Make Getting Started With Intel Edison Sensors Actuators Bluetooth And Wi Fi On The Tiny Atom Powered Linux Module

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Python for Microcontrollers: Getting Started with MicroPython - Donald Norris 2016-11-29 Program Your Own MicroPython projects with ease—no prior programming experience necessary! This DIY guide provides a practical introduction to microcontroller programming with MicroPython. Written by an experienced electronics hobbyist, Python for Microcontrollers: Getting Started with MicroPython features eight start-to-finish projects that clearly demonstrate each technique. You will learn how to use sensors, store data, control motors and other devices, and work with expansion boards. From there, you'll discover how to design, build, and program all kinds of entertaining and practical projects of your own. • Learn MicroPython and object-oriented programming basics • Explore the powerful features of the Pyboard, ESP8266, and WiPy • Interface with a PC and load files, programs, and modules • Work with the LEDs, timers, and converters • Control external devices using serial interfaces and PWM • Build and program a let ball detector using the 3-axis accelerometer • Install and program LCD and touchsensor expansion boards • Record and play sounds using the AMP audio board
Intel Edison Projects - Avirup Basu 2017-05-30 Build powerful Robots and IoT solutions using

Intel Edison About This Book Learn to build advanced level robots with Intel Edison and Arduino Efficiently build and program home automation and IoT projects with Intel Edison Master the skills of creating enticing projects with Intel Edison. Who This Book Is For If you are a hobbyist, robot engineer, IoT enthusiast, programmer, or developer who wants to create autonomous projects with Intel Edison, then this book is for you. Prior programming knowledge would be beneficial. What You Will Learn Program your device using the Arduino processor language, Python, and Node.js Interface different sensors with the Intel Edison Build a home automation system using MQTT, Android, and WPF Perform face detection using Intel Edison Develop a high-speed line follower robot Control a robot using a PC application and an custom controller In Detail Change the way you look at embedded electronics with Intel Edison. It is a small computing platform packed with a set of robust features to deliver hands-on performance, durability, and software support. This book is a perfect place to kickstart development and rapid prototyping using Intel Edison. It will start by introducing readers to the Intel Edison board and explaining how to get started with it. You will learn how to build a mini weather station, which will help you to acquire

temperature and smoke level and push it to the IoT platform. Then you will see how to build a home automation device and control your appliances using an Android app. Furthermore, we will build a security system using a webcam to detect faces and perform voice recognition. Toward the end, the book will demonstrate how you can build two robots, which will be based on different line sensing sensors and can be controlled by a PC. The book will guide the readers through each and every step of execution of a project, using Intel Edison. Style and approach A project-based guide that will take the readers through various domains of projects like robotics, IoT and so on.

Advances in Communication, Devices and Networking - Rabindranath Bera 2019-02-15
The book covers recent trends in the field of devices, wireless communication and networking. It presents the outcomes of the International Conference in Communication, Devices and Networking (ICCDN 2018), which was organized by the Department of Electronics and Communication Engineering, Sikkim Manipal Institute of Technology, Sikkim, India on 2–3 June, 2018. Gathering cutting-edge research papers prepared by researchers, engineers and industry professionals, it will help young and experienced scientists and developers alike to explore new perspectives, and offer them inspirations on addressing real-world problems in the field of electronics, communication, devices and networking.

Programming the Intel Edison: Getting Started with Processing and Python - Donald Norris 2015-10-13
Learn To Easily Create Robotic, IoT, and Wearable Electronic Gadgets! Get up-and-running building cutting-edge Edison devices with help from this DIY guide. Programming the Intel Edison: Getting Started with Processing and Python lays out the Edison's powerful features and teaches the basics of Internet-enabled embedded programming. Discover how to set up components, connect your PC or Mac, build Python applications, and use USB, WiFi, and Bluetooth connections. Start-to-finish example projects include a motor controller, home temperature system, robotic car, and wearable hospital alert sensor. Explore the capabilities and features of the Edison Connect

Sparkfun, Break-out, and Arduino boards Program your Edison through the Arduino IDE Set up USB, GPIO, WiFi, and Bluetooth connections

Home Automation with Intel Galileo - Onur Dundar 2015-03-30
This book is for anyone who wants to learn Intel Galileo for home automation and cross-platform software development. No knowledge of programming with Intel Galileo is assumed, but knowledge of the C programming language is essential.

