apps, games, web sites, and more
- Written by former Editor-in-Chief/Community Manager of Developer Shed - an online publication and community

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About the author
James R. Payne was introduced to programming when he was just 10 years old. He started off hacking text-based games like Lemonade Stand to gain an advantage while playing and soon started creating his own text-based Role-Playing Games in the style of Dungeons and Dragons and inspired by his favorite comic books. The enjoyment of those early days stuck with him, and he continues to be drawn back into the programming world throughout his career. Payne is the former Editor-in-Chief/Community Manager of Developer Shed, an online publication and community consisting of 14 websites and forums dedicated to programming, web development, and Internet Marketing. He's written over a thousand articles on coding and marketing, covering virtually every language and platform available. His first […]

Learn PySpark

Build Python-based Machine Learning and Deep Learning Models

P. Singh, AWHO Sandeep Vihar, Bangalore, India

About the book

Leverage machine and deep learning models to build applications on real-time data using PySpark. This book is perfect for those who want to learn to use this language to perform exploratory data analysis and solve an array of business challenges. You’ll start by reviewing PySpark fundamentals, such as Spark’s core architecture, and see how to use PySpark for big data processing like data ingestion, cleaning, and transformations techniques. This is followed by building workflows for analyzing streaming data using PySpark and a comparison of various streaming platforms. You’ll then see how to schedule different spark jobs using Airflow with PySpark and book examine tuning machine and deep learning models for real-time predictions. This book concludes with a discussion on graph frames and performing network analysis using graph algorithms in PySpark. All the code presented in the book will be available in Python scripts on Github. What You’ll Learn Develop pipelines for streaming data processing using PySpark Build Machine Learning & Deep Learning models using PySpark latest offerings Use graph analytics using PySpark Create Sequence Embeddings from Text data Who This Book is For Data Scientists, machine learning and deep learning engineers who want to learn and use PySpark for real time analysis on streaming data.

- Covers entire range of PySpark’s offerings from streaming to graph analytics
- Build standardized work flows for pre-processing and builds machine learning and deep learning models on big data sets
- Discusses how to schedule different Spark jobs using Airflow

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About the author

Pramod Singh is currently a Manager (Data Science) at Publicis Sapient and working as data science lead for a project with Mercedes Benz. He has spent the last nine years working on multiple Data projects at SapientRazorfish, Infosys & Tally and has used traditional to advanced machine learning and deep learning techniques in multiple projects using R, Python, Spark and Tensorflow. Pramod has also been a regular speaker at major conferences in India and abroad and is currently authoring a couple of books on Deep Learning and AI techniques. He regularly conducts Data Science meetups at SapientRazorfish and presents webinars on Machine Learning and Artificial Intelligence. He lives in Bangalore with his wife and 2-year-old son. In his spare time, he enjoys coding, reading and watching […]

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DevOps in Python

Infrastructure as Python

M. Zadka, Belmont, CA, USA

About the book
Explore and apply best practices for efficient application deployment. This book draws upon author Moshe Zadka’s years of DevOps experience and focuses on the parts of Python, and the Python ecosystem, that are relevant for DevOps engineers. You’ll start by writing command-line scripts and automating simple DevOps-style tasks. You’ll then move on to more advanced cases, like using Jupyter as an auditable remote-control panel, and writing Ansible and Salt extensions. This work also covers how to use the AWS API to manage cloud infrastructure, and how to manage Python programs and environments on remote machines. Python was invented as a systems management language for distributed operating systems, which makes it an ideal tool for DevOps. Assuming a basic understanding of Python concepts, this book is perfect for engineers who want to move from operations/system administration into coding. What You’ll Learn: Use third party packages and create new packages Create operating system management and automation code in Python Write testable code, and testing best practices Work with REST APIs for web clients Who This Book Is For: Junior or intermediate sysadmin who has picked up some bash and Python basics.

