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More physicists today are taking on the role of software developer as part of their research, but software development isn't always easy or obvious, even for physicists. This practical book teaches essential software development skills to help you automate and accomplish nearly any aspect of research in a physics-based field. Written by two PhDs in nuclear engineering, this book includes practical examples drawn from a working knowledge of physics concepts. You'll learn how to use the Python programming language to perform everything from collecting and analyzing data to building software and publishing your results. In four parts, this book includes:

- Getting Started: Jump into Python, the command line, data containers, functions, flow control and logic, and classes and objects
- Getting It Done: Learn about regular expressions, analysis and visualization, NumPy, storing data in files and HDF5, important data structures in physics, computing in parallel, and deploying software
- Getting It Right: Build pipelines and software, learn to use local and remote version control, and debug and test your code
- Getting It Out There: Document your code, process and publish your findings, and collaborate efficiently; dive into software licenses, ownership, and copyright procedures

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This book includes selected papers from the International Conference on Data Science and Intelligent Applications (ICDSIA 2020), hosted by Gandhinagar Institute of Technology (GIT), Gujarat, India, on January 24–25, 2020. The proceedings present original and high-quality contributions on theory and practice concerning emerging technologies in the areas of data science and intelligent applications. The conference provides a forum for researchers from academia and industry to present and share their ideas, views and results, while also helping them approach the challenges of technological advancements from different viewpoints. The contributions cover a broad range of topics, including: collective intelligence, intelligent systems, IoT, fuzzy systems, Bayesian networks, ant colony optimization, data privacy and security, data mining, data warehousing, big data analytics, cloud computing, natural language processing, swarm intelligence, speech processing, machine learning and deep learning, and intelligent applications and systems. Helping strengthen the links between academia and industry, the book offers a valuable resource for instructors, students, industry practitioners, engineers, managers, researchers, and scientists alike.

This is the eBook of the printed book and may not include any media, website access codes, or print supplements that may come packaged with the

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bound book. Used by sites as varied as Twitter, GitHub, Disney, and Airbnb, Ruby on Rails is one of the most popular frameworks for developing web applications, but it can be challenging to learn and use. Whether you're new to web development or new only to Rails, *Ruby on Rails™ Tutorial, Fourth Edition*, is the solution. Best-selling author and leading Rails developer Michael Hartl teaches Rails by guiding you through the development of three example applications of increasing sophistication. The tutorial's examples focus on the general principles of web development needed for virtually any kind of website. The updates to this edition include full compatibility with Rails 5, a division of the largest chapters into more manageable units, and a huge number of new exercises interspersed in each chapter for maximum reinforcement of the material. This indispensable guide provides integrated tutorials not only for Rails, but also for the essential Ruby, HTML, CSS, and SQL skills you need when developing web applications. Hartl explains how each new technique solves a real-world problem, and then he demonstrates it with bite-sized code that's simple enough to understand, yet novel enough to be useful. Whatever your previous web development experience, this book will guide you to true Rails mastery. This book will help you install and set up your Rails development environment, including pre-installed integrated development

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environment (IDE) in the cloud Go beyond generated code to truly understand how to build Rails applications from scratch Learn testing and test-driven development (TDD) Effectively use the Model-View-Controller (MVC) pattern Structure applications using the REST architecture Build static pages and transform them into dynamic ones Master the Ruby programming skills all Rails developers need Create high-quality site layouts and data models Implement registration and authentication systems, including validation and secure passwords Update, display, and delete users Upload images in production using a cloud storage service Implement account activation and password reset, including sending email with Rails Add social features and microblogging, including an introduction to Ajax Record version changes with Git and create a secure remote repository at Bitbucket Deploy your applications early and often with Heroku

This book presents a comprehensive state-of-the-art approach to digital health technologies and practices within the broad confines of healthcare practices. It provides a canvas to discuss emerging digital health solutions, propelled by the ubiquitous availability of miniaturized, personalized devices and affordable, easy to use wearable sensors, and innovative technologies like 3D printing, virtual and augmented reality and driverless robots and vehicles including drones. One of the most significant promises the

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digital health solutions hold is to keep us healthier for longer, even with limited resources, while truly scaling the delivery of healthcare. Digital Health: Scaling Healthcare to the World addresses the emerging trends and enabling technologies contributing to technological advances in healthcare practice in the 21st Century. These areas include generic topics such as mobile health and telemedicine, as well as specific concepts such as social media for health, wearables and quantified-self trends. Also covered are the psychological models leveraged in design of solutions to persuade us to follow some recommended actions, then the design and educational facets of the proposed innovations, as well as ethics, privacy, security, and liability aspects influencing its acceptance.

Furthermore, sections on economic aspects of the proposed innovations are included, analyzing the potential business models and entrepreneurship opportunities in the domain.

