Open Source Code Iot Platform Ayla Networks

Computational Science and Its Applications – ICCSA 2019Getting Started with Bluetooth Low EnergyLPWAN Technologies for IoT and M2M ApplicationsInteroperability and Open-Source Solutions for the Internet of ThingsJavaScript on ThingsPython Programming for ArduinoBuilding Wireless Sensor NetworksAzure IoT Development CookbookThe Business of PlatformsAdvanced Platform Development with KubernetesInternet-of-Things (IoT) SystemsLearning Internet of ThingsInteroperability and Open-Source Solutions for the Internet of ThingsAbusing the Internet of ThingsDesigning the Internet of ThingsInternet of Things – ICIOT 2018The Cathedral & the BazaarRaspberry Pi with Java: Programming the Internet of Things (IoT) (Oracle Press)Internet of Things with Arduino CookbookIntegration, Interconnection, and Interoperability of IoT SystemsEnhanced Living EnvironmentsInternet of Things: Concepts and System DesignJavaScript RoboticsLearning IoT with Particle Photon and ElectronAd Hoc NetworksIntel Galileo and Intel Galileo Gen 2Open-Source Electronics PlatformsDemystifying Internet of Things SecurityBuilding Blocks for IoT AnalyticsComponents and Services for IoT PlatformsEnterprise IoTInternet of Things From Hype to RealityBuilding the Web of ThingsGetting Started with the PhotonBuild Your Own IoT PlatformEnterprise IotBuilding Arduino Projects for the Internet of ThingsSmart Computing with Open Source PlatformsIoT Platforms, Use Cases, Privacy,

and Business ModelsIoT Development for ESP32 and ESP8266 with JavaScript

Computational Science and Its Applications – ICCSA 2019

This book introduces a new approach to embedded development, grounded in modern, industry-standard JavaScript. Using the same language that powers web browsers and Node.js, the Moddable SDK empowers IoT developers to apply many of the same tools and techniques used to build sophisticated websites and mobile apps. The Moddable SDK enables you to unlock the full potential of inexpensive microcontrollers like the ESP32 and ESP8266. Coding for these microcontrollers in C or C++ with the ESP-IDF and Arduino SDKs works for building basic products but doesn't scale to handle the increasingly complex IoT products that customers expect. The Moddable SDK adds the lightweight XS JavaScript engine to those traditional environments, accelerating development with JavaScript while keeping the performance benefits of a native SDK. Building user interfaces and communicating over the network are two areas where JavaScript really shines. IoT Development for ESP32 and ESP8266 with JavaScript shows you how to build responsive touch screen user interfaces using the Piu framework. You'll learn how easy it is to securely send and receive JSON data over Wi-Fi with elegant JavaScript APIs for common IoT protocols, including HTTP/HTTPS, WebSocket, MQTT, and mDNS. You'll also learn how to integrate common

sensors and actuators, Bluetooth Low Energy (BLE), file systems, and more into your projects, and you'll see firsthand how JavaScript makes it easier to combine these diverse technologies. If you're an embedded C or C++ developer who has never worked in JavaScript, don't worry. This book includes an introduction to the JavaScript language just for embedded developers experienced with C or C++. What You'll Learn Building, installing, and debugging JavaScript projects on the ESP32 and ESP8266 Using modern JavaScript for all aspects of embedded development with the Moddable SDK Developing IoT products with animated user interfaces, touch input, networking, BLE, sensors, actuators, and more Who This Book Is For Professional embedded developers who want the speed, flexibility, and power of web development in their embedded software work Makers who want a faster, easier way to build their hobby projects Web developers working in JavaScript who want to extend their skills to hardware products

Getting Started with Bluetooth Low Energy

This open access book was prepared as a Final Publication of the COST Action IC1303 "Algorithms, Architectures and Platforms for Enhanced Living Environments (AAPELE)". The concept of Enhanced Living Environments (ELE) refers to the area of Ambient Assisted Living (AAL) that is more related with Information and Communication Technologies (ICT). Effective ELE solutions require appropriate ICT algorithms, architectures, platforms, and systems,

having in view the advance of science and technology in this area and the development of new and innovative solutions that can provide improvements in the quality of life for people in their homes and can reduce the financial burden on the budgets of the healthcare providers. The aim of this book is to become a state-of-the-art reference, discussing progress made, as well as prompting future directions on theories, practices, standards, and strategies related to the ELE area. The book contains 12 chapters and can serve as a valuable reference for undergraduate students, post-graduate students, educators, faculty members, researchers, engineers, medical doctors, healthcare organizations, insurance companies, and research strategists working in this area.

