

Building The Web Of Things With Examples In Node Js And Raspberry Pi

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Manual of Digital Earth - Huadong Guo

2019-11-18

This open access book offers a summary of the development of Digital Earth over the past twenty years. By reviewing the initial vision of Digital Earth, the evolution of that vision, the relevant key technologies, and the role of Digital Earth in helping people respond to global challenges, this publication reveals how and why Digital Earth is becoming vital for acquiring, processing, analysing and mining the rapidly growing volume of global data sets about the Earth. The main aspects of Digital Earth covered here include: Digital Earth platforms, remote sensing and navigation satellites, processing and visualizing

geospatial information, geospatial information infrastructures, big data and cloud computing, transformation and zooming, artificial intelligence, Internet of Things, and social media. Moreover, the book covers in detail the multi-layered/multi-faceted roles of Digital Earth in response to sustainable development goals, climate changes, and mitigating disasters, the applications of Digital Earth (such as digital city and digital heritage), the citizen science in support of Digital Earth, the economic value of Digital Earth, and so on. This book also reviews the regional and national development of Digital Earth around the world, and discusses the role and effect of education and ethics. Lastly, it concludes with a summary of

the challenges and forecasts the future trends of Digital Earth. By sharing case studies and a broad range of general and scientific insights into the science and technology of Digital Earth, this book offers an essential introduction for an ever-growing international audience.

Internet of Things From Hype to Reality - Ammar Rayes 2016-10-22

This book comprehensively describes an end-to-end Internet of Things (IoT) architecture that is comprised of devices, network, compute, storage, platform, applications along with management and security components. It is organized into five main parts, comprising of a total of 11 chapters. Part I presents a generic IoT reference model to establish a common vocabulary for IoT solutions. This includes a detailed description of the Internet protocol layers and the Things (sensors and actuators) as well as the key business drivers to realize the IoT vision. Part II focuses on the IoT requirements that impact networking protocols and provides a layer-by-layer walkthrough of the protocol stack with emphasis on industry progress and key gaps. Part III introduces the concept of Fog computing and describes the drivers for the technology, its constituent elements, and how it relates and differs from Cloud computing. Part IV discusses the IoT services platform, the cornerstone of the solution followed by the Security functions and requirements. Finally, Part V provides a treatment of the topic of connected

ecosystems in IoT along with practical applications. It then surveys the latest IoT standards and discusses the pivotal role of open source in IoT. “Faculty will find well-crafted questions and answers at the end of each chapter, suitable for review and in classroom discussion topics. In addition, the material in the book can be used by engineers and technical leaders looking to gain a deep technical understanding of IoT, as well as by managers and business leaders looking to gain a competitive edge and understand innovation opportunities for the future.” Dr. Jim Spohrer, IBM “This text provides a very compelling study of the IoT space and achieves a very good balance between engineering/technology focus and business context. As such, it is highly-recommended for anyone interested in this rapidly-expanding field and will have broad appeal to a wide cross-section of readers, i.e., including engineering professionals, business analysts, university students, and professors.” Professor Nasir Ghani, University of South Florida

Building the Web of Things - Dominique Guinard 2016-06-18

Summary A hands-on guide that will teach how to design and implement scalable, flexible, and open IoT solutions using web technologies. This book focuses on providing the right balance of theory, code samples, and practical examples to enable you to successfully connect all sorts of devices to

the web and to expose their services and data over REST APIs. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Because the Internet of Things is still new, there is no universal application protocol. Fortunately, the IoT can take advantage of the web, where IoT protocols connect applications thanks to universal and open APIs. About the Book Building the Web of Things is a guide to using cutting-edge web technologies to build the IoT. This step-by-step book teaches you how to use web protocols to connect real-world devices to the web, including the Semantic and Social Webs. Along the way you'll gain vital concepts as you follow instructions for making Web of Things devices. By the end, you'll have the practical skills you need to implement your own web-connected products and services. What's Inside Introduction to IoT protocols and devices Connect electronic actuators and sensors (GPIO) to a Raspberry Pi Implement standard REST and Pub/Sub APIs with Node.js on embedded systems Learn about IoT protocols like MQTT and CoAP and integrate them to the Web of Things Use the Semantic Web (JSON-LD, RDFa, etc.) to discover and find Web Things Share Things via Social Networks to create the Social Web of Things Build a web-based smart home with HTTP and WebSocket Compose physical mashups with EVERYTHING, Node-RED, and

IFTTT About the Reader For both seasoned programmers and those with only basic programming skills. About the Authors Dominique Guinard and Vlad Trifa pioneered the Web of Things and cofounded EVERYTHING, a large-scale IoT cloud powering billions of Web Things. Table of Contents PART 1 BASICS OF THE IOT AND THE WOT From the Internet of Things to the Web of Things Hello, World Wide Web of Things Node.js for the Web of Things Getting started with embedded systems Building networks of Things PART 2 BUILDING THE WOT Access: Web APIs for Things Implementing Web Things Find: Describe and discover Web Things Share: Securing and sharing Web Things Pax Technica - Philip N. Howard 2015-01-01 A technology expert describes a possible future, and its repercussions in the area of privacy, social control and political manipulation, of a world where more and more things, like eyeglasses, thermostats and home security systems are reliant on the Internet. The Shallows: What the Internet Is Doing to Our Brains - Nicholas Carr 2020-03-03 New York Times bestseller • Finalist for the Pulitzer Prize “This is a book to shake up the world.” –Ann Patchett Nicholas Carr’s bestseller The Shallows has become a foundational book in one of the most important debates of our time: As we enjoy the internet’s bounties, are we sacrificing our ability to read and think deeply?

This 10th-anniversary edition includes a new afterword that brings the story up to date, with a deep examination of the cognitive and behavioral effects of smartphones and social media.