Internet of Things (IoT) - Jamil Y. Khan 2019-09-23
The Internet of Things (IoT) is one of the core technologies of current and future information and communications technology (ICT) sectors. IoT technologies will be deployed in numerous industries, including health, transport, smart cities, utility sectors, environment, security, and many other areas. In a manner suitable to a broad range of readers, this book introduces various key IoT technologies focusing on algorithms, process algebra, network architecture, energy harvesting, wireless communications, and network security. It presents IoT system design techniques, international IoT standards, and recent research outcomes relevant to the IoT system developments and provides existing and emerging solutions to the design and development of IoT platforms for multi-sector industries, particularly for Industry 4.0. The book also addresses some of the regulatory issues and design challenges related to IoT system deployments and proposes guidelines for possible future applications.

Cryptographic Security Solutions for the Internet of Things - Banday, Mohammad Tariq 2019-01-18
The Internet of Things is a technological revolution that represents the future of computing and communications. Even though efforts have been made to standardize Internet of Things devices and how they communicate with the web, a uniform architecture is not followed. This inconsistency directly impacts and limits security standards that need to be put in place to secure the data being exchanged across networks. Cryptographic Security Solutions for the Internet of Things is an essential reference

source that discusses novel designs and recent developments in cryptographic security control procedures to improve the efficiency of existing security mechanisms that can help in securing sensors, devices, networks, communication, and data in the Internet of Things. With discussions on cryptographic algorithms, encryption techniques, and authentication procedures, this book is ideally designed for managers, IT consultants, startup companies, ICT procurement managers, systems and network integrators, infrastructure service providers, students, researchers, and academic professionals.

Internet of Things in Biomedical Engineering - Valentina E. Balas 2019-06-14
Internet of Things in Biomedical Engineering presents the most current research in Internet of Things (IoT) applications for clinical patient monitoring and treatment. The book takes a systems-level approach for both human-factors and the technical aspects of networking, databases and privacy. Sections delve into the latest advances and cutting-edge technologies, starting with an overview of the Internet of Things and biomedical engineering, as well as a focus on 'daily life.' Contributors from various experts then discuss 'computer assisted anthropology,' CLOUDFALL, and image guided surgery, as well as bio-informatics and data mining. This comprehensive coverage of the industry and technology is a perfect resource for students and researchers interested in the topic. Presents recent advances in IoT for biomedical engineering, covering biometrics, bioinformatics, artificial intelligence, computer vision and various network applications Discusses big data and data mining in healthcare and other IoT based biomedical data analysis Includes discussions on a variety of IoT applications and medical information systems Includes case studies and applications, as well as examples on how to automate data analysis with Perl R in IoT
Android Things Projects - Francesco Azzola 2017-06-30
Develop smart Internet of things projects using Android Things. About This Book Learn to build promising IoT projects with Android Things Make the most out of hardware peripherals using standard Android APIs Build enticing

projects on IoT, home automation, and robotics by leveraging Raspberry Pi 3 and Intel Edison Who This Book Is For This book is for Android enthusiasts, hobbyists, IoT experts, and Android developers who want to gain a deeper knowledge of Android Things. The main focus is on implementing IoT projects using Android Things. What You Will Learn Understand IoT ecosystem and the Android Things role See the Android Things framework: installation, environment, SDK, and APIs See how to effectively use sensors (GPIO and I2C Bus) Integrate Android Things with IoT cloud platforms Create practical IoT projects using Android Things Integrate Android Things with other systems using standard IoT protocols Use Android Things in IoT projects In Detail Android Things makes developing connected embedded devices easy by providing the same Android development tools, best-in-class Android framework, and Google APIs that make developers successful on mobile. With this book, you will be able to take advantage of the new Android framework APIs to securely build projects using low-level components such as sensors, resistors, capacitors, and display controllers. This book will teach you all you need to know about working with Android Things through practical projects based on home automation, robotics, IoT, and so on. We'll teach you to make the most of the Android Things and build enticing projects such as a smart greenhouse that controls the climate and environment automatically. You'll also create an alarm system, integrate Android Things with IoT cloud platforms, and more. By the end of this book, you will know everything about Android Things, and you'll have built some very cool projects using the latest technology that is driving the adoption of IoT. You will also have primed your mindset so that you can use your knowledge for profitable, practical projects. Style and approach This book is packed with fun-filled, end-to-end projects that you will be encouraged to experiment on the Android Things OS.