LPWAN Technologies for IoT and M2M Applications

Interoperability and Open-Source Solutions for the Internet of Things

Get ready to create distributed sensor systems and intelligent interactive devices using the ZigBee wireless networking protocol and Series 2 XBee radios. By the time you're halfway through this fast-paced, hands-on guide, you'll have built a series of useful projects, including a complete ZigBee wireless network that delivers remotely sensed data. Radio networking is creating revolutions in volcano monitoring, performance art, clean energy, and

consumer electronics. As you follow the examples in each chapter, you'll learn how to tackle inspiring projects of your own. This practical guide is ideal for inventors, hackers, crafters, students, hobbyists, and scientists. Investigate an assortment of practical and intriguing project ideas Prep your ZigBee toolbox with an extensive shopping list of parts and programs Create a simple, working ZigBee network with XBee radios in less than two hours -- for under $100 Use the Arduino open source electronics prototyping platform to build a series of increasingly complex projects Get familiar with XBee's API mode for creating sensor networks Build fully scalable sensing and actuation systems with inexpensive components Learn about power management, source routing, and other XBee technical nuances Make gateways that connect with neighboring networks, including the Internet

JavaScript on Things

Discover how every solution in some way related to the IoT needs a platform and how to create that platform. This book is about being agile and reducing time to market without breaking the bank. It is about designing something that you can scale incrementally without having to do a lot of rework and potentially disrupting your current state of the work. So the key questions are: what does it take, how long does it take, and how much does it take to build your own IoT platform? Build Your Own IoT Platform answers these questions and provides you with step-by-step guidance on how to build your own IoT platform. The author bursts the bubble of IoT platforms and

highlights what the core of an IoT platform looks like. There are must-haves and there are nice-to-haves; this book will distinguish the two and focus on how to build the must-haves. Building your own IoT platform is not only the biggest cost saver, but also can be a satisfying learning experience, giving you control over your project. What You Will Learn Architect an interconnected system Develop a flexible architecture Create a redundant communication platform Prioritize system requirements with a bottom-up approach Who This Book Is For IoT developers and development teams in small- to medium-sized companies. Basic to intermediate programming skills are required.

Python Programming for Arduino

Use Raspberry Pi with Java to create innovative devices that power the internet of things! Raspberry Pi with Java: Programming the Internet of Things (IoT) fills an important gap in knowledge between seasoned Java developers and embedded-hardware gurus, taking a project-based approach to skills development from which both hobbyists and professionals can learn. By starting with simple projects based on open-source libraries such as Pi4J, hobbyists can get immediate results without a significant investment in time or hardware. Later projects target simplified industrial use cases where professionals can start to apply their skills to practical problems in the fields of home automation, healthcare, and robotics. This progression prepares you to be an active participant in the IoT revolution that is reshaping our lives. For the hobbyist: Hardware

used in projects is affordable and easily accessible
Follows a project-based learning approach with a
gradual learning curve Projects are based on open-
source code repositories with commercial friendly
licenses For the professional computer engineer: Uses
an industry-standard platform that allows for high
performance, secure, production-ready applications
Introduces Java SE Embedded for large devices and
Java ME Embedded for small devices Code is portable
to a wide variety of ARM and MIPS based platforms
Provides practical skill development with advanced
projects in the fields of home automation, healthcare,
and robotics

Building Wireless Sensor Networks

Over 60 recipes will help you build smart IoT solutions
and surprise yourself with captivating IoT projects you
thought only existed in Bond movies About This Book
This book offers key solutions and advice to address
the hiccups faced when working on Arduino-based IoT
projects in the real world Take your existing skills and
capabilities to the next level by building challenging
IoT applications with ease. Be the tech disruptor you
always wanted to be with key recipes that help you
solve Arduino IoT related problems smarter and
faster. Put IoT to work through recipes on building
Arduino-based devices that take control of your home,
health, and life! Who This Book Is For This book is
primarily for tech enthusiasts and early IoT adopters
who would like to make the most of IoT and address
the challenges encountered while developing IoT-
based applications with Arduino. This book is also

good for developers with basic electronics knowledge who need help to successfully build Arduino projects. What You Will Learn Monitor several Arduino boards simultaneously Tweet sensor data directly from your Arduino board Post updates on your Facebook wall directly from your Arduino board Create an automated access control with a fingerprint sensor Control your entire home from a single dashboard Make a GPS tracker that you can track in Google Maps Build a live camera that streams directly from your robot In Detail Arduino is a powerful and very versatile platform used by millions of people around the world to create DIY electronics projects. It can be connected to a wide variety of sensors and other components, making it the ideal platform to build amazing Internet of Things (IoT) projects on—the next wave in the era of computing. This book takes a recipe-based approach, giving you precise examples on how to build IoT projects of all types using the Arduino platform. You will come across projects from several fields, including the popular robotics and home automation domains. Along with being introduced to several forms of interactions within IoT, including projects that directly interact with well-known web services such as Twitter, Facebook, and Dropbox we will also focus on Machine-to-Machine (M2M) interactions, where Arduino projects interact without any human intervention. You will learn to build a few quick and easy-to-make fun projects that will really expand your horizons in the world of IoT and Arduino. Each chapter ends with a troubleshooting recipe that will help you overcome any problems faced while building these projects. By the end of this book, you will not only know how to

build these projects, but also have the skills necessary to build your own IoT projects in the future. Style and approach This book takes a recipe-based approach, giving you precise examples on how to build IoT projects using the Arduino platform. You will learn to build fun and easy projects through a task-oriented approach.