Managing the Web of Things - Michael Sheng

2017-02-10

Managing the Web of Things: Linking the Real World to the Web presents a consolidated and holistic coverage of engineering, management, and analytics of the Internet of Things. The web has gone through many transformations, from traditional linking and sharing of computers and documents (i.e., Web of Data), to the current connection of people (i.e., Web of People), and to the emerging connection of billions of physical objects (i.e., Web of Things). With increasing numbers of electronic devices and systems providing different services to people, Web of Things applications present numerous challenges to research institutions, companies, governments, international organizations, and others. This book compiles the newest developments and advances in the area of the Web of Things, ranging from modeling, searching, and data analytics, to software building, applications, and social impact. Its coverage will enable effective exploration, understanding, assessment, comparison, and the selection of WoT models, languages, techniques, platforms, and tools. Readers will gain an up-to-date understanding of the Web of Things systems that accelerates their research. Offers a

comprehensive and systematic presentation of the methodologies, technologies, and applications that enable efficient and effective management of the Internet of Things Provides an in-depth analysis on the state-of-the-art Web of Things modeling and searching technologies, including how to collect, clean, and analyze data generated by the Web of Things Covers system design and software building principles, with discussions and explorations of social impact for the Web of Things through real-world applications Acts as an ideal reference or recommended text for graduate courses in cloud computing, service computing, and more

Getting Things Done - David Allen 2001

ALLEN/GETTING THINGS DONE

Designing the Internet of Things - Adrian McEwen

2013-11-07

Take your idea from concept to production with this unique guide Whether it's called physical computing, ubiquitous computing, or the Internet of Things, it's a hot topic in technology: how to channel your inner Steve Jobs and successfully combine hardware, embedded software, web services, electronics, and cool design to create cutting-edge devices that are fun, interactive, and practical. If you'd like to create the next must-have product, this unique book is the perfect place to start. Both a creative and practical primer, it explores the platforms you can use to develop hardware or software, discusses design

concepts that will make your products eye-catching and appealing, and shows you ways to scale up from a single prototype to mass production. Helps software engineers, web designers, product designers, and electronics engineers start designing products using the Internet-of-Things approach Explains how to combine sensors, servos, robotics, Arduino chips, and more with various networks or the Internet, to create interactive, cutting-edge devices Provides an overview of the necessary steps to take your idea from concept through production If you'd like to design for the future, *Designing the Internet of Things* is a great place to start.

Building the Internet of Things - Maciej Kranz

2016-11-09

Connect your organization to the Internet of Things with solid strategy and a proven implementation plan *Building Internet of Things* provides front-line business decision makers with a practical handbook for capitalizing on this latest transformation. Focusing on the business implications of Internet of Things (IoT), this book describes the sheer impact, spread, and opportunities arising every day, and how business leaders can implement IoT today to realize tangible business advantages. The discussion delves into IoT from a business, strategy and organizational standpoint, and includes use-cases that illustrate the ripple effect that this latest disruption brings; you'll learn how to fashion a

viable IoT plan that works with your organization's strategy and direction, and how to implement that strategy successfully by integrating IoT into your organization tomorrow. For business managers, the biggest question surrounding the Internet of Things is what to do with it. This book examines the way IoT is being used today—and will be used in the future—to help you craft a robust plan for your organization. Grasp the depth and breadth of the Internet of Things Create a secure IoT recipe that aligns with your company's strategy Capitalize on advances while avoiding disruption from others Leverage the technical, organizational, and social impact of IoT In the past five years, the Internet of Things has become the new frontier of technology that has everyone talking. It seems that almost every week a major vendor announces a new IoT strategy or division; is your company missing the boat? Learn where IoT fits into your organization, and how to turn disruption into profit with the expert guidance in *Building the Internet of Things*.

Getting Started with the Internet of Things - Cuno

Pfister 2011-05-24

This hands-on introductory guide will quickly show how to program embedded devices using the .NET Micro Framework and the Netduino Plus board, and then connect these devices to the Internet using Pachube, a cloud platform for sharing real-time sensor data.

Rethinking the Internet of Things - Francis

daCosta 2013-12-30

Apress is proud to announce that Rethinking the Internet of Things was a 2014 Jolt Award Finalist, the highest honor for a programming book. And the amazing part is that there is no code in the book. Over the next decade, most devices connected to the Internet will not be used by people in the familiar way that personal computers, tablets and smart phones are. Billions of interconnected devices will be monitoring the environment, transportation systems, factories, farms, forests, utilities, soil and weather conditions, oceans and resources. Many of these sensors and actuators will be networked into autonomous sets, with much of the information being exchanged machine-to-machine directly and without human involvement. Machine-to-machine communications are typically terse. Most sensors and actuators will report or act upon small pieces of information - "chirps". Burdening these devices with current network protocol stacks is inefficient, unnecessary and unduly increases their cost of ownership. This must change. The architecture of the Internet of Things must evolve now by incorporating simpler protocols toward at the edges of the network, or remain forever inefficient. Rethinking the Internet of Things describes reasons why we must rethink current approaches to the Internet of Things. Appropriate architectures that will coexist with existing networking protocols are described in

detail. An architecture comprised of integrator functions, propagator nodes, and end devices, along with their interactions, is explored. What you'll learn Discusses the difference between the "normal" Internet and the Internet of Things. Describes a new architecture and its components in the "chirp" context. Explains the shortcomings of IP for IoT. Describes the anatomy of the IoT. Describes how to build a suitable network to maximize the amazing potential of the IoT. Who this book is for Thought leaders, executives, architectural, standards and development leaders in the evolving IoT industry. Corporations and organizations whose commercial products could be adapted simply to be functioning devices on the IOT while saving billions of dollars in unnecessary costs or proprietary designs. Those who wish to capitalize on technology change and those interested in the Internet, its capabilities and the need to improve it. Table of ContentsForeword Preface Chapter Goal: The reader will understand the new demands and opportunities of the Internet of Things (IoT). The preface introduces the idea of a new, simplified architectural approach that draws on nature. Chapter 1: It's Different Out Here Chapter Goal: Reader should understand the difference between traditional Internet networking and the Internet of Things. What are the unique characteristics of the IoT that demand a new architecture? Why traditional architectures such as IP are a poor fit.

Characteristics of an IoT-optimized architecture.