Internet of Things and Big Data Analytics Toward Next-Generation Intelligence - Nilanjan Dey 2017-08-14
This book highlights state-of-the-art research on big data and the Internet of Things (IoT), along

with related areas to ensure efficient and Internet-compatible IoT systems. It not only discusses big data security and privacy challenges, but also energy-efficient approaches to improving virtual machine placement in cloud computing environments. Big data and the Internet of Things (IoT) are ultimately two sides of the same coin, yet extracting, analyzing and managing IoT data poses a serious challenge. Accordingly, proper analytics infrastructures/platforms should be used to analyze IoT data. Information technology (IT) allows people to upload, retrieve, store and collect information, which ultimately forms big data. The use of big data analytics has grown tremendously in just the past few years. At the same time, the IoT has entered the public consciousness, sparking people's imaginations as to what a fully connected world can offer. Further, the book discusses the analysis of real-time big data to derive actionable intelligence in enterprise applications in several domains, such as in industry and agriculture. It explores possible automated solutions in daily life, including structures for smart cities and automated home systems based on IoT technology, as well as health care systems that manage large amounts of data (big data) to improve clinical decisions. The book addresses the security and privacy of the IoT and big data technologies, while also revealing the impact of IoT technologies on several scenarios in smart cities design. Intended as a comprehensive introduction, it offers in-depth analysis and provides scientists, engineers and professionals the latest techniques, frameworks and strategies used in IoT and big data technologies.

Internet of Things - Qusay F. Hassan 2017-12-15
Internet of Things: Challenges, Advances, and Applications provides a comprehensive introduction to IoT, related technologies, and common issues in the adoption of IoT on a large scale. It surveys recent technological advances and novel solutions for challenges in the IoT environment. Moreover, it provides detailed discussion of the utilization of IoT and its underlying technologies in critical application areas, such as smart grids, healthcare, insurance, and the automotive industry. The chapters of this book are authored by several

international researchers and industry experts. This book is composed of 18 self-contained chapters that can be read, based on interest. Features: Introduces IoT, including its history, common definitions, underlying technologies, and challenges Discusses technological advances in IoT and implementation considerations Proposes novel solutions for common implementation issues Explores critical application domains, including large-scale electric power distribution networks, smart water and gas grids, healthcare and e-Health applications, and the insurance and automotive industries The book is an excellent reference for researchers and post-graduate students working in the area of IoT, or related areas. It also targets IT professionals interested in gaining deeper knowledge of IoT, its challenges, and application areas.

Internet of Things – ICIOT 2019 - Valerie Issarny 2019-06-17
This book constitutes the proceedings of the International Conference on Internet of Things, ICIOT 2019, held as part of SCF 2019, in San Diego, CA, USA, in June 2019. The 8 full and 3 short papers presented in this volume were carefully reviewed and selected from 16 submissions. With the rapid advancements of mobile Internet, cloud computing and big data, device-centric traditional Internet of Things (IoT) is now moving into a new era which is termed as Internet of Things Services (IOTS). In this era, sensors and other types of sensing devices, wired and wireless networks, platforms and tools, data processing/visualization/analysis and integration engines, and other components of traditional IoT are interconnected through innovative services to realize the value of connected things, people, and virtual Internet spaces.

Modeling, Simulation and Optimization - Biplab Das 2021-03-17
This book includes selected peer-reviewed papers presented at the International Conference on Modeling, Simulation and Optimization, organized by National Institute of Technology, Silchar, Assam, India, during 3–5 August 2020. The book covers topics of modeling, simulation and optimization, including computational modeling and simulation, system modeling and simulation, device/VLSI modeling

and simulation, control theory and applications, modeling and simulation of energy system and optimization. The book disseminates various models of diverse systems and includes solutions of emerging challenges of diverse scientific fields.

Low-power Wearable Healthcare Sensors - R. Simon Sherratt 2020-12-29
Advances in technology have produced a range of on-body sensors and smartwatches that can be used to monitor a wearer's health with the objective to keep the user healthy. However, the real potential of such devices not only lies in monitoring but also in interactive communication with expert-system-based cloud services to offer personalized and real-time healthcare advice that will enable the user to manage their health and, over time, to reduce expensive hospital admissions. To meet this goal, the research challenges for the next generation of wearable healthcare devices include the need to offer a wide range of sensing, computing, communication, and human–computer interaction methods, all within a tiny device with limited resources and electrical power. This Special Issue presents a collection of six papers on a wide range of research developments that highlight the specific challenges in creating the next generation of low-power wearable healthcare sensors.