Azure IoT Development Cookbook

The Photon is an open source, inexpensive, programmable, WiFi-enabled module for building connected projects and prototypes. Powered by an ARM Cortex-M3 microcontroller and a Broadcom WiFi chip, the Photon is just as happy plugged into a hobbyist's breadboard as it is into a product rolling off of an assembly line. While the Photon--and its accompanying cloud platform--is designed as a ready-to-go foundation for product developers and manufacturers, it's great for Maker projects, as you'll see in this book. You'll learn how to get started with the free development tools, deploy your sketches over WiFi, and build electronic projects that take advantage of the Photon's processing power, cloud platform, and input/output pins. What's more, the Photon is backward-compatible with its predecessor, the Spark Core.

The Business of Platforms

Gain a strong foundation of Arduino-based device development, from which you can go in any direction according to your specific development needs and

desires. You'll build Arduino-powered devices for everyday use, and then connect those devices to the Internet. You'll be introduced to the building blocks of IoT, and then deploy those principles to by building a variety of useful projects. Projects in the books gradually introduce the reader to key topics such as internet connectivity with Arduino, common IoT protocols, custom web visualization, and Android apps that receive sensor data on-demand and in realtime. IoT device enthusiasts of all ages will want this book by their side when developing Android-based devices. If you're one of the many who have decided to build your own Arduino-powered devices for IoT applications, then Building Arduino Projects for the Internet of Things is exactly what you need. This book is your single resource--a guidebook for the eager-to-learn Arduino enthusiast--that teaches logically, methodically, and practically how the Arduino works and what you can build with it. Written by a software developer and solution architect who got tired of hunting and gathering various lessons for Arduino development as he taught himself all about the topic. For Arduino enthusiasts, this book not only opens up the world of IoT applications, you will also learn many techniques that likely would not be obvious if not for experience with such a diverse group of applications What You'll Learn Create an Arduino circuit that senses temperature Publish data collected from an Arduino to a server and to an MQTT broker Set up channels in Xively Using Node-RED to define complex flows Publish data visualization in a web app Report motion-sensor data through a mobile app Create a remote control for house lights Set up an app in IBM Bluematrix Who This Book Is For IoT device

enthusiasts of all ages will want this book by their side when developing Android-based devices.

Advanced Platform Development with Kubernetes

The six volumes LNCS 11619-11624 constitute the refereed proceedings of the 19th International Conference on Computational Science and Its Applications, ICCSA 2019, held in Saint Petersburg, Russia, in July 2019. The 64 full papers, 10 short papers and 259 workshop papers presented were carefully reviewed and selected form numerous submissions. The 64 full papers are organized in the following five general tracks: computational methods, algorithms and scientific applications; high performance computing and networks; geometric modeling, graphics and visualization; advanced and emerging applications; and information systems and technologies. The 259 workshop papers were presented at 33 workshops in various areas of computational sciences, ranging from computational science technologies to specific areas of computational sciences, such as software engineering, security, artificial intelligence and blockchain technologies.

Internet-of-Things (IoT) Systems

Focuses on the concept of open source prototyping and product development and designing sensor networks and covers IoT base applications This book will serves as a single source of introductory material

and reference for programming smart computing and Internet of Things (IoT) devices using Arduino with the use of Python It covers number of comprehensive DIY experiments through which the reader can design various intelligent systems

Learning Internet of Things

Over 50 recipes to drive IoT innovation with Microsoft Azure About This Book Build secure and scalable IoT solutions with Azure IoT platform Learn techniques to build end to end IoT solutions leveraging the Azure IoT platform Filled with practical recipes to help you increase connectivity and automation across IoT devices Who This Book Is For If you are an application developer and want to build robust and secure IoT solution for your organization using Azure IoT, then this book is for you. What You Will Learn Build IoT Solutions using Azure IoT & Services Learn device configuration and communication protocols Understand IoT Suite and Pre-configured solutions Manage Secure Device communications Understand Device management, alerts Introduction with IoT Analytics, reference IoT Architectures Reference Architectures from Industry Pre-Configured IoT Suite solutions In Detail Microsoft's end-to-end IoT platform is the most complete IoT offering, empowering enterprises to build and realize value from IoT solutions efficiently. It is important to develop robust and reliable solutions for your organization to leverage IoT services. This book focuses on how to start building custom solutions using the IoT hub or the preconfigured solution of Azure IoT suite. As a

developer, you will be taught how to connect multiple devices to the Azure IoT hub, develop, manage the IoT hub service and integrate the hub with cloud. We will be covering REST APIs along with HTTP, MQTT and AMQP protocols. It also helps you learn Pre-Configured IoT Suite solution. Moving ahead we will be covering topics like:-Process device-to-cloud messages and cloud-to-device messages using .Net-Direct methods and device management-Query Language, Azure IoT SDK for .Net-Creating and managing, Securing IoT hub, IoT Suite and many more. We will be using windows 10 IoT core, Visual Studio, universal Windows platform. At the end, we will take you through IoT analytics and provide a demo of connecting real device with Azure IoT. Style and approach A set of exciting recipes of using Microsoft Azure IoT more effectively.