Chapter 2: Anatomy of the Internet of Things
Chapter Goal: Reader will understand the underlying principles of the emerging IoT architecture. Fundamental concepts are: the division of networking complexity among different devices; the make-up of the "Chirp" and how they are propagated; distinctions between transport and functional topologies; the concept of neighborhoods or zones of interest.

Chapter 3: On the Edge
Chapter Goal: Reader will learn the principles and characteristics of the End Devices in the IoT and how these will often differ from our present understanding of the Smartphone, tablet, and laptop. How the minimal networking needs of many IoT devices dictate elements of the architecture.

Chapter 4: Building a Web of Things
Chapter Goal: Reader will learn the characteristics and functionality of the Propagator node in the IoT Architecture. Some communications principles are introduced which will be more fully explored in Chapter 6.

Chapter 5: Small Data, Big Data, and Human Interaction
Chapter Goal: Reader will understand the role of Integrator functions in the IoT, the point in the IoT where humans interact to gain information from IoT data and to set parameters and control end devices. An explanation of zones of interest and neighborhoods, with a discussion of incorporating "small data" from chirps into big data analysis.

Chapter 6: An Architecture for the Frontier

Chapter Goal: Reader will gain an understanding of the challenges inherent in a communications architecture for the massive scale of the IoT. Exploiting the opportunities inherent in a machine-to-machine environment, a much simpler architecture is described in detail that readily scales to the required scope. This chapter adds technical depth to ideas introduced in Chapters 3-5.

Chapter 7: IoT Examples and Applications
Chapter Goal: Reader will learn about current and emerging applications in the Internet of Things. Reference will be made to new applications enabled by the simpler architecture described in this book that are difficult or not possible with traditional networking protocols.

Chapter 8: Blueprint to the Internet of Things
Chapter Goal: Exploring the steps to IoT deployment. Standards based versus ad hoc approaches, call for industry cooperation and consortia. Intermediate incremental steps to broader adoption.

Building the Web of Things - Dominique Dom Guinard 2016-06-06

Summary A hands-on guide that will teach how to design and implement scalable, flexible, and open IoT solutions using web technologies. This book focuses on providing the right balance of theory, code samples, and practical examples to enable you to successfully connect all sorts of devices to the web and to expose their services and data over REST APIs. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub

formats from Manning Publications. About the Technology Because the Internet of Things is still new, there is no universal application protocol. Fortunately, the IoT can take advantage of the web, where IoT protocols connect applications thanks to universal and open APIs. About the Book Building the Web of Things is a guide to using cutting-edge web technologies to build the IoT. This step-by-step book teaches you how to use web protocols to connect real-world devices to the web, including the Semantic and Social Webs. Along the way you'll gain vital concepts as you follow instructions for making Web of Things devices. By the end, you'll have the practical skills you need to implement your own web-connected products and services. What's Inside Introduction to IoT protocols and devices Connect electronic actuators and sensors (GPIO) to a Raspberry Pi Implement standard REST and Pub/Sub APIs with Node.js on embedded systems Learn about IoT protocols like MQTT and CoAP and integrate them to the Web of Things Use the Semantic Web (JSON-LD, RDFa, etc.) to discover and find Web Things Share Things via Social Networks to create the Social Web of Things Build a web-based smart home with HTTP and WebSocket Compose physical mashups with EVERYTHING, Node-RED, and IFTTT About the Reader For both seasoned programmers and those with only basic programming skills. About the Authors Dominique

Guinard and Vlad Trifa pioneered the Web of Things and cofounded EVERYTHING, a large-scale IoT cloud powering billions of Web Things. Table of Contents PART 1 BASICS OF THE IOT AND THE WOT From the Internet of Things to the Web of Things Hello, World Wide Web of Things Node.js for the Web of Things Getting started with embedded systems Building networks of Things PART 2 BUILDING THE WOT Access: Web APIs for Things Implementing Web Things Find: Describe and discover Web Things Share: Securing and sharing Web Things Smart Innovation of Web of Things - Aarti Jain 2020-06-02 The Web of Things (WoT) is a concept that describes approaches, programming tools and software architectural systems, which interface networks of real-world objects with the World Wide Web. The book is organized into 11 chapters, each focusing on a unique wireless technological aspect of the Web of Things, and it aims to comprehensively cover each of its various applications, including: A strong emphasis on WoT problems and solutions, identifying the main open issues, innovations and latest technologies behind WoT A blend of theoretical and simulation-based problems for better understanding of the concepts behind WoT Various exemplifying applications in which the use of WoT is very attractive and an inspiration for future applications The book will be useful to researchers, software

developers and undergraduate and postgraduate students, as well as practitioners.

Flow Architectures - James Urquhart 2021-01-06

Software development today is embracing events and streaming data, which optimizes not only how technology interacts but also how businesses integrate with one another to meet customer needs. This phenomenon, called flow, consists of patterns and standards that determine which activity and related data is communicated between parties over the internet. This book explores critical implications of that evolution: What happens when events and data streams help you discover new activity sources to enhance existing businesses or drive new markets? What technologies and architectural patterns can position your company for opportunities enabled by flow? James Urquhart, global field CTO at VMware, guides enterprise architects, software developers, and product managers through the process. Learn the benefits of flow dynamics when businesses, governments, and other institutions integrate via events and data streams Understand the value chain for flow integration through Wardley mapping visualization and promise theory modeling Walk through basic concepts behind today's event-driven systems marketplace Learn how today's integration patterns will influence the real-time events flow in the future Explore why companies should architect and build software today to take

advantage of flow in coming years

Building Blocks for IoT Analytics - John Soldatos 2016-11-23

Internet-of-Things (IoT) Analytics are an integral element of most IoT applications, as it provides the means to extract knowledge, drive actuation services and optimize decision making. IoT analytics will be a major contributor to IoT business value in the coming years, as it will enable organizations to process and fully leverage large amounts of IoT data, which are nowadays largely underutilized. The Building Blocks of IoT Analytics is devoted to the presentation the main technology building blocks that comprise advanced IoT analytics systems. It introduces IoT analytics as a special case of BigData analytics and accordingly presents leading edge technologies that can be deployed in order to successfully confront the main challenges of IoT analytics applications. Special emphasis is paid in the presentation of technologies for IoT streaming and semantic interoperability across diverse IoT streams. Furthermore, the role of cloud computing and BigData technologies in IoT analytics are presented, along with practical tools for implementing, deploying and operating non-trivial IoT applications. Along with the main building blocks of IoT analytics systems and applications, the book presents a series of practical applications, which illustrate the use of these