Step-by-step instructions which take you through each program to automate monotonous tasks with Python 3.7 Key Features Automate integral business processes such as report generation, email marketing, and lead generation Build your first web application that scrapes data and accesses websites' APIs Create graphic-rich charts, graphs, and maps using Matplotlib Book Description Have you been doing the same old monotonous office work over and

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over again? Or have you been trying to find an easy way to make your life better by automating some of your repetitive tasks? Through a tried and tested approach, understand how to automate all the boring stuff using Python. The Python Automation Cookbook helps you develop a clear understanding of how to automate your business processes using Python, including detecting opportunities by scraping the web, analyzing information to generate automatic spreadsheets reports with graphs, and communicating with automatically generated emails. You'll learn how to get notifications via text messages and run tasks while your mind is focused on other important activities, followed by understanding how to scan documents such as résumés. Once you've gotten familiar with the fundamentals, you'll be introduced to the world of graphs, along with studying how to produce organized charts using Matplotlib. In addition to this, you'll gain in-depth knowledge of how to generate rich graphics showing relevant information. By the end of this book, you'll have refined your skills by attaining a sound understanding of how to identify and correct problems to produce superior and reliable systems. What you will learn Get to grips with scraping a website to detect changes Search and process raw sales files to aggregate information in spreadsheets Explore techniques to extract information from an Excel spreadsheet and generate

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exciting reports with graphs Discover the techniques required to generate random, print-friendly codes to be used as single-use coupons Automatically generate a marketing campaign, contacting the recipients over different channels Identify and implement precise solutions Who this book is for The Python Automation Cookbook is for you if you are a developer or anyone who wants to automate monotonous manual tasks related to fields such as finance, sales, and HR, among others.

This book is an easy-to-follow guide that shows the essential parts of Three.js through a set of extensive examples. Through the explanation of these examples, you'll learn everything you need to know about Three.js. If you already know JavaScript and want to quickly learn the essentials of Three.js, this book is for you. No prior knowledge of Three.js, WebGL, 3D modelling, or Maths is required.

This book introduces state-of-the-art research on simulation and serious games for education. Based partially on work presented at the 3rd Asia-Europe Symposium on Simulation and Serious Games (3rd AESSSG) held in Zhuhai, China as part of the 2016 ACM SIGGRAPH International Conference on Virtual-Reality Consortium and Applications in Industry (VRACI 2016), it includes a selection of the best papers from both. The book is divided into three major domains of education applications that use simulation and serious games: science, technology,

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engineering and mathematics (STEM) education; special needs education; and humanity and social science education. A valuable resource for researchers and developers in simulation and serious games for education benefit from this book, it also offers educators and professionals involved in training insights into the possible applications of simulation and serious games in various areas. Felix Klein, one of the great nineteenth-century geometers, rediscovered in mathematics an idea from Eastern philosophy: the heaven of Indra contained a net of pearls, each of which was reflected in its neighbour, so that the whole Universe was mirrored in each pearl. Klein studied infinitely repeated reflections and was led to forms with multiple co-existing symmetries. For a century these ideas barely existed outside the imagination of mathematicians. However in the 1980s the authors embarked on the first computer exploration of Klein's vision, and in doing so found many further extraordinary images. Join the authors on the path from basic mathematical ideas to the simple algorithms that create the delicate fractal filigrees, most of which have never appeared in print before. Beginners can follow the step-by-step instructions for writing programs that generate the images. Others can see how the images relate to ideas at the forefront of research.

Unlock the complexities of machine learning algorithms

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in Spark to generate useful data insights through this data analysis tutorial About This Book Process and analyze big data in a distributed and scalable way Write sophisticated Spark pipelines that incorporate elaborate extraction Build and use regression models to predict flight delays Who This Book Is For Are you a developer with a background in machine learning and statistics who is feeling limited by the current slow and “small data” machine learning tools? Then this is the book for you! In this book, you will create scalable machine learning applications to power a modern data-driven business using Spark. We assume that you already know the machine learning concepts and algorithms and have Spark up and running (whether on a cluster or locally) and have a basic knowledge of the various libraries contained in Spark. What You Will Learn Use Spark streams to cluster tweets online Run the PageRank algorithm to compute user influence Perform complex manipulation of DataFrames using Spark Define Spark pipelines to compose individual data transformations Utilize generated models for off-line/on-line prediction Transfer the learning from an ensemble to a simpler Neural Network Understand basic graph properties and important graph operations Use GraphFrames, an extension of DataFrames to graphs, to study graphs using an elegant query language Use K-means algorithm to cluster movie reviews dataset In Detail The purpose of machine learning is to build systems that learn from data. Being able to understand trends and patterns in complex data is critical to success; it is one of the key strategies to unlock growth in the challenging contemporary

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marketplace today. With the meteoric rise of machine learning, developers are now keen on finding out how can they make their Spark applications smarter. This book gives you access to transform data into actionable knowledge. The book commences by defining machine learning primitives by the MLlib and H2O libraries. You will learn how to use Binary classification to detect the Higgs Boson particle in the huge amount of data produced by CERN particle collider and classify daily health activities using ensemble Methods for Multi-Class Classification. Next, you will solve a typical regression problem involving flight delay predictions and write sophisticated Spark pipelines. You will analyze Twitter data with help of the doc2vec algorithm and K-means clustering. Finally, you will build different pattern mining models using MLlib, perform complex manipulation of DataFrames using Spark and Spark SQL, and deploy your app in a Spark streaming environment. Style and approach This book takes a practical approach to help you get to grips with using Spark for analytics and to implement machine learning algorithms. We'll teach you about advanced applications of machine learning through illustrative examples. These examples will equip you to harness the potential of machine learning, through Spark, in a variety of enterprise-grade systems. This book gives clear and effective instructions, stuffed with practical examples, to build your own fun, stunning and highly-interactive openFrameworks applications. Each chapter is focused differently and has a new theme to it, This book targets visual artists, designers, programmers and those interested in creative coding by

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getting started with openFrameworks. This book will help you understand the capabilities of openFrameworks to help you create visually stunning and fully interactive applications. You should have a basic knowledge of object oriented programming, such as C++, Java, Python, ActionScript 3, etc.