Interoperability and Open-Source Solutions for the Internet of Things

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.

Abusing the Internet of Things

Intel® Galileo and Intel® Galileo Gen 2: API Features and Arduino Projects for Linux Programmers provides detailed information about Intel® Galileo and Intel® Galileo Gen 2 boards for all software developers interested in Arduino and the Linux platform. The book covers the new Arduino APIs and is an introduction for developers on natively using Linux. Author Manoel Carlos Ramon is a member of the Intel Galileo development team; in this book he draws on his practical experience in working on the Galileo project as he shares the team's findings, problems, fixes, workarounds, and techniques with the open source community. His areas of expertise are wide-ranging, including Linux-embedded kernel and device drivers, C/C++, Java, OpenGL, Assembler, Android NDK/SDK/ADK, and 2G/3G/4G modem integration. He has more than 17 years of experience in research and development of mobile devices and embedded circuits. His personal blog about programming is BytesThink (www.bytesthink.com).

Designing the Internet of Things

This book serves as a single-source reference to the state-of-the-art in Internet of Things (IoT) platforms, services, tools, programming languages, and applications. In particular, the authors focus on IoT-related requirements such as low-power, time-to-market, connectivity, reliability, interoperability, security, and privacy. Authors discuss the question of whether we need new IoT standardization bodies or initiatives, toward a fully connected, cyber-physical world. Coverage includes the research outcomes of

several, current European projects related to IoT platforms, services, APIs, tools, and applications.

Internet of Things – ICIOT 2018

Low power wide area network (LPWAN) is a promising solution for long range and low power Internet of Things (IoT) and machine to machine (M2M) communication applications. The LPWANs are resource-constrained networks and have critical requirements for long battery life, extended coverage, high scalability, and low device and deployment costs. There are several design and deployment challenges such as media access control, spectrum management, link optimization and adaptability, energy harvesting, duty cycle restrictions, coexistence and interference, interoperability and heterogeneity, security and privacy, and others. LPWAN Technologies for IoT and M2M Applications is intended to provide a one-stop solution for study of LPWAN technologies as it covers a broad range of topics and multidisciplinary aspects of LPWAN and IoT. Primarily, the book focuses on design requirements and constraints, channel access, spectrum management, coexistence and interference issues, energy efficiency, technology candidates, use cases of different applications in smart city, healthcare, and transportation systems, security issues, hardware/software platforms, challenges, and future directions. One stop guide to the technical details of various low power long range technologies such as LoRaWAN, Sigfox, NB-IoT, LTE-M and others Describes the design aspects, network architectures,

security issues and challenges Discusses the performance, interference, coexistence issues and energy optimization techniques Includes LPWAN based intelligent applications in diverse areas such as smart city, traffic management, health and others Presents the different hardware and software platforms for LPWANs Provides guidance on selecting the right technology for an application

The Cathedral & the Bazaar

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.

Raspberry Pi with Java: Programming the Internet of Things (IoT) (Oracle Press)

With Bluetooth Low Energy (BLE), smart devices are about to become even smarter. This practical guide demonstrates how this exciting wireless technology helps developers build mobile apps that share data with external hardware, and how hardware engineers can gain easy and reliable access to mobile operating systems. This book provides a solid, high-level overview of how devices use BLE to communicate with each other. You'll learn useful low-cost tools for developing and testing BLE-enabled mobile apps and embedded firmware and get examples using various development platforms—including iOS and Android for app developers and embedded platforms for product designers and hardware engineers. Understand how data is organized and transferred by BLE devices Explore BLE's concepts, key limitations, and network topology Dig into the protocol stack to grasp how and why BLE operates Learn how BLE devices discover each other and establish secure connections Set up the tools and infrastructure for BLE application development Get examples for connecting BLE to iPhones, iPads, Android devices, and sensors Develop code for a simple device that transmits heart rate data to a mobile device

Internet of Things with Arduino

Cookbook

This book constitutes the proceedings of the International Conference on Ad Hoc Networks, ADHOCNETS 2015, held in September 2015 in Italy. The 17 regular and 3 invited papers presented were carefully reviewed and selected from numerous submissions. The papers cover topics such as physical layer; MAC and routing; mobility in networks; self-organization, virtualization and localization; cloud, virtualization and prototypage; security and fault tolerance in wireless mobile networks.

Integration, Interconnection, and Interoperability of IoT Systems

This edited book investigates the lack of interoperability in the IoT realm, including innovative research as well as technical solutions to interoperability, integration, and interconnection of heterogeneous IoT systems, at any level. It also explores issues caused by lack of interoperability such as impossibility to plug non-interoperable IoT devices into heterogeneous IoT platforms, impossibility to develop IoT applications exploiting multiple platforms in homogeneous and/or cross domains, slowness of IoT technology introduction at large-scale: discouragement in adopting IoT technology, increase of costs; scarce reusability of technical solutions and difficulty in meeting user satisfaction.