technologies in the scope of pragmatic applications. Technical topics discussed in the book include: Cloud Computing and BigData for IoT analytics Searching the Internet of Things Development Tools for IoT Analytics Applications IoT Analytics-as-a-Service Semantic Modelling and Reasoning for IoT Analytics IoT analytics for Smart Buildings IoT analytics for Smart Cities Operationalization of IoT analytics Ethical aspects of IoT analytics This book contains both research oriented and applied articles on IoT analytics, including several articles reflecting work undertaken in the scope of recent European Commission funded projects in the scope of the FP7 and H2020 programmes. These articles present results of these projects on IoT analytics platforms and applications. Even though several articles have been contributed by different authors, they are structured in a well thought order that facilitates the reader either to follow the evolution of the book or to focus on specific topics depending on his/her background and interest in IoT and IoT analytics technologies. The compilation of these articles in this edited volume has been largely motivated by the close collaboration of the co-authors in the scope of working groups and IoT events organized by the Internet-of-Things Research Cluster (IERC), which is currently a part of EU's Alliance for Internet of Things Innovation (AIOTI).

Ruby on Rails Tutorial - Michael Hartl 2016-11-17

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

Learning Web Design - Jennifer Robbins

2018-05-11

Do you want to build web pages but have no prior experience? This friendly guide is the perfect place to start. You'll begin at square one, learning how the web and web pages work, and then steadily build from there. By the end of the book, you'll have the skills to create a simple site with

multicolumn pages that adapt for mobile devices. Each chapter provides exercises to help you learn various techniques and short quizzes to make sure you understand key concepts. This thoroughly revised edition is ideal for students and professionals of all backgrounds and skill levels. It is simple and clear enough for beginners, yet thorough enough to be a useful reference for experienced developers keeping their skills up to date. Build HTML pages with text, links, images, tables, and forms Use style sheets (CSS) for colors, backgrounds, formatting text, page layout, and even simple animation effects Learn how JavaScript works and why the language is so important in web design Create and optimize web images so they'll download as quickly as possible NEW! Use CSS Flexbox and Grid for sophisticated and flexible page layout NEW! Learn the ins and outs of Responsive Web Design to make web pages look great on all devices NEW! Become familiar with the command line, Git, and other tools in the modern web developer's toolkit NEW! Get to know the superpowers of SVG graphics

[What is Web 2.0](#) - Tim O'Reilly 2009-09-23

The concept of "Web 2.0" began with a conference brainstorming session between O'Reilly and MediaLive International. Dale Dougherty, web pioneer and O'Reilly VP, noted that far from having "crashed", the web was more important than ever, with exciting new

applications and sites popping up with surprising regularity. What's more, the companies that had survived the collapse seemed to have some things in common. Could it be that the dot-com collapse marked some kind of turning point for the web, such that a call to action such as "Web 2.0" might make sense? We agreed that it did, and so the Web 2.0 Conference was born. In the year and a half since, the term "Web 2.0" has clearly taken hold, with more than 9.5 million citations in Google. But there's still a huge amount of disagreement about just what Web 2.0 means, with some people decrying it as a meaningless marketing buzzword, and others accepting it as the new conventional wisdom. This article is an attempt to clarify just what we mean by Web 2.0.

JavaScript Robotics - Backstop Media 2015-04-13

JavaScript Robotics is on the rise. Rick Waldron, the lead author of this book and creator of the Johnny-Five platform, is at the forefront of this movement. Johnny-Five is an open source JavaScript Arduino programming framework for robotics. This book brings together fifteen innovative programmers, each creating a unique Johnny-Five robot step-by-step, and offering tips and tricks along the way. Experience with JavaScript is a prerequisite.

Programming Collective Intelligence - Toby Segaran 2007-08-16

Want to tap the power behind search rankings,

product recommendations, social bookmarking, and online matchmaking? This fascinating book demonstrates how you can build Web 2.0 applications to mine the enormous amount of data created by people on the Internet. With the sophisticated algorithms in this book, you can write smart programs to access interesting datasets from other web sites, collect data from users of your own applications, and analyze and understand the data once you've found it.

Programming Collective Intelligence takes you into the world of machine learning and statistics, and explains how to draw conclusions about user experience, marketing, personal tastes, and human behavior in general -- all from information that you and others collect every day. Each algorithm is described clearly and concisely with code that can immediately be used on your web site, blog, Wiki, or specialized application. This book explains: Collaborative filtering techniques that enable online retailers to recommend products or media Methods of clustering to detect groups of similar items in a large dataset Search engine features -- crawlers, indexers, query engines, and the PageRank algorithm Optimization algorithms that search millions of possible solutions to a problem and choose the best one Bayesian filtering, used in spam filters for classifying documents based on word types and other features Using decision trees not only to make predictions, but to model the way

decisions are made Predicting numerical values rather than classifications to build price models Support vector machines to match people in online dating sites Non-negative matrix factorization to find the independent features in a dataset Evolving intelligence for problem solving - - how a computer develops its skill by improving its own code the more it plays a game Each chapter includes exercises for extending the algorithms to make them more powerful. Go beyond simple database-backed applications and put the wealth of Internet data to work for you. "Bravo! I cannot think of a better way for a developer to first learn these algorithms and methods, nor can I think of a better way for me (an old AI dog) to reinvigorate my knowledge of the details." -- Dan Russell, Google "Toby's book does a great job of breaking down the complex subject matter of machine-learning algorithms into practical, easy-to-understand examples that can be directly applied to analysis of social interaction across the Web today. If I had this book two years ago, it would have saved precious time going down some fruitless paths." -- Tim Wolters, CTO, Collective Intellect