Securing IoT in Industry 4.0 Applications with Blockchain - P Kaliraj 2021-12-03
The Industry 4.0 revolution is changing the world around us. Artificial intelligence and machine learning, automation and robotics, big data, Internet of Things, augmented reality, virtual reality, and creativity are the tools of Industry 4.0. Improved collaboration is seen between smart systems and humans, which merges humans' critical and cognitive thinking abilities with highly accurate and fast industrial automation. Securing IoT in Industry 4.0 Applications with Blockchain examines the role of IoT in Industry 4.0 and how it can be made secure through various technologies including blockchain. The book begins with an in-depth look at IoT and discusses applications, architecture, technologies, tools, and programming languages. It then examines blockchain and cybersecurity, as well as how blockchain achieves cybersecurity. It also looks

at cybercrimes and their preventive measures and issues related to IoT security and trust. Features An overview of how IoT is used to improve the performance of Industry 4.0 systems The evolution of the Industrial Internet of Things (IIoT), its proliferation and market share, and some examples across major industries An exploration of how smart farming is helping farmers prevent plant disease The concepts behind the Internet of Nano Things (IoNT), including the nanomachine and nanonetwork architecture and nano-communication paradigms A look at how blockchains can enhance cybersecurity in a variety of applications, including smart contracts, transferring financial instruments, and Public Key Infrastructure An overview of the structure and working of a blockchain, including the types, evolution, benefits, and applications of blockchain to industries A framework of technologies designed to shield networks, computers, and data from malware, vulnerabilities, and unauthorized activities An explanation of the automation system employed in industries along with its classification, functionality, flexibility, limitations, and applications

The 8th International Conference on Computer Engineering and Networks (CENet2018) - Qi Liu 2019-04-15
This book examines innovation in the fields of computer engineering and networking, and explores important, state-of-the-art developments in areas such as artificial intelligence, machine learning, information analysis and communication. It gathers papers presented at the 8th International Conference on Computer Engineering and Networks (CENet2018), held in Shanghai, China on August 17–19, 2018. • Explores emerging topics in computer engineering and networking, along with their applications • Discusses how to improve productivity by using the latest advanced technologies • Examines innovation in the fields of computer engineering and networking

Intel Galileo and Intel Galileo Gen 2 - Manoel Ramon 2014-12-31
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).

Data Science For Dummies - Lillian Pierson 2017-02-21
Discover how data science can help you gain in-depth insight into your business - the easy way! Jobs in data science abound, but few people have the data science skills needed to fill these increasingly important roles. Data Science For Dummies is the perfect starting point for IT professionals and students who want a quick primer on all areas of the expansive data science space. With a focus on business cases, the book explores topics in big data, data science, and data engineering, and how these three areas are combined to produce tremendous value. If you want to pick-up the skills you need to begin a new career or initiate a new project, reading this book will help you understand what technologies, programming languages, and mathematical methods on which to focus. While this book serves as a wildly fantastic guide through the broad, sometimes intimidating field of big data and data science, it is not an instruction manual for hands-on implementation. Here's what to expect: Provides a background in big data and data engineering before moving on to data science and how it's applied to generate value Includes coverage of big data frameworks like Hadoop, MapReduce, Spark, MPP platforms, and NoSQL Explains machine learning and many of its algorithms as well as artificial intelligence and the evolution of the Internet of Things

Details data visualization techniques that can be used to showcase, summarize, and communicate the data insights you generate It's a big, big data world out there—let Data Science For Dummies help you harness its power and gain a competitive edge for your organization.
State-of-the-Art Sensors Technology in Spain 2017 Volume 2 - Gonzalo Pajares Martinsanz 2018-05-22
This book is a printed edition of the Special Issue "State-of-the-Art Sensors Technology in Spain 2017" that was published in Sensors
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 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

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.

Make: Getting Started with LittleBits - Ayah Bdeir 2015-03-25
"Learning and inventing with modular electronics"--Cover.

Programming with STM32: Getting Started with the Nucleo Board and C/C++ - Donald Norris 2018-03-21
Publisher's Note: Products purchased from Third Party sellers are not guaranteed by the publisher for quality, authenticity, or access to any online entitlements included with the product. Create your own STM32 programs with ease! Get up and running programming the STM32 line of microcontrollers from STMicroelectronics using the hands-on information contained in this easy-to-follow guide. Written by an experienced electronics hobbyist and author, Programming with STM32: Getting Started with the Nucleo Board and C/C++ features start-to-finish projects that clearly demonstrate each technique. Discover how to set up a stable development toolchain, write custom programs, download your programs to the development

board, and execute them. You will even learn how to work with external servos and LED displays! •Explore the features of STM32 microcontrollers from STMicroelectonics•Configure your Nucleo-64 Microcontroller development board•Establish a toolchain and start developing interesting applications •Add specialized code and create cool custom functions•Automatically generate C code using the STM32CubeMX application•Work with the ARM Cortex Microcontroller Software Interface Standard and the STM hardware abstraction layer (HAL).•Control servos, LEDs, and other hardware using PWM•Transfer data to and from peripheral devices using DMA•Generate waveforms and pulses through your microcontroller's DAC