Enhanced Living Environments

This book covers essential topics in the architecture and design of Internet of Things (IoT) systems. The authors provide state-of-the-art information that enables readers to design systems that balance functionality, bandwidth, and power consumption, while providing secure and safe operation in the face of a wide range of threat and fault models. Coverage includes essential topics in system modeling, edge/cloud architectures, and security and safety, including cyberphysical systems and industrial control systems.

Internet of Things: Concepts and System Design

This book constitutes the proceedings of the International Conference on Internet of Things, ICIOT 2018, held in Seattle, WA, USA, in June 2018. The 13 full papers and 1 short paper presented in this volume was carefully reviewed and selected for inclusion in this book. The contributions are organized in topical sections named: Research Track – Architecture; Research Track – Smart IoT; Application and Industry Track; and Short Paper Track. They deal with research and application innovations in the internet of things services.

JavaScript Robotics

This textbook presents an end-to-end Internet of Things (IoT) architecture that comprises of devices, network, compute, storage, platform, applications along with management and security components

with focus on the missing functionality in the current state of the art. As with the first edition, it is organized into six main parts: an IoT reference model; Fog computing and the drivers; IoT management and applications ranging from smart homes to manufacturing and energy conservation solutions; Smart Services in IoT; IoT standards; and case studies. The textbook edition features a new chapter entitled The Blockchain in IoT, updates based on latest standards and technologies, and new slide ware for professors. It features a full suite of classroom material for easy adoption.

Learning IoT with Particle Photon and Electron

A trio of experts on high-tech business strategy and innovation reveal the principles that have made platform businesses the most valuable firms in the world and the first trillion-dollar companies. Managers and entrepreneurs in the digital era must learn to live in two worlds—the conventional economy and the platform economy. Platforms that operate for business purposes usually exist at the level of an industry or ecosystem, bringing together individuals and organizations so they can innovate and interact in ways not otherwise possible. Platforms create economic value far beyond what we see in conventional companies. The Business of Platforms is an invaluable, in-depth look at platform strategy and digital innovation. Cusumano, Gawer, and Yoffie address how a small number of companies have come to exert extraordinary influence over every dimension

of our personal, professional, and political lives. They
explain how these new entities differ from the
powerful corporations of the past. They also question
whether there are limits to the market dominance and
expansion of these digital juggernauts. Finally, they
discuss the role governments should play in
rethinking data privacy laws, antitrust, and other
regulations that could reign in abuses from these
powerful businesses. Their goal is to help managers
and entrepreneurs build platform businesses that can
stand the test of time and win their share of battles
with both digital and conventional competitors. As
experts who have studied and worked with these
firms for some thirty years, this book is the most
authoritative and timely investigation yet of the
powerful economic and technological forces that
make platform businesses, from Amazon and Apple to
Microsoft, Facebook, and Google—all dominant
players in shaping the global economy, the future of
work, and the political world we now face.

Ad Hoc Networks

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 analyticsSearching the Internet of ThingsDevelopment Tools for IoT Analytics ApplicationsIoT Analytics-as-a-ServiceSemantic Modelling and Reasoning for IoT AnalyticsIoT analytics for Smart BuildingsIoT analytics for Smart CitiesOperationalization of IoT analyticsEthical 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).

Intel Galileo and Intel Galileo Gen 2

JavaScript can be used to control hordes of small robots, creative maker projects, and IoT devices. With the Node.js ecosystem at hand, hardware prototyping gets fun, intuitive and fast. JavaScript on Things is the first step into the exciting world of programming for small electronics. This fully-illustrated, hands-on book teaches readers how to get going with platforms like Arduino, Tessel, and Raspberry Pi. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications.

Open-Source Electronics Platforms

Open source provides the competitive advantage in the Internet Age. According to the August Forrester Report, 56 percent of IT managers interviewed at Global 2,500 companies are already using some type of open source software in their infrastructure and another 6 percent will install it in the next two years. This revolutionary model for collaborative software development is being embraced and studied by many

of the biggest players in the high-tech industry, from Sun Microsystems to IBM to Intel.The Cathedral & the Bazaar is a must for anyone who cares about the future of the computer industry or the dynamics of the information economy. Already, billions of dollars have been made and lost based on the ideas in this book. Its conclusions will be studied, debated, and implemented for years to come. According to Bob Young, "This is Eric Raymond's great contribution to the success of the open source revolution, to the adoption of Linux-based operating systems, and to the success of open source users and the companies that supply them."The interest in open source software development has grown enormously in the past year. This revised and expanded paperback edition includes new material on open source developments in 1999 and 2000. Raymond's clear and effective writing style accurately describing the benefits of open source software has been key to its success. With major vendors creating acceptance for open source within companies, independent vendors will become the open source story in 2001.

Demystifying Internet of Things Security

If you're a developer or electronics engineer who is curious about Internet of Things, then this is the book for you. With only a rudimentary understanding of electronics, Raspberry Pi, or similar credit-card sized computers, and some programming experience using managed code such as C# or Java, you will be taught to develop state-of-the-art solutions for Internet of Things in an instant.