[Rust for the IoT](#) - Joseph Faisal Nusairat

2020-08-29

Get started programming Rust applications for the Internet of Things (IoT). This book is a programming skills migration book that teaches you the Rust programming techniques most

useful for IoT applications. You'll step through from server to board development in creating a set of IoT applications. In Rust for the IoT, you'll learn how to build a modern server side application using Rust on the backend. Then you'll use docker and Kubernetes to deploy these to a managed cloud. Finally you will use a Raspberry Pi with a SenseHat and Camera to capture the world around you and send that information to the cloud. While you will be able to follow along without any cloud or hardware, to make the most of it we recommend a few cloud pieces and hardware that is designed to integrate with the software in this book. After reading and using this book, you'll see how to apply Rust to the Internet of Things. What You Will Learn Create a modern Rust backend complete with handling eventual consistency and interacting via a GraphQL interface Use the Raspberry PI to serve as a cheap IoT device that one can easily deploy around the house Capture temperature, video, and use the interactive joystick to interact with the software you've created Use OpenCV to perform facial detection from the PI's camera and save that information to the cloud. Create deployable helm charts for the cloud, and for the device create complete ISOs that allow you to easily deploy the Pi's OS + custom software Who This Book Is For You will need to have a basic understanding of cloud application development at a minimum and the basics of Rust coding. This

book is for those interested in or working with the IoT and the Raspberry Pi who want to learn how Rust can work for them.

Building the Internet of Things - Maciej Kranz

2016-11-21

Connect your organization to the Internet of Things with solid strategy and a proven implementation plan Building Internet of Things provides front-line business decision makers with a practical handbook for capitalizing on this latest transformation. Focusing on the business implications of Internet of Things (IoT), this book describes the sheer impact, spread, and opportunities arising every day, and how business leaders can implement IoT today to realize tangible business advantages. The discussion delves into IoT from a business, strategy and organizational standpoint, and includes use-cases that illustrate the ripple effect that this latest disruption brings; you'll learn how to fashion a viable IoT plan that works with your organization's strategy and direction, and how to implement that strategy successfully by integrating IoT into your organization tomorrow. For business managers, the biggest question surrounding the Internet of Things is what to do with it. This book examines the way IoT is being used today—and will be used in the future—to help you craft a robust plan for your organization. Grasp the depth and breadth of the Internet of Things Create a secure IoT recipe that aligns with your company's strategy

Capitalize on advances while avoiding disruption from others Leverage the technical, organizational, and social impact of IoT In the past five years, the Internet of Things has become the new frontier of technology that has everyone talking. It seems that almost every week a major vendor announces a new IoT strategy or division; is your company missing the boat? Learn where IoT fits into your organization, and how to turn disruption into profit with the expert guidance in Building the Internet of Things.

Designing Web Navigation - James Kalbach

2007-08-28

Thoroughly rewritten for today's web environment, this bestselling book offers a fresh look at a fundamental topic of web site development: navigation design. Amid all the changes to the Web in the past decade, and all the hype about Web 2.0 and various "rich" interactive technologies, the basic problems of creating a good web navigation system remain. Designing Web Navigation demonstrates that good navigation is not about technology—it's about the ways people find information, and how you guide them. Ideal for beginning to intermediate web designers, managers, other non-designers, and web development pros looking for another perspective, Designing Web Navigation offers basic design principles, development techniques and practical advice, with real-world examples and essential concepts seamlessly folded in. How

does your web site serve your business objectives? How does it meet a user's needs? You'll learn that navigation design touches most other aspects of web site development. This book: Provides the foundations of web navigation and offers a framework for navigation design Paints a broad picture of web navigation and basic human information behavior Demonstrates how navigation reflects brand and affects site credibility Helps you understand the problem you're trying to solve before you set out to design Thoroughly reviews the mechanisms and different types of navigation Explores "information scent" and "information shape" Explains "persuasive" architecture and other design concepts Covers special contexts, such as navigation design for web applications Includes an entire chapter on tagging While *Designing Web Navigation* focuses on creating navigation systems for large, information-rich sites serving a business purpose, the principles and techniques in the book also apply to small sites. Well researched and cited, this book serves as an excellent reference on the topic, as well as a superb teaching guide. Each chapter ends with suggested reading and a set of questions that offer exercises for experiencing the concepts in action.

HTML and CSS - Jon Duckett 2011-11-08

A full-color introduction to the basics of HTML and CSS! Every day, more and more people want to learn some HTML and CSS. Joining the

professional web designers and programmers are new audiences who need to know a little bit of code at work (update a content management system or e-commerce store) and those who want to make their personal blogs more attractive. Many books teaching HTML and CSS are dry and only written for those who want to become programmers, which is why this book takes an entirely new approach. Introduces HTML and CSS in a way that makes them accessible to everyone—hobbyists, students, and professionals—and it's full-color throughout Utilizes information graphics and lifestyle photography to explain the topics in a simple way that is engaging Boasts a unique structure that allows you to progress through the chapters from beginning to end or just dip into topics of particular interest at your leisure This educational book is one that you will enjoy picking up, reading, then referring back to. It will make you wish other technical topics were presented in such a simple, attractive and engaging way! This book is also available as part of a set in hardcover - *Web Design with HTML, CSS, JavaScript and jQuery*, 9781119038634; and in softcover - *Web Design with HTML, CSS, JavaScript and jQuery*, 9781118907443.

Social Internet of Things - Alessandro Soro 2018-07-20

The aim of this book is to stimulate research on the topic of the Social Internet of Things, and

explore how Internet of Things architectures, tools, and services can be conceptualized and developed so as to reveal, amplify and inspire the capacities of people, including the socialization or collaborations that happen through or around smart objects and smart environments. From new ways of negotiating privacy, to the consequences of increased automation, the Internet of Things poses new challenges and opens up new questions that often go beyond the technology itself, and rather focus on how the technology will become embedded in our future communities, families, practices, and environment, and how these will change in turn.