This is the fourth volume of the successful series Robot Operating Systems: The Complete Reference, providing a comprehensive overview of robot operating systems (ROS), which is currently the main development framework for robotics applications, as well as the latest trends and contributed systems. The book is divided into four parts: Part 1 features two papers on navigation, discussing SLAM and path planning. Part 2 focuses on the integration of ROS into quadcopters and their control. Part 3 then discusses two emerging applications for robotics: cloud robotics, and video stabilization. Part 4 presents tools developed for ROS; the first is a practical alternative to the roslaunch system, and the second is related to penetration testing. This book is a valuable resource for ROS users and wanting to learn more about ROS capabilities and features.

Ptolemy's Almagest is one of the most influential scientific works in history. A masterpiece of technical exposition, it was the basic textbook of astronomy for more than a thousand years, and still is the main source for our knowledge of ancient astronomy. This translation, based on the standard Greek text of Heiberg, makes the work accessible to English readers in an intelligible and reliable form. It contains numerous corrections derived from medieval Arabic translations and extensive

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footnotes that take account of the great progress in understanding the work made in this century, due to the discovery of Babylonian records and other researches. It is designed to stand by itself as an interpretation of the original, but it will also be useful as an aid to reading the Greek text.

'Emmett William's Sweethearts is a breakthrough. It is to concrete poetry as Wuthering Heights is to the English novel; as Guernica is to modern art. Sweethearts is the first large scale lyric masterpiece among the concrete texts, compelling in its emotional scope, readable, a sweetly heartfelt, jokey, crying, laughing, tender expression of love. It moves. Miraculously, the formal limitations of Sweethearts enabled Emmett to prove that, with both hands tied behind his back, gagged, just nudging letters out of a regular grid with his nose (look, no mirrors), a real artist can write the Book of Life all over again.' - (Richard Hamilton)

Mastering openFrameworks: Creative Coding

DemystifiedPackt Publishing Ltd

Shows postcard photographs of the artist's arrangements of one hundred boots in a variety of settings, including in rows outside a bank, at a drive-in, in a line along a sidewalk, and gathered around a campfire

Summary Grokking Deep Learning teaches you to build deep learning neural networks from scratch! In his engaging style, seasoned deep learning expert Andrew Trask shows you the science under the hood, so you grok for yourself every detail of training neural networks. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications.

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About the Technology Deep learning, a branch of artificial intelligence, teaches computers to learn by using neural networks, technology inspired by the human brain. Online text translation, self-driving cars, personalized product recommendations, and virtual voice assistants are just a few of the exciting modern advancements possible thanks to deep learning. About the Book Grokking Deep Learning teaches you to build deep learning neural networks from scratch! In his engaging style, seasoned deep learning expert Andrew Trask shows you the science under the hood, so you grok for yourself every detail of training neural networks. Using only Python and its math-supporting library, NumPy, you'll train your own neural networks to see and understand images, translate text into different languages, and even write like Shakespeare! When you're done, you'll be fully prepared to move on to mastering deep learning frameworks. What's inside The science behind deep learning Building and training your own neural networks Privacy concepts, including federated learning Tips for continuing your pursuit of deep learning About the Reader For readers with high school-level math and intermediate programming skills. About the Author Andrew Trask is a PhD student at Oxford University and a research scientist at DeepMind. Previously, Andrew was a researcher and analytics product manager at Digital Reasoning, where he trained the world's largest artificial neural network and helped guide the analytics roadmap for the Synthesys cognitive computing platform. Table of Contents Introducing deep learning: why you should learn it Fundamental concepts:

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how do machines learn? Introduction to neural prediction: forward propagation Introduction to neural learning: gradient descent Learning multiple weights at a time: generalizing gradient descent Building your first deep neural network: introduction to backpropagation How to picture neural networks: in your head and on paper Learning signal and ignoring noise: introduction to regularization and batching Modeling probabilities and nonlinearities: activation functions Neural learning about edges and corners: intro to convolutional neural networks Neural networks that understand language: king - man + woman == ? Neural networks that write like Shakespeare: recurrent layers for variable-length data Introducing automatic optimization: let's build a deep learning framework Learning to write like Shakespeare: long short-term memory Deep learning on unseen data: introducing federated learning Where to go from here: a brief guide

Over the last five years, CoffeeScript has taken the web development world by storm. With the humble motto "It's just JavaScript," CoffeeScript provides all the power of the JavaScript language in a friendly and elegant package. This extensively revised and updated new edition includes an all-new project to demonstrate CoffeeScript in action, both in the browser and on a Node.js server. There's no faster way to learn to write a modern web application. This new edition has been extensively revised and updated to reflect the current state and features of CoffeeScript. Every chapter has been revised and

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refactored, and new sections and a new chapter on testing have been added. If you already know JavaScript, this book will make your transition to CoffeeScript easy. If you're new to JavaScript, it's a great place to start. New in this edition: Automating setup with the Grunt task runner Using CoffeeScript classes with the Backbone framework Using CoffeeScript's simple callback syntax to interact with the Express framework A new chapter on client-side and server-side testing with Intern * A new project that gives you hands-on experience with browser-side and server-side CoffeeScript CoffeeScript is every bit as portable and effective as JavaScript. It aids development by adding a bevy of features, such as classes, splats, list comprehensions, and destructuring. These features make it easier to write clear, readable code, and by learning how these features work, you'll deepen your understand of JavaScript as well. This book is your complete guide to writing better JavaScript code, faster.