Social Innovation in Long-Term Care Through Digitalization - Massimo Conti 2022-09-30
This book gathers extended contributions to the workshop on Long-Term Digital Care, LTC-2021, organized by the Università Politecnica delle Marche (UNIVPM), Ancona, Italy, and the Hochschule Konstanz (HTWG), Germany, in November 2021, and funded by the DAAD Joint Mobility Program. It covers innovative, practice-oriented approaches that are expected to foster digital health care, with a special focus on improving internationalization and accessibility. The book, which bridges between technological and social disciplines, reports on selected studies with the main goals of: establishing a comparison of Long-Term Digital Care approaches, with focus on exchange and networking processes; defining practical roadmaps for digital social innovation; establishing concepts and methods for process evaluation and sustainability. It offers a timely snapshot on technologies for patient monitoring and assistant systems, medical data analysis and image processing, digital platforms and advanced diagnostics techniques, and discusses important concepts relating to traceable process evaluation, networking and accessibility. It aims at informing, yet it is also intended to inspire and foster a stronger collaboration across disciplines, countries, as well as academic and professional institutions.

IoT Solutions in Microsoft's Azure IoT Suite - Scott Klein 2017-04-20
Collect and analyze sensor and usage data from

Internet of Things applications with Microsoft Azure IoT Suite. Internet connectivity to everyday devices such as light bulbs, thermostats, and even voice-command devices such as Google Home and Amazon.com's Alexa is exploding. These connected devices and their respective applications generate large amounts of data that can be mined to enhance user-friendliness and make predictions about what a user might be likely to do next. Microsoft's Azure IoT Suite is a cloud-based platform that is ideal for collecting data from connected devices. You'll learn in this book about data acquisition and analysis, including real-time analysis. Real-world examples are provided to teach you to detect anomalous patterns in your data that might lead to business advantage. We live in a time when the amount of data being generated and stored is growing at an exponential rate. Understanding and getting real-time insight into these data is critical to business. IoT Solutions in Microsoft's Azure IoT Suite walks you through a complete, end-to-end journey of how to collect and store data from Internet-connected devices. You'll learn to analyze the data and to apply your results to solving real-world problems. Your customers will benefit from the increasingly capable and reliable applications that you'll be able to deploy to them. You and your business will benefit from the gains in insight and knowledge that can be applied to delight your customers and increase the value from their business. What You'll Learn Go through data generation, collection, and storage from sensors and devices, both relational and non-relational Understand, from end to end, Microsoft's analytic services and where they fit into the analytical ecosystem Look at the Internet of your things and find ways to discover and draw on the insights your data can provide Understand Microsoft's IoT technologies and services, and stitch them together for business insight and advantage Who This Book Is For Developers and architects who plan on delivering IoT solutions, data scientists who want to understand how to get better insights into their data, and anyone needing or wanting to do real-time analysis of data from the Internet of Things

Hands-On IoT Solutions with Blockchain - Maximiliano Santos 2019-01-08 Integrate an end-to-end logistic chain using IBM

Blockchain and IoT platforms Key Features Explore practical implementation of ledger technology in the IoT architecture Study security best practices for your smart devices Understand Blockchain implementation for end-to-end IoT solutions Book Description Blockchain has been the hot topic of late thanks to cryptocurrencies. To make matters more interesting, the financial market is looking for ways to reduce operational costs and generate new business models, and this is where blockchain solutions come into the picture. In addition to this, with Internet of Things (IoT) trending and Arduino, Raspberry Pi, and other devices flooding the market, you can now create cheap devices even at home. Hands-On IoT Solutions with Blockchain starts with an overview of IoT concepts in the current business scenario. It then helps you develop your own device on the IBM Watson IoT platform and create your fi rst IoT solution using Watson and Intel Edison.Once you are familiar with IoT, you will learn about Blockchain technology and its use cases. You will also work with the Hyperledger framework and develop your own Blockchain network. As you progress through the chapters, you'll work with problem statements and learn how to design your solution architecture so that you can create your own integrated Blockchain and IoT solution. The next set of chapters will explain how to implement end-to-end Blockchain solutions with IoT using the IBM Cloud platform. By the end of this book, you will have mastered the convergence of IoT and Blockchain technology and exploited the best practices and drivers to develop a bulletproof integrated solution. What you will learn Understand the key roles of IoT in the current market Study the different aspects of IBM Watson IoT platform Create devices, gateways, and applications connected to the platform Explore the fundamentals of Blockchain Define good use cases for Blockchain Discover the Hyperledger Fabric and Composer frameworks Develop an IBM Watson IoT application using a Intel Edison Integrate IoT with the Blockchain platform Who this book is for Hands-On IoT Solutions with Blockchain is for you if you are an Internet of Things (IoT) analyst, architect, engineer, or any stakeholder responsible for security mechanisms on an IoT

infrastructure. This book is also for IT professionals who want to start developing solutions using Blockchain and IoT on the IBM Cloud platform. Basic understanding of IoT will assist you in understanding key concepts covered in the book.