The Internet of Things in the Cloud - Honbo Zhou
2013-03-21

Although the Internet of Things (IoT) is a vast and dynamic territory that is evolving rapidly, there has been a need for a book that offers a holistic view of the technologies and applications of the entire IoT spectrum. Filling this void, *The Internet of Things in the Cloud: A Middleware Perspective* provides a comprehensive introduction to the IoT and its development worldwide. It gives you a panoramic view of the IoT landscape—focusing on the overall technological architecture and design of a tentatively unified IoT framework underpinned by Cloud computing from a middleware perspective. Organized into three sections, it: Describes the many facets of Internet of Things—including the four pillars of IoT and the

three layer value chain of IoT Focuses on middleware, the glue and building blocks of a holistic IoT system on every layer of the architecture Explores Cloud computing and IoT as well as their synergy based on the common background of distributed processing The book is based on the author's two previous bestselling books (in Chinese) on IoT and Cloud computing and more than two decades of hands-on software/middleware programming and architecting experience at organizations such as the Oak Ridge National Laboratory, IBM, BEA Systems, and Silicon Valley startup Doubletwin. Tapping into this wealth of knowledge, the book categorizes the many facets of the IoT and proposes a number of paradigms and classifications about Internet of Things' mass and niche markets and technologies.

The Internet of Things - Pethuru Raj 2017-02-24

As more and more devices become interconnected through the Internet of Things (IoT), there is an even greater need for this book, which explains the technology, the internetworking, and applications that are making IoT an everyday reality. The book begins with a discussion of IoT "ecosystems" and the technology that enables them, which includes: Wireless Infrastructure and Service Discovery Protocols Integration Technologies and Tools Application and Analytics Enablement Platforms A chapter on next-generation cloud infrastructure

explains hosting IoT platforms and applications. A chapter on data analytics throws light on IoT data collection, storage, translation, real-time processing, mining, and analysis, all of which can yield actionable insights from the data collected by IoT applications. There is also a chapter on edge/fog computing. The second half of the book presents various IoT ecosystem use cases. One chapter discusses smart airports and highlights the role of IoT integration. It explains how mobile devices, mobile technology, wearables, RFID sensors, and beacons work together as the core technologies of a smart airport. Integrating these components into the airport ecosystem is examined in detail, and use cases and real-life examples illustrate this IoT ecosystem in operation. Another in-depth look is on envisioning smart healthcare systems in a connected world. This chapter focuses on the requirements, promising applications, and roles of cloud computing and data analytics. The book also examines smart homes, smart cities, and smart governments. The book concludes with a chapter on IoT security and privacy. This chapter examines the emerging security and privacy requirements of IoT environments. The security issues and an assortment of surmounting techniques and best practices are also discussed in this chapter.

The Cloud-to-Thing Continuum - Theo Lynn

2020-01-01

The Internet of Things offers massive societal and economic opportunities while at the same time significant challenges, not least the delivery and management of the technical infrastructure underpinning it, the deluge of data generated from it, ensuring privacy and security, and capturing value from it. This Open Access Pivot explores these challenges, presenting the state of the art and future directions for research but also frameworks for making sense of this complex area. This book provides a variety of perspectives on how technology innovations such as fog, edge and dew computing, 5G networks, and distributed intelligence are making us rethink conventional cloud computing to support the Internet of Things. Much of this book focuses on technical aspects of the Internet of Things, however, clear methodologies for mapping the business value of the Internet of Things are still missing. We provide a value mapping framework for the Internet of Things to address this gap. While there is much hype about the Internet of Things, we have yet to reach the tipping point. As such, this book provides a timely entrée for higher education educators, researchers and students, industry and policy makers on the technologies that promise to reshape how society interacts and operates. Theo Lynn is Full Professor of Digital Business at DCU Business School, Ireland and Director of the Irish Institute of Digital Business. John G. Mooney is Associate Professor of

Information Systems and Technology Management at the Pepperdine Graziadio Business School, United States. Brian Lee is Director of the Software Research Institute at Athlone Institute of Technology. Patricia Takako Endo is a Postdoctoral Research Fellow at the Irish Institute of Digital Business, Dublin City University, Ireland, and a Professor at Universidade de Pernambuco, Brazil.

A Reference Guide to the Internet of Things -

Greg Dunko 2017-03

This resource will help you make educated decisions for your IoT project, whether building from scratch or assembling ready to deploy components. Bridgera provides insight on what to consider throughout the entire process, from planning and design of each component to the deployment and monitoring of your IoT system. Our goal is to help you navigate the many options available when constructing an IoT system. We outline the advantages and disadvantages of the various technologies available to help you decide which options best suit your IoT project's needs.

Community Building on the Web - Amy Jo Kim

2006-07-19

What's the point of creating a great Web site if no one goes there-or worse, if people come but never return? How do some sites, such as America Online, EBay, and GeoCities, develop into Internet communities with loyal followings and regular repeat traffic? How can Web page

designers and developers create sites that are vibrant and rewarding? Amy Jo Kim, author of Community Building on the Web and consultant to some of the most successful Internet communities, is an expert at teaching how to design sites that succeed by making new visitors feel welcome, rewarding member participation, and building a sense of their own history. She discusses important design strategies, interviews influential Web community-builders, and provides the reader with templates and questionnaires to use in building their own communities.

The Fourth Industrial Revolution - Klaus Schwab 2017-01-03

World-renowned economist Klaus Schwab, Founder and Executive Chairman of the World Economic Forum, explains that we have an opportunity to shape the fourth industrial revolution, which will fundamentally alter how we live and work. Schwab argues that this revolution is different in scale, scope and complexity from any that have come before. Characterized by a range of new technologies that are fusing the physical, digital and biological worlds, the developments are affecting all disciplines, economies, industries and governments, and even challenging ideas about what it means to be human. Artificial intelligence is already all around us, from supercomputers, drones and virtual assistants to 3D printing, DNA sequencing, smart thermostats, wearable sensors and microchips smaller than a

grain of sand. But this is just the beginning: nanomaterials 200 times stronger than steel and a million times thinner than a strand of hair and the first transplant of a 3D printed liver are already in development. Imagine “smart factories” in which global systems of manufacturing are coordinated virtually, or implantable mobile phones made of biosynthetic materials. The fourth industrial revolution, says Schwab, is more significant, and its ramifications more profound, than in any prior period of human history. He outlines the key technologies driving this revolution and discusses the major impacts expected on government, business, civil society and individuals. Schwab also offers bold ideas on how to harness these changes and shape a better future—one in which technology empowers people rather than replaces them; progress serves society rather than disrupts it; and in which innovators respect moral and ethical boundaries rather than cross them. We all have the opportunity to contribute to developing new frameworks that advance progress.