Building Blocks for IoT Analytics

Note - The book was last edited and updated on 15th December 2015. Now includes bonus chapter on Cognitive IoT. For complete details about the book,visit http://enterpriseiotbook.com. "Internet of Things is a vision where every object in the world has the potential to connect to the Internet and provide their data so as to derive actionable insights on its own or through other connected objects" The object can be anything - a vehicle, machinery, airport, city, people, phone or even a shoe. From a connected vehicle solution, you can understand the driver behaviour and vehicle usage patterns, from a connected machines solution you can determine when do machines need servicing, from a connected airport solution you can understand many things like - how much time the passenger needs to wait for check-in and security, from an operating perspective it could help to optimize the passenger movement and ensure the right equipments are available at the right time to ensure quick serviceability and finally say, from a connected footwear solution you can understand how much you have run so far and your app can automatically purchase a new pair of shoes based on the remaining shoe life. As we can see, it's not just about connectivity, but how to use the connected data in context of your application or for that matter other connected solutions to derive insights which can't be uncovered before. Today we are seeing data (both structured and unstructured) growing by leaps and bounds available through mediums like blogs, social media, transactional systems etc. With advent

of IoT, you will see a large volume of raw data emitting from devices like sensors. Such huge and complex set of data, if not attended to, can go wasted and opportunity lost in terms of building smart environment around us. While focusing on issue of addressing this web of complexity, often understanding the real benefit of IoT is lost and most importantly how to get started on IoT. In this book, our focus will be to provide a clear vision on Internet of Things and everything you should know to get started on applying and building Enterprise IoT applications in any industry. The concepts listed down in the book are applicable across industries. Till date, it's difficult to find a single perspective of what does an Enterprise IoT stack actually mean and our intent is to provide an applicability guide that can be taken as reference for building any IoT application. In the course of the book, we would describe some of the key components of Internet of Things through our Enterprise IoT stack. We would look at how to incrementally apply IoT transformations to build connected products in various industries. At the end, we would understand the technical strategy and how to build IoT applications using IoT cloud offerings from Microsoft, IBM, and Amazon and even build one using open source technologies. To summarize, as part of the book we would cover the following - * A detail overview of key components of Internet of Things and most comprehensive view of an Enterprise IoT stack. * How to apply IoT in context of real world applications by covering detailed use cases on manufacturing, automotive and home automation. * Understand the technical strategy and how to implement IoT applications using Microsoft, IBM and Amazon IoT

offerings and various open source technologies and map it to our Enterprise IoT Stack.

Components and Services for IoT Platforms

Break down the misconceptions of the Internet of Things by examining the different security building blocks available in Intel Architecture (IA) based IoT platforms. This open access book reviews the threat pyramid, secure boot, chain of trust, and the SW stack leading up to defense-in-depth. The IoT presents unique challenges in implementing security and Intel has both CPU and Isolated Security Engine capabilities to simplify it. This book explores the challenges to secure these devices to make them immune to different threats originating from within and outside the network. The requirements and robustness rules to protect the assets vary greatly and there is no single blanket solution approach to implement security. Demystifying Internet of Things Security provides clarity to industry professionals and provides and overview of different security solutions What You'll Learn Secure devices, immunizing them against different threats originating from inside and outside the networkGather an overview of the different security building blocks available in Intel Architecture (IA) based IoT platformsUnderstand the threat pyramid, secure boot, chain of trust, and the software stack leading up to defense-in-depth Who This Book Is For Strategists, developers, architects, and managers in the embedded and Internet of Things (IoT) space trying to understand and implement the security in

the IoT devices/platforms.

Enterprise IoT

Internet of Things (IoT) is one of the most hyped concept in today's technology world. However, with so much hype, still there is a lot of confusion on what does Internet of Things actually mean and what it takes to build IoT applications and how to apply it in various industries. There exist many definitions on "Internet of Things" and even getting on to a same terminology and definition seems difficult nowadays. We have seen multiple definitions over a period of time, such as 'Internet of Everything', 'Internet of your Things', 'Internet of People' and the list goes on. They all mean the same, so let's start with a simple definition of Internet of Things. "Internet of Things is a vision where every object in the world has the potential to connect to the Internet and provide their data so as to derive actionable insights on its own or through other connected objects" The object can be anything - a vehicle, machinery, airport, city, people, phone or even a shoe. From a connected vehicle solution, you can understand the driver behaviour and vehicle usage patterns, from a connected machines solution you can determine when do machines need servicing, from a connected airport solution you can understand many things like - how much time the passenger needs to wait for check-in and security, from an operating perspective it could help to optimize the passenger movement and ensure the right equipments are available at the right time to ensure quick serviceability and finally say, from a