The Complete Guide to Building Cloud-Based Services Cloud Native Go shows developers how to build massive cloud applications that meet the insatiable demands of today's customers, and will dynamically scale to handle virtually any volume of data, traffic, or users. Kevin Hoffman and Dan Nemeth describe the modern cloud-native application in detail, illuminating factors, disciplines, and habits associated with rapid, reliable cloud-

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native development. They also introduce Go, a “simply elegant” high-performance language that is especially well-suited for cloud development. You’ll walk through creating microservices in Go, adding front-end web components using ReactJS and Flux, and mastering advanced Go-based cloud-native techniques. Hoffman and Nemeth show how to build a continuous delivery pipeline with tools like Wercker, Docker, and Dockerhub; automatically push apps to leading platforms; and systematically monitor app performance in production. Learn “The Way of the Cloud”: why developing good cloud software is fundamentally about mindset and discipline Discover why Go is ideal for cloud-native microservices development Plan cloud apps that support continuous delivery and deployment Design service ecosystems, and then build them in a test-first manner Push work-in-progress to a cloud Use Event Sourcing and CQRS patterns to react and respond to enormous volume and throughput Secure cloud-based web applications: do’s, don’ts, and options Create reactive applications in the cloud with third-party messaging providers Build massive-scale, cloud-friendly GUIs with React and Flux Monitor dynamic scaling, failover, and fault tolerance in the cloud

Discover practical techniques to build cloud-native apps that are scalable, reliable, and always available. Key Features Build well-designed and

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secure microservices. Enrich your microservices with continuous integration and monitoring. Containerize your application with Docker Deploy your application to AWS. Learn how to utilize the powerful AWS services from within your application Book Description Awarded as one of the best books of all time by BookAuthority, Cloud Native Programming with Golang will take you on a journey into the world of microservices and cloud computing with the help of Go. Cloud computing and microservices are two very important concepts in modern software architecture. They represent key skills that ambitious software engineers need to acquire in order to design and build software applications capable of performing and scaling. Go is a modern cross-platform programming language that is very powerful yet simple; it is an excellent choice for microservices and cloud applications. Go is gaining more and more popularity, and becoming a very attractive skill. This book starts by covering the software architectural patterns of cloud applications, as well as practical concepts regarding how to scale, distribute, and deploy those applications. You will also learn how to build a JavaScript-based front-end for your application, using TypeScript and React. From there, we dive into commercial cloud offerings by covering AWS. Finally, we conclude our book by providing some overviews of other concepts and technologies that you can explore, to move from where the book

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leaves off. What you will learn Understand modern software applications architectures Build secure microservices that can effectively communicate with other services Get to know about event-driven architectures by diving into message queues such as Kafka, Rabbitmq, and AWS SQS. Understand key modern database technologies such as MongoDB, and Amazon's DynamoDB Leverage the power of containers Explore Amazon cloud services fundamentals Know how to utilize the power of the Go language to access key services in the Amazon cloud such as S3, SQS, DynamoDB and more. Build front-end applications using ReactJS with Go Implement CD for modern applications Who this book is for This book is for developers who want to begin building secure, resilient, robust, and scalable Go applications that are cloud native. Some knowledge of the Go programming language should be sufficient. To build the front-end application, you will also need some knowledge of JavaScript programming.

An introduction to a broad range of topics in deep learning, covering mathematical and conceptual background, deep learning techniques used in industry, and research perspectives. "Written by three experts in the field, Deep Learning is the only comprehensive book on the subject." —Elon Musk, cochair of OpenAI; cofounder and CEO of Tesla and SpaceX Deep learning is a form of machine learning

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that enables computers to learn from experience and understand the world in terms of a hierarchy of concepts. Because the computer gathers knowledge from experience, there is no need for a human computer operator to formally specify all the knowledge that the computer needs. The hierarchy of concepts allows the computer to learn complicated concepts by building them out of simpler ones; a graph of these hierarchies would be many layers deep. This book introduces a broad range of topics in deep learning. The text offers mathematical and conceptual background, covering relevant concepts in linear algebra, probability theory and information theory, numerical computation, and machine learning. It describes deep learning techniques used by practitioners in industry, including deep feedforward networks, regularization, optimization algorithms, convolutional networks, sequence modeling, and practical methodology; and it surveys such applications as natural language processing, speech recognition, computer vision, online recommendation systems, bioinformatics, and videogames. Finally, the book offers research perspectives, covering such theoretical topics as linear factor models, autoencoders, representation learning, structured probabilistic models, Monte Carlo methods, the partition function, approximate inference, and deep generative models. Deep Learning can be used by undergraduate or graduate

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students planning careers in either industry or research, and by software engineers who want to begin using deep learning in their products or platforms. A website offers supplementary material for both readers and instructors.