Proceedings of Data Analytics and Management - Deepak Gupta (Ph.D.) 2022 This book includes original unpublished contributions presented at the International Conference on Data Analytics and Management (ICDAM 2021), held at Jan Wyzykowski University, Poland, during June 2021. The book covers the topics in data analytics, data management, big data, computational intelligence, and communication networks. The book presents innovative work by leading academics, researchers, and experts from industry which is useful for young researchers and students.

Getting Started with littleBits - Ayah Bdeir 2015-04-20
littleBits are electronic building blocks with over 60 modules and trillions of combinations. With littleBits, anyone can harness the power of electronics, microcontrollers, and the cloud--regardless of age, gender, technical ability, or educational background. You can combine these simple, snap-together, magnetic bricks to make simple electronic circuits, or build robots and devices that combine sensors, microcontrollers, and cloud connectivity. This book, co-authored by littleBits founder Ayah Bdeir, along with top-selling author Matt Richardson (Getting Started with Raspberry Pi), teaches you just enough electronics to start making things with littleBits and takes you on up through connecting littleBits to the cloud and programming with its Arduino-compatible module.

MQTT Essentials - A Lightweight IoT Protocol - Gastón C. Hillar 2017-04-14
Send and receive messages with the MQTT protocol for your IoT solutions. About This Book Make your connected devices less prone to attackers by understanding practical security mechanisms Dive deep into one of IoT's extremely lightweight machines to enable connectivity protocol with some real-world examples Learn to take advantage of the features included in MQTT for IoT and Machine-to-Machine communications with complete real-

life examples Who This Book Is For This book is a great resource for developers who want to learn more about the MQTT protocol to apply it to their individual IoT projects. Prior knowledge of working with IoT devices is essential. What You Will Learn Understand how MQTTv3.1 and v3.1.1 works in detail Install and secure a Mosquitto MQTT broker by following best practices Design and develop IoT solutions combined with mobile and web apps that use MQTT messages to communicate Explore the features included in MQTT for IoT and Machine-to-Machine communications Publish and receive MQTT messages with Python, Java, Swift, JavaScript, and Node.js Implement the security best practices while setting up the MQTT Mosquitto broker In Detail This step-by-step guide will help you gain a deep understanding of the lightweight MQTT protocol. We'll begin with the specific vocabulary of MQTT and its working modes, followed by installing a Mosquitto MQTT broker. Then, you will use best practices to secure the MQTT Mosquitto broker to ensure that only authorized clients are able to publish and receive messages. Once you have secured the broker with the appropriate configuration, you will develop a solution that controls a drone with Python. Further on, you will use Python on a Raspberry Pi 3 board to process commands and Python on Intel Boards (Joule, Edison and Galileo). You will then connect to the MQTT broker, subscribe to topics, send messages, and receive messages in Python. You will also develop a solution that interacts with sensors in Java by working with MQTT messages. Moving forward, you will work with an asynchronous API with callbacks to make the sensors interact with MQTT messages. Following the same process, you will develop an iOS app with Swift 3, build a website that uses WebSockets to connect to the MQTT broker, and control home automation devices with HTML5, JavaScript code, Node.js and MQTT messages Style and approach This step-by-step guide describes the MQTT protocol for your IoT projects

Practical Fashion Tech - Joan Horvath 2016-09-26
Pull back the curtain on making fun and innovative costumes and accessories incorporating technologies like low-cost microprocessors, sensors and programmable

LEDs. Fashion tech can require skills in design, pattern-making, sewing, electronics, and maybe 3D printing. Besides the tech skills, making a good costume or accessory also requires knowledge of the intangibles of what makes a good costume. This book is a collaboration between two technologists and a veteran teacher, costumer, and choreographer. Regardless of whether you are coming at this from the theater costuming, sewing, or electronics side, the authors will help you get started with the other skills you need. More than just a book of projects (although it has those too), Practical Fashion Tech teaches why things are done a certain way to impart the authors' collective wealth of experience. Whether you need a book for a wearable tech class or you just want to get started making fantastic costumes and wearables on your own, Practical Fashion Tech will get you there. What you will learn: The fundamentals of both the sewing and the technology aspects of wearable tech for fashion How to make a memorable costume that reacts to its wearer or environment Ideas for using this book as a textbook Who this is for: Electronics enthusiasts, hipsters, costume designers, teachers, and students who want to learn how to make fashion or cosplay wearables. Cosplay fans wanting to incorporate sensors and more into their costumes.