connected footwear solution you can understand how much you have run so far and your app can automatically purchase a new pair of shoes based on the remaining shoe life. As we can see, it's not just about connectivity, but how to use the connected data in context of your application or for that matter other connected solutions to derive insights which can't be uncovered before. Today we are seeing data (both structured and unstructured) growing by leaps and bounds available through mediums like blogs, social media, transactional systems etc. With advent of IoT, you will see a large volume of raw data emitting from devices like sensors. Such huge and complex set of data, if not attended to, can go wasted and opportunity lost in terms of building smart environment around us. While focusing on issue of addressing this web of complexity, often understanding the real benefit of IoT is lost and most importantly how to get started on IoT. In this book, our focus will be to provide a clear vision on IoT and everything you should know to get started on applying and building Enterprise IoT applications in any industry. The concepts listed down in the book are applicable across industries. Till date, it's difficult to find a single perspective of what does an Enterprise IoT stack actually mean and our intent is to provide an applicability guide that can be taken as reference for building any IoT application. In the course of the book, we would describe some of the key components of Internet of Things through our Enterprise IoT stack. We would look at how to incrementally apply IoT transformations to build connected products in various industries. At the end, we would understand the technical strategy and how to build IoT

applications using IoT cloud offerings from Microsoft, IBM, and Amazon and even build one using open source technologies. To summarize, as part of the book we would cover the following - * A detailed overview of key components of Internet of Things and most comprehensive view of an Enterprise IoT stack. * How to apply IoT in context of real world applications by covering detailed use cases on manufacturing, automotive and home automation. * Understand the technical strategy and how to implement IoT applications using Microsoft Azure and IoT Suite, IBM Internet of Things Foundation and BlueMix, Amazon IoT and AWS services and various open source technologies like Apache Kakfa, Apache Spark and map it to our Enterprise IoT Stack.

Internet of Things From Hype to Reality

Open-source electronics are becoming very popular, and are integrated with our daily educational and developmental activities. At present, the use open-source electronics for teaching science, technology, engineering, and mathematics (STEM) has become a global trend. Off-the-shelf embedded electronics such as Arduino- and Raspberry-compatible modules have been widely used for various applications, from do-it-yourself (DIY) to industrial projects. In addition to the growth of open-source software platforms, open-source electronics play an important role in narrowing the gap between prototyping and product development. Indeed, the technological and social impacts of open-source electronics in teaching, research, and innovation have been widely

recognized.

Building the Web of Things

This book constitutes the thoroughly refereed post-conference proceedings of the International Workshop on Interoperability and Open-Source Solutions for the Internet of Things, FP7 OpenIot Project, held in Conjunction with SoftCOM 2014, in Split, Croatia, in September 2014. The 11 revised full papers presented together with the extended abstracts of 2 keynote talks were carefully reviewed and selected from numerous submissions during two rounds of reviewing and improvement. The papers are organized in topical sections on OpenIoT platform, open platforms and standards, and IoT Applications.

Getting Started with the Photon

Leverage Kubernetes for the rapid adoption of emerging technologies. Kubernetes is the future of enterprise platform development and has become the most popular, and often considered the most robust, container orchestration system available today. This book focuses on platforming technologies that power the Internet of Things, Blockchain, Machine Learning, and the many layers of data and application management supporting them. Advanced Platform Development with Kubernetes takes you through the process of building platforms with these in-demand capabilities. You'll progress through the development of Serverless, CICD integration, data processing pipelines, event queues, distributed query engines,

modern data warehouses, data lakes, distributed object storage, indexing and analytics, data routing and transformation, query engines, and data science/machine learning environments. You'll also see how to implement and tie together numerous essential and trending technologies including: Kafka, NiFi, Airflow, Hive, Keycloak, Cassandra, MySQL, Zookeeper, Mosquitto, Elasticsearch, Logstash, Kibana, Presto, Mino, OpenFaaS, and Ethereum. The book uses Golang and Python to demonstrate the development integration of custom container and Serverless functions, including interaction with the Kubernetes API. The exercises throughout teach Kubernetes through the lens of platform development, expressing the power and flexibility of Kubernetes with clear and pragmatic examples. Discover why Kubernetes is an excellent choice for any individual or organization looking to embark on developing a successful data and application platform. What You'll Learn Configure and install Kubernetes and k3s on vendor-neutral platforms, including generic virtual machines and bare metal Implement an integrated development toolchain for continuous integration and deployment Use data pipelines with MQTT, NiFi, Logstash, Kafka and Elasticsearch Install a serverless platform with OpenFaaS Explore blockchain network capabilities with Ethereum Support a multi-tenant data science platform and web IDE with JupyterHub, MLflow and Seldon Core Build a hybrid cluster, securely bridging on-premise and cloud-based Kubernetes nodes Who This Book Is For System and software architects, full-stack developers, programmers, and DevOps engineers with some experience building and using

containers. This book also targets readers who have started with Kubernetes and need to progress from a basic understanding of the technology and "Hello World" example to more productive, career-building projects.