The audience remains much the same as for the 1992 Handbook, namely, mathematics education researchers and other scholars conducting work in mathematics education. This group includes college and university faculty, graduate students, investigators in research and development centers, and staff members at federal, state, and local agencies that conduct and use research within the discipline of mathematics. The intent of the authors of this volume is to provide useful perspectives as well as pertinent information for conducting investigations that are informed by previous work. The Handbook should also be a useful textbook for graduate research seminars. In addition to the audience mentioned above, the present Handbook contains chapters that should be relevant to four other groups: teacher educators, curriculum developers, state and national policy makers, and test developers and others involved with assessment. Taken as a whole, the chapters reflects the mathematics education research community's willingness to accept the challenge of helping the public understand what mathematics education research is all about and what the relevance of their

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research findings might be for those outside their immediate community.

Now available in a paperback edition, LaToya Ruby Frazier's award-winning first book, "The Notion of Family," offers an incisive exploration of the legacy of racism and economic decline in America's small towns, as embodied by her hometown of Braddock, Pennsylvania. The work also considers the impact of that decline on the community and on her family, creating a statement both personal and truly political an intervention in the histories and narratives of the region. Frazier has compellingly set her story of three generations her Grandma Ruby, her mother, and herself against larger questions of civic belonging and responsibility. The work documents her own struggles and interactions with family and the expectations of community, and includes the documentation of the demise of Braddock's only hospital, reinforcing the idea that the history of a place is frequently written on the body as well as the landscape. With "The Notion of Family," Frazier knowingly acknowledges and expands upon the traditions of classic black-and-white documentary photography, enlisting the participation of her family, and her mother in particular. In the creation of these collaborative works, Frazier reinforces the idea of art and image-making as a transformative act, a means of resetting traditional power dynamics and narratives both those of her family and of the

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community at large. "

Create and animate stunning 3D browser based graphics with Three.js JavaScript library Key Features Enhance your 3D graphics with light sources, shadows, advanced materials, and textures Load models from external sources, and visualize and animate them directly from JavaScript Create your own custom WebGL shader and explore the postprocessing feature of Three.js Book Description WebGL makes it possible to create 3D graphics in the browser without having to use plugins such as Flash and Java. Programming WebGL, however, is difficult and complex. With Three.js, it is possible to create stunning 3D graphics in an intuitive manner using JavaScript, without having to learn WebGL. With this book, you'll learn how to create and animate beautiful looking 3D scenes directly in your browser-utilizing the full potential of WebGL and modern browsers. It starts with the basic concepts and building blocks used in Three.js. From there on, it will expand on these subjects using extensive examples and code samples. You will learn to create, or load, from externally created models, realistic looking 3D objects using materials and textures. You'll find out how to easily control the camera using the Three.js built-in in camera controls, which will enable you to fly or walk around the 3D scene you created. You will then use the HTML5 video and canvas elements as a material for

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your 3D objects and to animate your models. Finally, you will learn to use morph and skeleton-based animation, and even how to add physics, such as gravity and collision detection, to your scene. After reading this book, you'll know everything that is required to create 3D animated graphics using Three.js. What you will learn

- Work with the different types of materials in Three.js and see how they interact with your 3D objects and the rest of the environment
- Implement the different camera controls provided by Three.js to effortlessly navigate around your 3D scene
- Work with vertices directly to create snow, rain, and galaxy-like effects
- Import and animate models from external formats, such as OBJ, STL, and COLLADA
- Create and run animations using morph targets and bones animations
- Explore advanced textures on materials to create realistic looking 3D objects by using bump maps, normal maps, specular maps, and light maps
- Interact directly with WebGL by creating custom vertex and fragment shaders

Who this book is for The ideal target audience for this book would be JavaScript developers who who wa ...

Learning analytics is one of the most important research issues in the field of educational technology. By analyzing logs and records in educational databases and systems, it can provide useful information to teachers, learners, and decision makers – information which they can use to improve

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teaching strategies, learning performances, and educational policies. However, it is a great challenge for most researchers to efficiently analyze educational data in a meaningful way. This book presents various learning analytics approaches and applications, including the process of determining the coding scheme, analyzing the collected data, and interpreting the findings. This book was originally published as a special issue of Interactive Learning Environments.

The second edition of the best-selling Python book in the world (over 1 million copies sold!). A fast-paced, no-nonsense guide to programming in Python.

Updated and thoroughly revised to reflect the latest in Python code and practices. Python Crash Course is the world's best-selling guide to the Python programming language. This fast-paced, thorough introduction to programming with Python will have you writing programs, solving problems, and making things that work in no time. In the first half of the book, you'll learn basic programming concepts, such as variables, lists, classes, and loops, and practice writing clean code with exercises for each topic.

You'll also learn how to make your programs interactive and test your code safely before adding it to a project. In the second half, you'll put your new knowledge into practice with three substantial projects: a Space Invaders-inspired arcade game, a set of data visualizations with Python's handy

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libraries, and a simple web app you can deploy online. As you work through the book, you'll learn how to:

- Use powerful Python libraries and tools, including Pygame, Matplotlib, Plotly, and Django
- Make 2D games that respond to keypresses and mouse clicks, and that increase in difficulty
- Use data to generate interactive visualizations
- Create and customize web apps and deploy them safely online
- Deal with mistakes and errors so you can solve your own programming problems

If you've been thinking about digging into programming, Python Crash Course will get you writing real programs fast. Why wait any longer? Start your engines and code!