- Builds on readers basic familiarity with Python to focus on those parts essential to DevOps
- Addresses the growing demand for DevOps specialization among Python developers
- Based on the author’s more than 15 years of experience doing DevOps with Python

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About the author
Moshe Zadka has been part of the open source community since 1995 and has been involved with DevOps since before the term became mainstream. One of two collaborators in the Facebook bootcamp Python class, he made his first core Python contributions in 1998, and is a founding member of the Twisted open source project. He has also given tutorials and talks at several recent PyCon conferences and contributed to Expert Twisted (Apress, 2019); ted at “Production Engineers”, which is what Facebook calls DevOps. Moshe has been part of the open source community since 1995, made his first core Python contributions in 1998 and is a founding member of the Twisted open source project. He has given tutorials or talks at several recent PyCon conferences and contributed to Expert Twisted (Apress, 2019).
Practical Cryptography in Python
Learning Correct Cryptography by Example
S. J. Neilson, Owings Mills, MD, USA; C. K. Monson, Owings Mills, MD, USA

About the book
Develop a greater intuition for the proper use of cryptography. This book teaches the basics of writing cryptographic algorithms in Python, demystifies cryptographic internals, and demonstrates common ways cryptography is used incorrectly. Cryptography is the life blood of the digital world’s security infrastructure. From governments around the world to the average consumer, most communications are protected in some form or another by cryptography. These days, even Google searches are encrypted. Despite its ubiquity, cryptography is easy to misconfigure, misuse, and misunderstand. Developers building cryptographic operations into their applications are not typically experts in the subject, and may not fully grasp the implication of different algorithms, modes, and other parameters. The concepts in this book are largely taught by example, including incorrect uses of cryptography and how “bad” cryptography can be broken. By digging into the guts of cryptography, you can experience what works, what doesn’t, and why. What You’ll Learn Understand where cryptography is used, why, and how it gets misused Know what secure hashing is used for and its basic properties Get up to speed on algorithms and modes for block ciphers such as AES, and see how bad configurations break Use message integrity and/or digital signatures to protect messages Utilize modern symmetric ciphers such as AES-GCM and CHACHA Practice the basics of public key cryptography, including ECDSA signatures Discover how RSA encryption can be broken if insecure padding is used Employ TLS connections for secure communications Find out how certificates work and modern improvements such as certificate pinning and certificate transparency (CT) logs

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Chapter 5: Message Integrity, Signatures, and Certificates
Chapter 6: Combining Asymmetric and Symmetric Algorithms
Chapter 7: More Symmetric Crypto: Authenticated Encryption and Kerberos
Chapter 8: TLS Communications

About the author
Dr. Seth James Nielson is the founder and chief scientist of Crimson Vista, Inc., a boutique computer security research and consulting company. He is also an adjunct professor at Johns Hopkins University where he teaches network security and has also served as the director of advanced research projects at the Information Security Institute. As part of his Hopkins work, he co-founded the cryptodoneright.org knowledge base, through a generous grant from Cisco; Christopher K. Monson has a PhD in machine learning, and has spent over a decade at Google in various engineering, machine learning, and leadership roles. He has broad experience writing and teaching programming courses in multiple languages, and has worked in document password recovery, malware detection, and large-scale secure […]

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JavaScript Frameworks for Modern Web Development

The Essential Frameworks, Libraries, and Tools to Learn Right Now

2nd Edition

S. bin Uzayr, Al Manama, United Arab Emirates; N. Cloud, Florissant, MO, USA; T. Ambler, Nashville, TN, USA

About the book

Enrich your software design skills and take a guided tour of the wild, vast, and untamed frontier that is JavaScript development. Especially useful for frontend developers, this revision includes specific chapters on React and VueJS, as well as an updated one on Angular. To help you get the most of your new skills, each chapter also has a “further reading” section. This book will serve as an introduction to both new and well-established libraries and frameworks, such as Angular, VueJS, React, Grunt, Yeoman, RequireJS, Browserify, Knockout, Kraken, Async.js, Underscore, and Lodash. It also covers utilities that have gained popular traction and support from seasoned developers and tools applicable to the entire development stack, both client- and server-side. While no single book can possibly cover every JavaScript library of value, JavaScript Frameworks for Modern Web Development focuses on incredibly useful libraries and frameworks that production software uses. You will be treated to detailed analyses and sample code for tools that manage dependencies, structure code in a modular fashion, automate repetitive build tasks, create specialized servers, structure client-side applications, facilitate horizontal scaling, and interacting with disparate data stores. What You’ll Learn Work with a variety of JavaScript frameworks, such as Angular, Vue, React, RequireJS, Knockout, and more. Choose the right framework for different types of projects. Employ the appropriate libraries and tools in your projects. Discover useful JavaScript development tools such as Grunt, Yeoman, Lodash, etc. Who This Book Is For Web developers of all levels of ability; particularly relevant for frontend developers, server-side coders, and developers interested in learning JavaScript.