Getting Started with Intel Edison - Stephanie Moyerman 2015-11-03
The Intel Edison is a crowning achievement of Intel's adaptation of its technology into maker-friendly products. They've packed the dual-core power of the Atom CPU, combined it with a sideboard microcontroller brain, and added in Wi-Fi, Bluetooth Low Energy, and a generous amount of RAM (1GB) and flash storage (4GB). This book, written by Stephanie Moyerman, a research scientist with Intel's Smart Device Innovation Team, teaches you everything you need to know to get started making things with Edison, the compact and powerful Internet of Things platform. Projects and tutorials include: Controlling devices over Bluetooth Using Python and Arduino programming environments on Edison Tracking objects with a webcam and OpenCV Responding to voice commands and talking back Using and configuring Linux on Edison

Computational Science and Its Applications – ICCSA 2020 - Osvaldo Gervasi 2020-09-29
The seven volumes LNCS 12249-12255 constitute the refereed proceedings of the 20th International Conference on Computational Science and Its Applications, ICCSA 2020, held in Cagliari, Italy, in July 2020. Due to COVID-19 pandemic the conference was organized in an online event. Computational Science is the main pillar of most of the present research, industrial and commercial applications, and plays a unique role in exploiting ICT innovative technologies. The 466 full papers and 32 short papers presented were carefully reviewed and selected from 1450 submissions. Apart from the general track, ICCSA 2020 also include 52 workshops, in various areas of computational sciences, ranging from computational science technologies, to specific areas of computational sciences, such as software engineering, security, machine learning and artificial intelligence, blockchain technologies, and of applications in many fields.

Intelligence of Things: AI-IoT Based Critical-Applications and Innovations - Fadi Al-Turjman 2021-10-28
This book presents recent technologies that explore artificial intelligence (AI) and its scope in Internet of Things (IoT) enabled areas for productivity and the betterment of society. The book aims at targeting audiences of several disciplines to share research, suggest solutions, and future trends in the field of AI using IoT. Rather than looking at the field from only a theoretical or only a practical perspective, this book unifies both aspects to give a holistic understanding of the AI paradigm for IoT. The book focuses on timely topics related to the field of AI enabled IoT applications at large. The book consists of four major parts: fundamentals, theoretical discussion, critical applications, and the learning algorithms. These contents shall include the basics, types, tools, and techniques of AI. Finally, applications of AI enabled IoT in several areas are presented including health, security, climate change, agricultural engineering, bioinformatics, biomedicine, smart applications, natural language processing, social and economic implications of AI enabled IoT, as well as robotics, sustainability, risk management, seismic data processing, smart grid management, text analysis, security,

privacy, and ethics.

Getting Started with the micro:bit - Wolfram Donat 2017-08-24
The micro:bit, a tiny computer being distributed by the BBC to students all over the UK, is now available for anyone to purchase and play with. Its small size and low power requirements make it an ideal project platform for hobbyists and makers. You don't have to be limited by the web-based programming solutions, however: the hardware on the board is deceptively powerful, and this book will teach you how to really harness the power of the micro:bit. You'll learn about sensors, Bluetooth communications, and embedded operating systems, and along the way you'll develop an understanding of the next big thing in computers: the Internet of Things.

Open-Source Electronics Platforms - Trung Dung Ngo 2019-05-20
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.

Practical Contiki-NG - Agus Kurniawan 2018-06-13
Explore how to develop and implement wireless server networks (WSN) using Contiki-NG, branded as the operating system for the IoT. The book explains Contiki-NG's advantages in sensing, communication, and energy optimization and enables you to begin solving problems in automation with WSN. Practical Contiki-NG is a guide to getting started with Contiki-NG programming featuring projects that demonstrate a variety of applications. This book takes a practical and content-driven approach to the latest technologies, including Raspberry Pi, IoT and cloud servers. Readers will go through step-by-step guides and sample scenarios such as sensing, actuating, connectivity, building middleware, and utilizing IoT and cloud-based technologies. If you're looking to go from zero to hero in using Contiki-NG to build Wireless Sensor Network (WSN) applications then this is the book for you. What You'll Learn Prepare and set up Contiki-NG development Review the basics of the Contiki-NG platform to build Wireless Sensor Networks (WSN) Develop your own Contiki-NG program Perform sensing and actuating on the Contiki-NG platform Implement a middleware for Contiki-NG motes Build a simple IoT program using the Contiki-NG environment Who This Book Is For Developers, students, researchers and anyone who has an interest in Wireless Sensor Network (WSN).