Pulsing with drama and excitement, *Infinesimal* celebrates the spirit of discovery, innovation, and intellectual achievement-and it will forever change the way you look at a simple line. On August 10, 1632, five men in flowing black robes convened in a somber Roman palazzo to pass judgment on a deceptively simple proposition: that a continuous line is composed of distinct and infinitely tiny parts. With the stroke of a pen the Jesuit fathers banned the doctrine of infinitesimals, announcing that it could never be taught or even mentioned. The concept was deemed dangerous and subversive, a threat to the belief that the world was an orderly place, governed by a strict and unchanging set of rules. If infinitesimals were ever accepted, the Jesuits feared,

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the entire world would be plunged into chaos. In *Infinitesimal*, the award-winning historian Amir Alexander exposes the deep-seated reasons behind the rulings of the Jesuits and shows how the doctrine persisted, becoming the foundation of calculus and much of modern mathematics and technology. Indeed, not everyone agreed with the Jesuits. Philosophers, scientists, and mathematicians across Europe embraced infinitesimals as the key to scientific progress, freedom of thought, and a more tolerant society. As Alexander reveals, it wasn't long before the two camps set off on a war that pitted Europe's forces of hierarchy and order against those of pluralism and change. The story takes us from the bloody battlefields of Europe's religious wars and the English Civil War and into the lives of the greatest mathematicians and philosophers of the day, including Galileo and Isaac Newton, Cardinal Bellarmine and Thomas Hobbes, and Christopher Clavius and John Wallis. In Italy, the defeat of the infinitely small signaled an end to that land's reign as the cultural heart of Europe, and in England, the triumph of infinitesimals helped launch the island nation on a course that would make it the world's first modern state. From the imperial cities of Germany to the green hills of Surrey, from the papal palace in Rome to the halls of the Royal Society of London, Alexander demonstrates how a disagreement over a mathematical concept became a contest over the

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heavens and the earth. The legitimacy of popes and kings, as well as our beliefs in human liberty and progressive science, were at stake-the soul of the modern world hinged on the infinitesimal.

Summary PostGIS in Action, Second Edition teaches readers of all levels to write spatial queries that solve real-world problems. It first gives you a background in vector-, raster-, and topology-based GIS and then quickly moves into analyzing, viewing, and mapping data. This second edition covers PostGIS 2.0 and 2.1 series, PostgreSQL 9.1, 9.2, and 9.3 features, and shows you how to integrate with other GIS tools. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Book Processing data tied to location and topology requires specialized know-how. PostGIS is a free spatial database extender for PostgreSQL, every bit as good as proprietary software. With it, you can easily create location-aware queries in just a few lines of SQL code and build the back end for a mapping, raster analysis, or routing application with minimal effort. PostGIS in Action, Second Edition teaches you to solve real-world geodata problems. It first gives you a background in vector-, raster-, and topology-based GIS and then quickly moves into analyzing, viewing, and mapping data. You'll learn how to optimize queries for maximum speed, simplify geometries for greater efficiency, and create custom functions for

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your own applications. You'll also learn how to apply your existing GIS knowledge to PostGIS and integrate with other GIS tools. Familiarity with relational database and GIS concepts is helpful but not required. What's Inside An introduction to spatial databases Geometry, geography, raster, and topology spatial types, functions, and queries Applying PostGIS to real-world problems Extending PostGIS to web and desktop applications Updated for PostGIS 2.x and PostgreSQL 9.x About the Authors Regina Obe and Leo Hsu are database consultants and authors. Regina is a member of the PostGIS core development team and the Project Steering Committee. Table of Contents PART 1 INTRODUCTION TO POSTGIS What is a spatial database? Spatial data types Spatial reference system considerations Working with real data Using PostGIS on the desktop Geometry and geography functions Raster functions PostGIS TIGER geocoder Geometry relationships PART 2 PUTTING POSTGIS TO WORK Proximity analysis Geometry and geography processing Raster processing Building and using topologies Organizing spatial data Query performance tuning PART 3 USING POSTGIS WITH OTHER TOOLS Extending PostGIS with pgRouting and procedural languages Using PostGIS in web applications Dart for Absolute Beginners enables individuals with no background in programming to create their own

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web apps while learning the fundamentals of software development in a cutting edge language. Easily digested chapters, while comprehensive enough to explore the whole domain, are aimed at both hobbyists and professionals alike. The reader will not only gain an insight into Dart, but also the technologies behind the web. A firm foundation is laid for further programming studies. Dart is a new, innovative language developed by Google which is poised to take the web by storm. For client side web app development, Dart has many advantages over JavaScript. These include but are not limited to: improved speed, enforcement of programmatic structure, and improved facilities for software reuse. Best of all, Dart is automatically converted to JavaScript so that it works with all web browsers. Dart is a fresh start, without the baggage of the last two decades of the web. Why start learning to program with yesterday's technology? Teaches you the fundamentals of programming and the technologies behind the web. Utilizes the cutting edge, easy to learn, structured Dart programming language so that your first steps are pointed towards the future of web development. No prior knowledge is required to begin developing your own web apps. This text for a second course in linear algebra, aimed at math majors and graduates, adopts a novel approach by banishing determinants to the end of the book and focusing on understanding the