- Focuses on front end frameworks, such as React, VueJS, and also addresses niche-focused and performance driven frameworks such as Kraken, Mongoose, etc.
- Provides not only comprehensive coverage of the features and uses of each framework covered, but also advises the reader on which framework to use for different situations, alleviating the problem of ‘too much choice’ when it comes to the multitude of JavaScript frameworks available.
- Practical advice and guidance that will help not only new developers, but those with experience looking for a single resource that covers the most relevant technologies in today’s JavaScript landscape.

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About the author

Sufyan bin Uzayr is a web developer with over 10 years of experience in the industry. He specializes in a wide variety of technologies, including JavaScript, WordPress, Drupal, PHP, and UNIX/Linux shell and server management, and is the author of four previous books. Sufyan is the CEO of Parakozm, a design and development consultancy firm that offers customized solutions to a global clientele. He is also the CTO at Samurai Servers, a server management and security company catering mainly to enterprise-scale audience. He takes a keen interest in technology, politics, literature, history and sports, and in his spare time he enjoys teaching coding and English to students.
Approachable Accessibility
Planning for Success
M. Dowden, Brownsburg, IN, USA; M. Dowden, Brownsburg, IN, USA

About the book
Understand the realities of modern web accessibility and what considerations should be made to include everyone. There are hundreds of millions of people who are being left out every single day on the web due to disability or circumstance. The purpose of web accessibility is to remove barriers and bring the information, services, and functionality of the web to as many people as possible so they can be included in this global community. This book makes the topic of web accessibility as approachable as possible to help every web professional become an accessibility advocate at their companies, on their projects, and in their communities. This discussion will go beyond the buzzword to explore the impact our designs and decisions have on real people, along with the ethical, legal, and financial incentives for accessibility prioritization. For those who are ready to get started the book covers tools and techniques for testing websites or web applications for conformance to the Web Content Accessibility Guidelines. Because we very rarely work in a vacuum the book also covers how to educate your team or company management on web accessibility as well as persuading them to invest time and money in accessibility. For those looking to start an accessibility practice at their company – or simply to ensure that nothing slips through the cracks – the book includes a guide to creating your very own accessibility action plan. Having a well-documented plan of action is an essential step in the long-term success of any initiative. Get started with web accessibility using Approachable Accessibility today. What You’ll Learn Discover various ways that website design can exclude or even harm users Gain an understanding of the Web Content Accessibility Guidelines (WCAG) 2.1 Put together an accessibility action plan for your organization Explore tools and techniques for evaluating your existing websites Who This Book Is For Web designers and developers who want to know more about web accessibility or just want to know how to get started; tech leaders who need help building an accessibility practice or convincing their company to invest in web accessibility; project managers and owners making scope decisions for a project.

- Fully up-to-date guide to modern web accessibility, covering WCAG 2.1 conformance and success criteria
- Provides answers to some common questions about web accessibility and introduces tools and techniques you can use to get started
- Helps you build an action plan to launch an accessibility initiative at your company.

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About the author
Martine and Michael Dowden are co-founders at Andromeda, FlexePark, and M2D2 Enterprises. Together they leverage a combined 40 years experience in tech and education to build accessible software products and educate others on UX, design, and development topics. Martine uses her degrees in psychology and visual design to create beautiful web interfaces that are usable by everyone. Michael uses his education in computer science and entrepreneurship to build software and businesses that are ethical and inclusive.
The Blockchain Developer
E. Elrom, New York, NY, USA

About the book
Become a Blockchain developer and design, build, publish, test, maintain and secure scalable decentralized Blockchain projects using Bitcoin, Ethereum, NEO, EOS and Hyperledger. This book helps you understand Blockchain beyond development and crypto to better harness its power and capability. You will learn tips to start your own project, and best practices for testing, security, and even compliance. Immerse yourself in this technology and review key topics such as cryptoeconomics, coding your own Blockchain P2P network, different consensus mechanisms, decentralized ledger, mining, wallets, blocks, and transactions. Additionally, this book provides you with hands-on practical tools and examples for creating smart contracts and dApps for different blockchains such as Ethereum, NEO, EOS, and Hyperledger. Aided by practical, real-world coding examples, you’ll see how to build dApps with Angular utilizing typescript from start to finish, connect to the blockchain network locally on a test network, and publish on the production mainnet environment. Don’t be left out of the next technology revolution – become a Blockchain developer using The Blockchain Developer today.