Digitising the Industry - Internet of Things Connecting the Physical, Digital and Virtual Worlds - Peter Friess 2016-07-07

This book provides an overview of the current Internet of Things (IoT) landscape, ranging from the research, innovation and development priorities to enabling technologies in a global context. A successful deployment of IoT

technologies requires integration on all layers, be it cognitive and semantic aspects, middleware components, services, edge devices/machines and infrastructures. It is intended to be a standalone book in a series that covers the Internet of Things activities of the IERC - Internet of Things European Research Cluster from research to technological innovation, validation and deployment. The book builds on the ideas put forward by the European Research Cluster and the IoT European Platform Initiative (IoT-EPI) and presents global views and state of the art results on the challenges facing the research, innovation, development and deployment of IoT in the next years. The IoT is bridging the physical world with virtual world and requires sound information processing capabilities for the "digital shadows" of these real things. The research and innovation in nanoelectronics, semiconductor, sensors/actuators, communication, analytics technologies, cyber-physical systems, software, swarm intelligent and deep learning systems are essential for the successful deployment of IoT applications. The emergence of IoT platforms with multiple functionalities enables rapid development and lower costs by offering standardised components that can be shared across multiple solutions in many industry verticals. The IoT applications will gradually move from vertical, single purpose solutions to multi-purpose and collaborative applications interacting across

industry verticals, organisations and people, being one of the essential paradigms of the digital economy. Many of those applications still have to be identified and involvement of end-users including the creative sector in this innovation is crucial. The IoT applications and deployments as integrated building blocks of the new digital economy are part of the accompanying IoT policy framework to address issues of horizontal nature and common interest (i.e. privacy, end-to-end security, user acceptance, societal, ethical aspects and legal issues) for providing trusted IoT solutions in a coordinated and consolidated manner across the IoT activities and pilots. In this, context IoT ecosystems offer solutions beyond a platform and solve important technical challenges in the different verticals and across verticals. These IoT technology ecosystems are instrumental for the deployment of large pilots and can easily be connected to or build upon the core IoT solutions for different applications in order to expand the system of use and allow new and even unanticipated IoT end uses. Technical topics discussed in the book include:

Introduction
Digitising industry and IoT as key enabler in the new era of Digital Economy
IoT Strategic Research and Innovation Agenda
IoT in the digital industrial context: Digital Single Market
Integration of heterogeneous systems and bridging the virtual, digital and physical worlds
Federated IoT platforms and

interoperability
Evolution from intelligent devices to connected systems of systems by adding new layers of cognitive behaviour, artificial intelligence and user interfaces. Innovation through IoT ecosystems
Trust-based IoT end-to-end security, privacy framework
User acceptance, societal, ethical aspects and legal issues
Internet of Things Applications

Growing Object-Oriented Software, Guided by Tests - Steve Freeman 2009-10-12

Test-Driven Development (TDD) is now an established technique for delivering better software faster. TDD is based on a simple idea: Write tests for your code before you write the code itself. However, this "simple" idea takes skill and judgment to do well. Now there's a practical guide to TDD that takes you beyond the basic concepts. Drawing on a decade of experience building real-world systems, two TDD pioneers show how to let tests guide your development and "grow" software that is coherent, reliable, and maintainable. Steve Freeman and Nat Pryce describe the processes they use, the design principles they strive to achieve, and some of the tools that help them get the job done. Through an extended worked example, you'll learn how TDD works at multiple levels, using tests to drive the features and the object-oriented structure of the code, and using Mock Objects to discover and then describe relationships between objects. Along the way, the book systematically addresses

challenges that development teams encounter with TDD—from integrating TDD into your processes to testing your most difficult features. Coverage includes Implementing TDD effectively: getting started, and maintaining your momentum throughout the project Creating cleaner, more expressive, more sustainable code Using tests to stay relentlessly focused on sustaining quality Understanding how TDD, Mock Objects, and Object-Oriented Design come together in the context of a real software development project Using Mock Objects to guide object-oriented designs Succeeding where TDD is difficult: managing complex test data, and testing persistence and concurrency

Deploying RFID - Cristina Turcu 2011-08-17

Radio frequency identification (RFID) is a technology that is rapidly gaining popularity due to its several benefits in a wide area of applications like inventory tracking, supply chain management, automated manufacturing, healthcare, etc. The benefits of implementing RFID technologies can be seen in terms of efficiency (increased speed in production, reduced shrinkage, lower error rates, improved asset tracking etc.) or effectiveness (services that companies provide to the customers). Leading to considerable operational and strategic benefits, RFID technology continues to bring new levels of intelligence and information, strengthening the experience of all participants in this research

domain, and serving as a valuable authentication technology. We hope this book will be useful for engineers, researchers and industry personnel, and provide them with some new ideas to address current and future issues they might be facing.

Rethinking the Internet of Things - Francis daCosta 2014-01-23

Apress is proud to announce that Rethinking the Internet of Things was a 2014 Jolt Award Finalist, the highest honor for a programming book. And the amazing part is that there is no code in the book. Over the next decade, most devices connected to the Internet will not be used by people in the familiar way that personal computers, tablets and smart phones are. Billions of interconnected devices will be monitoring the environment, transportation systems, factories, farms, forests, utilities, soil and weather conditions, oceans and resources. Many of these sensors and actuators will be networked into autonomous sets, with much of the information being exchanged machine-to-machine directly and without human involvement. Machine-to-machine communications are typically terse. Most sensors and actuators will report or act upon small pieces of information - "chirps". Burdening these devices with current network protocol stacks is inefficient, unnecessary and unduly increases their cost of ownership. This must change. The architecture of the Internet of Things

must evolve now by incorporating simpler protocols toward at the edges of the network, or remain forever inefficient. Rethinking the Internet of Things describes reasons why we must rethink current approaches to the Internet of Things. Appropriate architectures that will coexist with existing networking protocols are described in detail. An architecture comprised of integrator functions, propagator nodes, and end devices, along with their interactions, is explored.