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structure of linear operators on vector spaces. The author has taken unusual care to motivate concepts and to simplify proofs. For example, the book presents - without having defined determinants - a clean proof that every linear operator on a finite-dimensional complex vector space has an eigenvalue. The book starts by discussing vector spaces, linear independence, span, basics, and dimension. Students are introduced to inner-product spaces in the first half of the book and shortly thereafter to the finite-dimensional spectral theorem. A variety of interesting exercises in each chapter helps students understand and manipulate the objects of linear algebra. This second edition features new chapters on diagonal matrices, on linear functionals and adjoints, and on the spectral theorem; some sections, such as those on self-adjoint and normal operators, have been entirely rewritten; and hundreds of minor improvements have been made throughout the text.

This book summarizes the science to be carried out by the upcoming Cherenkov Telescope Array, a major ground-based gamma-ray observatory that will be constructed over the next six to eight years. The major scientific themes, as well as core program of key science projects, have been developed by the CTA Consortium, a collaboration of scientists from many institutions worldwide. CTA will be the major facility in high-energy and very high-energy photon

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astronomy over the next decade and beyond. CTA will have capabilities well beyond past and present observatories. Thus, CTA's science program is expected to be rich and broad and will complement other major multiwavelength and multimessenger facilities. This book is intended to be the primary resource for the science case for CTA and it thus will be of great interest to the broader physics and astronomy communities. The electronic version (e-book) is available in open access.

Integrate D3.js into a React TypeScript project and create a chart component working in harmony with React. This book will show you how utilize D3 with React to bring life to your charts. Seasoned author Elad Elrom will show you how to create simple charts such as line, bar, donut, scatter, histogram and others, and advanced charts such as a world map and force charts. You'll also learn to share the data across your components and charts using React Recoil state management. Then integrate third-party chart libraries that are built on D3 such as Rechart, Visx, Nivo, React-vi, and Victory and in the end deploy your chart as a server or serverless app on popular platforms. React and D3 are two of the most popular frameworks in their respective areas – learn to bring them together and take your storytelling to the next level. What You'll Learn Set up your project with React, TypeScript and D3.js Create simple and advanced D3.js charts Work with

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complex charts such as world and force charts
Integrate D3 data with React state management
Improve the performance of your D3 components
Deploy as a server or serverless app and debug test
Who This Book Is For Readers that already have basic knowledge of React, HTML, CSS and JavaScript.

'A Walled Garden' reproduces the complete set of watercolours that Ian Gardner made in collaboration with Ian Hamilton Finlay for the unpublished book, 'A Walled Garden: A History of the Spandau Garden in the Time of the Architect Albert Speer'. Finlay conceived the project after corresponding with the former Third Reich architect in the late 1970s, shortly after the publication of Clara and Richard Winston's English translation of, 'Spandau: The Secret Diaries' (1976), Speer's clandestine record of his twenty-year imprisonment in west Berlin's Spandau prison from 1946 to 1966.

"Learning Three.js is a hands-on guide which provides everything you need to start working with the powerful JavaScript library, and start creating awesome in-browser visualizations". Learning Three.js is written for anyone looking to get started with Three.js, or looking to improve their skills with the popular js library. The book assumes some knowledge of javascript, but you don't need any knowledge of Three.js itself to follow the book. This book sets forth the physical, mathematical, and numerical foundations of computer models used to

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understand and predict the global ocean climate system. Aimed at students and researchers of ocean and climate science who seek to understand the physical content of ocean model equations and numerical methods for their solution, it is largely general in formulation and employs modern mathematical techniques. It also highlights certain areas of cutting-edge research. Stephen Griffies presents material that spans a broad spectrum of issues critical for modern ocean climate models. Topics are organized into parts consisting of related chapters, with each part largely self-contained. Early chapters focus on the basic equations arising from classical mechanics and thermodynamics used to rationalize ocean fluid dynamics. These equations are then cast into a form appropriate for numerical models of finite grid resolution. Basic discretization methods are described for commonly used classes of ocean climate models. The book proceeds to focus on the parameterization of phenomena occurring at scales unresolved by the ocean model, which represents a large part of modern oceanographic research. The final part provides a tutorial on the tensor methods that are used throughout the book, in a general and elegant fashion, to formulate the equations.

A comprehensive, easy-to-follow guide to creating complete Node apps and understanding how to build, deploy, and test your own apps. Key Features Entirely project-based and practical Explains the "Why" of Node.js features, not just the "how", providing you with a deep understanding and enabling you to easily apply concepts in your own applications Covers the full range

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of technologies around Node.js – NPM, version control with Git, and much more

Book Description Learning Node.js Development is a practical, project-based book that provides you with all you need to get started as a Node.js developer. Node is a ubiquitous technology on the modern web, and an essential part of any web developers' toolkit. If you are looking to create real-world Node applications, or you want to switch careers or launch a side project to generate some extra income, then you're in the right place. This book has been written around a single goal—turning you into a professional Node developer capable of developing, testing, and deploying real-world production applications. Learning Node.js Development is built from the ground up around the latest version of Node.js (version 9.x.x). You'll be learning all the cutting-edge features available only in the latest software versions. This book cuts through the mass of information available around Node and delivers the essential skills that you need to become a Node developer. It takes you through creating complete apps and understanding how to build, deploy, and test your own Node apps. It maps out everything in a comprehensive, easy-to-follow package designed to get you up and running quickly. What you will learn

- Learn the fundamentals of Node
- Build apps that respond to user input
- Master working with servers
- Learn how to test and debug applications
- Deploy and update your apps in the real world
- Create responsive asynchronous web applications

Who this book is for This book targets anyone looking to launch their own Node applications, switch careers, or freelance as a Node developer. You

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should have a basic understanding of JavaScript in order to follow this course.