Build Your Own IoT Platform

Develop applications on one of the most popular platforms for IoT using Particle Photon and Electron with this fast-paced guide About This Book Get an introduction to IoT architecture, command-line build tools and applications of IoT devices and sensors Design and develop connected IoT applications using Particle Photon and Electron in a step-by-step manner, gaining an entry point into the field of IoT Get tips on troubleshooting IoT applications Who This Book Is For This book is for developers, IoT enthusiasts and hobbyists who want to enhance their knowledge of IoT machine-to-machine architecture using Particle Photon and Electron, and implement cloud-based IoT projects. What You Will Learn Setup the Particle Photon and Electron on the cloud using the command-line tools Build and deploy applications on the Photon and Electron using the Web-based IDE Setup a local cloud server to interact with Particle Photon and Electron Connect various components and sensors to Particle Photon and Electron Tinker with the existing firmware and deploy a custom firmware on the Photon and Electron Setup communication between two or more Particle Photon and Electron Debug and troubleshoot Particle Photon and Electron projects Use webhooks to communicate with various

third-party server applications In Detail IoT is basically the network of physical devices, vehicles, buildings and other items—embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to collect and exchange data.. The number of connected devices is growing rapidly and will continue to do so over years to come. By 2020, there will be more than 20 billion connected devices and the ability to program such devices will be in high demand. Particle provides prototyping boards for IoT that are easy to program and deploy. Most importantly, the boards provided by Particle can be connected to the Internet very easily as they include Wi-Fi or a GSM module. Starting with the basics of programming Particle Photon and Electron, this book will take you through setting up your local servers and running custom firmware, to using the Photon and Electron to program autonomous cars. This book also covers in brief a basic architecture and design of IoT applications. It gives you an overview of the IoT stack. You will also get information on how to debug and troubleshoot Particle Photon and Electron and set up your own debugging framework for any IoT board. Finally, you'll tinker with the firmware of the Photon and Electron by modifying the existing firmware and deploying them to your boards. By the end of this book, you should have a fairly good understanding of the IoT ecosystem and you should be able to build standalone projects using your own local server or the Particle Cloud Server. Style and approach This project-based guide contains easy-to-follow steps to program Particle Photon and Electron. You will learn to build connected applications with the help of projects of

increasing complexity, and with each project, a new concept in IoT is taught.

Enterprise Iot

A future with billions of connected "things" includes monumental security concerns. This practical book explores how malicious attackers can abuse popular IoT-based devices, including wireless LED lightbulbs, electronic door locks, baby monitors, smart TVs, and connected cars. If you're part of a team creating applications for Internet-connected devices, this guide will help you explore security solutions. You'll not only learn how to uncover vulnerabilities in existing IoT devices, but also gain deeper insight into an attacker's tactics. Analyze the design, architecture, and security issues of wireless lighting systems Understand how to breach electronic door locks and their wireless mechanisms Examine security design flaws in remote-controlled baby monitors Evaluate the security design of a suite of IoT-connected home products Scrutinize security vulnerabilities in smart TVs Explore research into security weaknesses in smart cars Delve into prototyping techniques that address security in initial designs Learn plausible attacks scenarios based on how people will likely use IoT devices

Building Arduino Projects for the Internet of Things

This is the book for you if you are a student, hobbyist, developer, or designer with little or no programming

and hardware prototyping experience, and you want to develop IoT applications. If you are a software developer or a hardware designer and want to create connected devices applications, then this book will help you get started.

Smart Computing with Open Source Platforms

This comprehensive overview of IoT systems architecture includes in-depth treatment of all key components: edge, communications, cloud, data processing, security, management, and uses. Internet of Things: Concepts and System Design provides a reference and foundation for students and practitioners that they can build upon to design IoT systems and to understand how the specific parts they are working on fit into and interact with the rest of the system. This is especially important since IoT is a multidisciplinary area that requires diverse skills and knowledge including: sensors, embedded systems, real-time systems, control systems, communications, protocols, Internet, cloud computing, large-scale distributed processing and storage systems, AI and ML, (preferably) coupled with domain experience in the area where it is to be applied, such as building or manufacturing automation. Written in a reader-minded approach that starts by describing the problem (why should I care?), placing it in context (what does this do and where/how does it fit in the great scheme of things?) and then describing salient features of solutions (how does it work?), this book covers the existing body of

knowledge and design practices, but also offers the author's insights and articulation of common attributes and salient features of solutions such as IoT information modeling and platform characteristics.

IoT Platforms, Use Cases, Privacy, and Business Models

This book constitutes the thoroughly refereed post-conference proceedings of the second International Workshop on Interoperability and Open-Source Solutions for the Internet of Things, InterOSS-IoT 2016, held in Stuttgart, Germany, November 7, 2016. The 11 revised full papers presented were carefully reviewed and selected from 17 submissions during two rounds of reviewing. They are organized in topical sections on semantic interoperability, interoperabile architectures and platforms, business models and security, platform performance and applications.

IoT Development for ESP32 and ESP8266 with JavaScript

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 EVRYTHNG, 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 EVRYTHNG, 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

ROMANCE ACTION & ADVENTURE MYSTERY & THRILLER BIOGRAPHIES & HISTORY CHILDREN'S YOUNG ADULT FANTASY HISTORICAL FICTION HORROR LITERARY FICTION NON-FICTION SCIENCE FICTION