Fool's Gold - Mark Y. Herring 2009-08-12

This work skeptically explores the notion that the internet will soon obviate any need for traditional print-based academic libraries. It makes a case for the library's staying power in the face of technological advancements (television, microfilm, and CD-ROM's were all once predicted as the contemporary library's heir-apparent), and devotes individual chapters to the pitfalls and prevarications of popular search engines, e-books, and the mass digitization of traditional print material.

Design Patterns - Erich Gamma 1995

Software -- Software Engineering.

JavaScript on Things - Lyza Gardner 2018-02-22

Summary JavaScript on Things is your first step into the exciting and downright entertaining world of programming for small electronics. If you know enough JavaScript to hack a website together, you'll be making things go bleep, blink, and spin faster than you can say "nodebot." Purchase of

the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Are you ready to make things move? If you can build a web app, you can create robots, weather stations, and other funky gadgets! In this incredibly fun, project-based guide, JavaScript hardware hacker Lyza Danger Gardner takes you on an incredible journey from your first flashing LED through atmospheric sensors, motorized rovers, Bluetooth doorbells, and more. With JavaScript, some easy-to-get hardware, and a bit of creativity, you'll be beeping, spinning, and glowing in no time. About the Book JavaScript on Things introduces the exciting world of programming small electronics! You'll start building things immediately, beginning with basic blinking on Arduino. This fully illustrated, hands-on book surveys JavaScript toolkits like Johnny-Five along with platforms including Raspberry Pi, Tessel, and BeagleBone. As you build project after interesting project, you'll learn to wire in sensors, hook up motors, transmit data, and handle user input. So be warned: once you start, you won't want to stop. What's Inside Controlling hardware with JavaScript Designing and assembling robots and gadgets A crash course in electronics Over a dozen hands-on projects! About the Reader Written for readers with intermediate JavaScript and Node.js skills. No experience with electronics required. About the Author Lyza Danger Gardner has been a web

developer for over 20 years. She's part of the NodeBots community and a contributor to the Johnny-Five Node.js library. Table of Contents
PART 1 - A JAVASCRIPTER'S INTRODUCTION TO HARDWARE Bringing JavaScript and hardware together Embarking on hardware with Arduino How to build circuits
PART 2 - PROJECT BASICS: INPUT AND OUTPUT WITH JOHNNY-FIVE Sensors and input Output: making things happen Output: making things move
PART 3 - MORE SOPHISTICATED PROJECTS Serial communication Projects without wires Building your own thing
PART 4 - USING JAVASCRIPT WITH HARDWARE IN OTHER ENVIRONMENTS JavaScript and constrained hardware Building with Node.js and tiny computers In the cloud, in the browser, and beyond

Building the Web of Things - Dominique Guinard
2016-06-18

Summary A hands-on guide that will teach how to design and implement scalable, flexible, and open IoT solutions using web technologies. This book focuses on providing the right balance of theory, code samples, and practical examples to enable you to successfully connect all sorts of devices to the web and to expose their services and data over REST APIs. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Because the Internet of Things is still new, there is no universal application protocol.

Fortunately, the IoT can take advantage of the web, where IoT protocols connect applications thanks to universal and open APIs. About the Book Building the Web of Things is a guide to using cutting-edge web technologies to build the IoT. This step-by-step book teaches you how to use web protocols to connect real-world devices to the web, including the Semantic and Social Webs. Along the way you'll gain vital concepts as you follow instructions for making Web of Things devices. By the end, you'll have the practical skills you need to implement your own web-connected products and services. What's Inside Introduction to IoT protocols and devices Connect electronic actuators and sensors (GPIO) to a Raspberry Pi Implement standard REST and Pub/Sub APIs with Node.js on embedded systems Learn about IoT protocols like MQTT and CoAP and integrate them to the Web of Things Use the Semantic Web (JSON-LD, RDFa, etc.) to discover and find Web Things Share Things via Social Networks to create the Social Web of Things Build a web-based smart home with HTTP and WebSocket Compose physical mashups with EVERYTHING, Node-RED, and IFTTT About the Reader For both seasoned programmers and those with only basic programming skills. About the Authors Dominique Guinard and Vlad Trifa pioneered the Web of Things and cofounded EVERYTHING, a large-scale IoT cloud powering billions of Web Things. Table

of Contents PART 1 BASICS OF THE IOT AND THE WOT From the Internet of Things to the Web of Things Hello, World Wide Web of Things Node.js for the Web of Things Getting started with embedded systems Building networks of Things PART 2 BUILDING THE WOT Access: Web APIs for Things Implementing Web Things Find: Describe and discover Web Things Share: Securing and sharing Web Things [Internet of Things](#) - Vlasios Tsiatsis 2018-11-16 Internet of Things: Technologies and Applications for a New Age of Intelligence outlines the background and overall vision for the Internet of Things (IoT) and Cyber-Physical Systems (CPS), as well as associated emerging technologies. Key technologies are described including device communication and interactions, connectivity of

devices to cloud-based infrastructures, distributed and edge computing, data collection, and methods to derive information and knowledge from connected devices and systems using artificial intelligence and machine learning. Also included are system architectures and ways to integrate these with enterprise architectures, and considerations on potential business impacts and regulatory requirements. Presents a comprehensive overview of the end-to-end system requirements for successful IoT solutions Provides a robust framework for analyzing the technology and market requirements for a broad variety of IoT solutions Covers in-depth security solutions for IoT systems Includes a detailed set of use cases that give examples of real-world implementation