What You’ll Learn
- Explore the Blockchain ecosystem and the different consensus mechanisms
- Create miners, wallets, transactions, distributed networks and DApps
- Review the main features of Bitcoin, Ethereum, NEO and EOS, and Hyperledger
- Interact with popular node clients as well as implementing your own Blockchain Publish and test your projects for security and scalability

Who This Book Is For
- Developers, architects and engineers who are interested in learning about Blockchain or implementing Blockchain into a new greenfield project or integrating Blockchain into a brownfield project.
- Technical entrepreneurs, technical investors or even executives who want to better understand Blockchain technology and its potential.

- Learn to work with Blockchain to create front-end wallets in React or Angular that work with Bitcoin, Ethereum, EOS, NEO and Hyperledger
- Filled with practical, real-world code examples that ensure you can learn by doing and become a well-rounded Blockchain developer
- Written by Elad Elrom, coder, technical lead and author of four technical books, well used to distilling difficult concepts into easy-to-understand instructions

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About the author
Elad Elrom is a coder, technical lead and a technical writer. As a writer, he has co-authored four technical books. Elad has consulted for a variety of clients, from large corporations such as HBO, Viacom, NBC Universal, and Weight Watchers, to smaller startups. Aside from coding, Elad is also a certified PADI dive instructor, motorcycle enthusiast, as well as an accomplished certified pilot.
About the book

Make your websites more dynamic by adding a feedback form, creating a private area where members can upload images that are automatically resized, or perhaps storing all your content in a database. David Powers has updated his definitive book to incorporate the latest techniques and changes to PHP, including the arrival of PHP 7. New features include the spaceship and null coalesce operators, generators, using array shorthand syntax for list(), array dereferencing, and array unpacking with the splat operator. The problem is, you’re not a programmer and the thought of writing code sends a chill up your spine. Or maybe you’ve dabbled a bit in PHP and MySQL, but you can’t get past baby steps. If this describes you, then you’ve just found the right book. PHP and the MySQL database are deservedly the most popular combination for creating dynamic websites. They’re free, easy to use, and provided by many web hosting companies in their standard packages. This book also covers MariaDB, a seamless replacement for MySQL that has been adopted on many web servers. Unfortunately, most PHP books either expect you to be an expert already or force you to go through endless exercises of little practical value. In contrast, this book gives you real value right away through a series of practical examples that you can incorporate directly into your sites, optimizing performance and adding functionality such as file uploading, email feedback forms, image galleries, content management systems, and much more. Each solution is created with not only functionality in mind, but also visual design. But this book doesn’t just provide a collection of ready-made scripts: each PHP solution builds on what’s gone before, teaching you the basics of PHP and database design quickly and painlessly. By the end of the book, you’ll have the confidence to start writing your own scripts or—if you prefer to leave that task to others—to adapt existing scripts to your own requirements. Right from the start, you’re shown how easy it is to protect your sites by adopting secure coding practices. What You Will Learn Design and build dynamic PHP-based web sites and applications Get started right away through practical examples that you can reuse Incorporate PHP 7 elements including new ways of handling arrays Work with the latest PHP 7 techniques, innovations, and best practices Who This Book Is For Readers should have at least some prior exposure to web development using PHP.

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16. Formatting Text and Dates  
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About the author

David Powers is an Adobe Community Expert for Dreamweaver and author of a series of highly successful books on PHP, including PHP Solutions: Dynamic Web Design Made Easy and Foundation PHP for Dreamweaver 8. As a professional writer, he has been involved in electronic media for more than 30 years, first with BBC radio and television and more recently with the Internet. His clear writing style is valued not only in the English-speaking world; several of his books have been translated into Spanish and Polish. What started as a mild interest in computing was transformed almost overnight into a passion, when David was posted to Japan in 1987 as BBC correspondent in Tokyo. With no corporate IT department just down the hallway, he was forced to learn how to fix everything himself. When not […]

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