If you know JavaScript and want to start creating 3D graphics that run in any browser, this book is a great choice for you. You don't need to know anything about math or WebGL; all that you need is general knowledge of JavaScript and HTML.

This volume is a case study of education reform and innovation using technology that examines the issue from a wide variety of perspectives. It brings together the views and experiences of software designers, curriculum writers, teachers and students, researchers and administrators. Thus, it stands in contrast to other analyses of innovation that tend to look through the particular prisms of research, classroom practice, or software design. The Geometric Supposer encourages a belief in a better tomorrow for schools. On its surface, the Geometric Supposer provides the means for radically altering the way in which geometry is taught and the quality of learning that can be achieved. At a deeper level, however, it suggests a powerful metaphor for improving education that can be played out in many different instructional contexts.

"I don't even feel like I've scratched the surface of what I can do with Python" With Python Tricks: The Book you'll discover Python's best practices and the power of beautiful & Pythonic code with simple examples and a step-by-step narrative. You'll get one step closer to mastering Python, so you can write beautiful and idiomatic code that comes to you naturally. Learning the ins and outs of Python is difficult-and with this book you'll

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be able to focus on the practical skills that really matter. Discover the "hidden gold" in Python's standard library and start writing clean and Pythonic code today. Who Should Read This Book: If you're wondering which lesser known parts in Python you should know about, you'll get a roadmap with this book. Discover cool (yet practical!) Python tricks and blow your coworkers' minds in your next code review. If you've got experience with legacy versions of Python, the book will get you up to speed with modern patterns and features introduced in Python 3 and backported to Python 2. If you've worked with other programming languages and you want to get up to speed with Python, you'll pick up the idioms and practical tips you need to become a confident and effective Pythonista. If you want to make Python your own and learn how to write clean and Pythonic code, you'll discover best practices and little-known tricks to round out your knowledge. What Python Developers Say About The Book: "I kept thinking that I wished I had access to a book like this when I started learning Python many years ago." - Mariatta Wijaya, Python Core Developer "This book makes you write better Python code!" - Bob Belderbos, Software Developer at Oracle "Far from being just a shallow collection of snippets, this book will leave the attentive reader with a deeper understanding of the inner workings of Python as well as an appreciation for its beauty." - Ben Felder, Pythonista "It's like having a seasoned tutor explaining, well, tricks!" - Daniel Meyer, Sr. Desktop Administrator at Tesla Inc.

What is pgRouting? It's a PostgreSQL extension for developing network routing applications and doing graph

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analysis. This book will give you all the tools and information you need to get started with pgRouting, as well as complete code examples and even how to deploy your project to the web.

Get a firm grip on the core processes including browser automation, web scraping, Word, Excel, and GUI automation with Python 3.8 and higher

Key Features

- Automate integral business processes such as report generation, email marketing, and lead generation
- Explore automated code testing and Python's growth in data science and AI automation in three new chapters
- Understand techniques to extract information and generate appealing graphs, and reports with Matplotlib

Book Description In this updated and extended version of Python Automation Cookbook, each chapter now comprises the newest recipes and is revised to align with Python 3.8 and higher. The book includes three new chapters that focus on using Python for test automation, machine learning projects, and for working with messy data. This edition will enable you to develop a sharp understanding of the fundamentals required to automate business processes through real-world tasks, such as developing your first web scraping application, analyzing information to generate spreadsheet reports with graphs, and communicating with automatically generated emails. Once you grasp the basics, you will acquire the practical knowledge to create stunning graphs and charts using Matplotlib, generate rich graphics with relevant information, automate marketing campaigns, build machine learning projects, and execute debugging techniques. By the end of this book, you will be proficient

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in identifying monotonous tasks and resolving process inefficiencies to produce superior and reliable systems. What you will learn Learn data wrangling with Python and Pandas for your data science and AI projects Automate tasks such as text classification, email filtering, and web scraping with Python Use Matplotlib to generate a variety of stunning graphs, charts, and maps Automate a range of report generation tasks, from sending SMS and email campaigns to creating templates, adding images in Word, and even encrypting PDFs Master web scraping and web crawling of popular file formats and directories with tools like Beautiful Soup Build cool projects such as a Telegram bot for your marketing campaign, a reader from a news RSS feed, and a machine learning model to classify emails to the correct department based on their content Create fire-and-forget automation tasks by writing cron jobs, log files, and regexes with Python scripting Who this book is for Python Automation Cookbook - Second Edition is for developers, data enthusiasts or anyone who wants to automate monotonous manual tasks related to business processes such as finance, sales, and HR, among others. Working knowledge of Python is all you need to get started with this book.

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