Deep Learning for Internet of Things Infrastructure - Uttam Ghosh 2021-09-30
This book promotes and facilitates exchanges of research knowledge and findings across different disciplines on the design and investigation of deep learning (DL)–based data analytics of IoT (Internet of Things) infrastructures. Deep Learning for Internet of Things Infrastructure addresses emerging trends and issues on IoT systems and services across various application domains. The book investigates the challenges posed by the implementation of deep learning on IoT networking models and services. It provides fundamental theory, model, and methodology in interpreting, aggregating, processing, and analyzing data for intelligent DL-enabled IoT. The book also explores new functions and technologies to provide adaptive services and intelligent applications for different end users. FEATURES Promotes and facilitates exchanges of research knowledge and findings across different disciplines on the design and investigation of DL-based data analytics of IoT infrastructures Addresses emerging trends and issues on IoT systems and services across various application domains Investigates the challenges posed by the implementation of deep learning on IoT networking models and services Provides fundamental theory, model, and methodology in interpreting, aggregating, processing, and analyzing data for intelligent DL-enabled IoT Explores new functions and technologies to provide adaptive services and

intelligent applications for different end users Uttam Ghosh is an Assistant Professor in the Department of Electrical Engineering and Computer Science, Vanderbilt University, Nashville, Tennessee, USA. Mamoun Alazab is an Associate Professor in the College of Engineering, IT and Environment at Charles Darwin University, Australia. Ali Kashif Bashir is a Senior Lecturer/Associate Professor and Program Leader of BSc (H) Computer Forensics and Security at the Department of Computing and Mathematics, Manchester Metropolitan University, United Kingdom. Al-Sakib Khan Pathan is an Adjunct Professor of Computer Science and Engineering at the Independent University, Bangladesh.

Explore Intel Edison - Harry Fairhead
2016-07-27
The Intel(r) Edison is a remarkable device. It is as small as an embedded processor, but has enough power to allow it to be used as a tiny server. With its built-in support for WiFi, GPIO, I2C and SPI it is a capable IoT device. However, to make use of its unique qualities you have to take a step beyond its simple Arduino emulation and make use of it as itself, in its native mode. This means using the mini-breakout board and dealing with the fact that it is a 1.8V logic device and programming it using C to bring out its full power. Once you know how, this isn't as difficult as it seems at first. The rewards are well worth the effort. Exploring Intel(r) Edison starts with setting it up for the mini-breakout board. Then it looks at the advantages of choosing C as the language in which to program it, showing how to set up the Intel(r) System Studio IoT Edition IDE. Now we are ready to get building circuits and coding. Using the mraa library is the direct way to work with the GPIO lines and we need to master it before looking at ways of making things faster with memory-mapped I/O, achieving realtime facilities with Linux and using pulse width modulation. From here we are able to start connecting sensors - the HTU21D (I2C), DHT11/22 (custom) and the DS18B20 (1-wire). There are problems to overcome along the way - how to convert from 1.8V to work with higher voltages and how to support a 1-wire bus. The final circuit, to add AtoD, uses the SPI bus and implements a software emulation. Finally we look beyond mraa with a Linux-based approach to working with GPIO lines and how to set the GPIO mod

Implementing Industry 4.0 - Carlos Toro
2021-04-03
This book relates research being implemented in three main research areas: secure connectivity and intelligent systems, real-time analytics and manufacturing knowledge and virtual manufacturing. Manufacturing SMEs and MNCs want to see how Industry 4.0 is implemented. On the other hand, groundbreaking research on this topic is constantly growing. For the aforesaid reason, the Singapore Agency for Science, Technology and Research (A*STAR), has created the model factory initiative. In the model factory, manufacturers, technology providers and the broader industry can (i) learn how I4.0 technologies are implemented on real-world manufacturing use-cases, (ii) test process improvements enabled by such technologies at the model factory facility, without disrupting their own operations, (iii) co-develop technology solutions and (iv) support the adoption of solutions at their everyday industrial operation. The book constitutes a clear base ground not only for inspiration of researchers, but also for companies who will want to adopt smart manufacturing approaches coming from Industry 4.0 in their pathway to digitization.

Intelligent Communication, Control and Devices - Sushabhan Choudhury 2019-08-28
The book focuses on the integration of intelligent communication systems, control systems, and devices related to all aspects of engineering and sciences. It includes high-quality research papers from the 3rd international conference, ICICCD 2018, organized by the Department of Electronics, Instrumentation and Control Engineering at the University of Petroleum and Energy Studies, Dehradun on 21–22 December 2018. Covering a range of recent advances in intelligent communication, intelligent control and intelligent devices., the book presents original research and findings as well as researchers' and industrial practitioners' practical development experiences of.