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LTE CELLULAR NARROWBAND INTERNET OF THINGS (NB-IOT)

PRACTICAL PROJECTS FOR THE CLOUD AND DATA VISUALIZATION

CRC Press NB-IoT is the Internet of Things (IoT) technology used for cellular communication. NB-IoT devices deliver much better capability and performance, such as: increased area coverage of up to one kilometer; a massive number of devices—up to 200,000—per a single base-station area; longer battery lifetime of ten years; and better indoor and outdoor coverage for areas with weak signal, such as underground garages. The cellular NB-IoT technology is a challenging technology to use and understand. With more than 30 projects presented in this book, covering many use cases and scenarios, this book provides hands-on and practical experience of how to use the cellular NB-IoT for smart applications using ArduinoTM, Amazon Cloud, Google Maps, and charts. The book starts by explaining AT commands used to configure the NB-IoT modem; data serialization and deserialization; how to set up the cloud for connecting NB-IoT devices; setting up rules, policy, security certificates, and a NoSQL database on the cloud; how to store and read data in the cloud; how to use Google Maps to visualize NB-IoT device geo-location; and how to use charts to visualize sensor datasets. Projects for Arduino are presented in four parts. The first part explains how to connect the device to the mobile operator and cellular network; perform communication using different network protocols, such as TCP, HTTP, SSL, or MQTT; how to use GPS for geo-location applications; and how to upgrade NB-IoT modem firmware over

the air. The second part explains the microcontroller unit and how to build and run projects, such as a 7-segment display or a real-time clock. The third part explains how NB-IoT can be used with sensor devices, such as ultrasonic and environmental sensors. Finally, the fourth part explains how NB-IoT can be used to control actuators, such as stepper motors and relays. This book is a unique resource for understanding practical uses of the NB-IoT technology and serves as a handbook for technical and non-technical readers who are looking for practicing and exercising the cellular NB-IoT technology. The book can be used by engineers, students, researchers, system integrators, mobile operators' technical staff, and electronics enthusiasts. To download the software which can be used with the book, go to: https://github.com/5ghub/NB-IoT About the Author: Hossam Fattah is a technology expert in 4G/5G wireless systems and networking. He received his Ph.D. in Electrical and Computer Engineering from University of British Columbia, Vancouver, Canada in 2003. He received his Master of Applied Science in Electrical and Computer Engineering from University of Victoria, Victoria, Canada in 2000. He completed his B.Sc. degree in Computers and Systems Engineering from Al-Azhar University, Cairo, Egypt in 1995. Between 2003 and 2011, he was in academia and industry, including Texas A&M University. Between 2011 and 2013, he was with Spirent Communications, NJ, USA. Since 2013, he has been with Microsoft, USA. He is also an affiliate associate professor at University of Washington, Tacoma, WA, USA, teaching graduate courses on IoT and distributed systems and collaborating on 5G research and innovations. He has had many patents and technical publications in conferences and journals. He is a registered professional Engineer with the Association of Professional Engineers, British Columbia, Canada. He is the author of the recent book 5G LTE Narrowband Internet of Things (NB-IoT). His research interest is in wireless communications and radio networks and protocols, cellular quality of service, radio resource management, traffic and packet scheduling, network analytics, and mobility.

NB-IOT USE CASES AND DEVICES

DESIGN GUIDE

Springer Nature

ARDUINO SKETCHES

TOOLS AND TECHNIQUES FOR PROGRAMMING WIZARDRY

John Wiley & Sons Master programming Arduino with this hands-on guide Arduino Sketches is a practical guide to programming theincreasingly popular microcontroller that brings gadgets to life.Accessible to tech-lovers at any level, this book provides expertinstruction on Arduino programming and hands-on practice to testyour skills. You'll find coverage of the various Arduino boards,detailed explanations of each standard library, and guidance oncreating libraries from scratch – plus practical examplesthat demonstrate the everyday use of the skills you're learning.Work on increasingly advanced programming projects, and gain morecontrol as you learn about hardware-specific libraries and how tobuild your own. Take full advantage of the Arduino API, and learnthe tips and tricks that will broaden your skillset. The Arduino development board comes with an embedded processorand sockets that allow you to quickly attach peripherals withouttools or solders. It's easy to build, easy to program, and requiresno specialized hardware. For the hobbyist, it's a dream come true– especially as the popularity of this open-source projectinspires even the major tech companies to develop compatibleproducts. Arduino Sketches is a practical, comprehensiveguide to getting the most out of your Arduino setup. You'll learnto: Communicate through Ethernet, WiFi, USB, Firmata, and Xbee Find, import, and update user libraries, and learn to createyour own Master the Arduino Due, Esplora, Yun, and Robot boards forenhanced communication, signal-sending, and peripherals Play audio files, send keystrokes to a computer, control LEDand cursor movement, and more This book presents the Arduino fundamentals in a way that helpsyou apply future additions to the Arduino language, providing agreat foundation in this rapidly-growing project. If you're lookingto explore Arduino programming, Arduino Sketches is thetoolbox you need to get started.

MACHINE LEARNING AND INTELLIGENT COMMUNICATIONS

4TH INTERNATIONAL CONFERENCE, MLICOM 2019, NANJING, CHINA, AUGUST 24–25, 2019, PROCEEDINGS

Springer Nature This volume constitutes the refereed post-conference proceedings of the Fourth International Conference on Machine Learning and Intelligent Communications, MLICOM 2019, held in Nanjing, China, in August 2019. The 65 revised full papers were carefully selected from 114 submissions. The papers are organized thematically in machine learning, intelligent positioning and navigation, intelligent multimedia processing and security, wireless mobile network and security, cognitive radio and intelligent networking, IoT, intelligent satellite communications and networking, green communication and intelligent networking, ad-hoc and sensor networks, resource allocation in

wireless and cloud networks, signal processing in wireless and optical communications, and intelligent cooperative communications and networking.

COMMUNICATIONS, SIGNAL PROCESSING, AND SYSTEMS

PROCEEDINGS OF THE 2018 CSPS VOLUME III: SYSTEMS

Springer This book brings together papers from the 2018 International Conference on Communications, Signal Processing, and Systems, which was held in Dalian, China on July 14–16, 2018. Presenting the latest developments and discussing the interactions and links between these multidisciplinary fields, the book spans topics ranging from communications, signal processing and systems. It is aimed at undergraduate and graduate electrical engineering, computer science and mathematics students, researchers and engineers from academia and industry as well as government employees.

DATA MANAGEMENT, ANALYTICS AND INNOVATION

PROCEEDINGS OF ICDMAI 2018, VOLUME 1

Springer The book presents the latest, high-quality, technical contributions and research findings in the areas of data management and smart computing, big data management, artificial intelligence and data analytics, along with advances in network technologies. It discusses state-of-the-art topics as well as the challenges and solutions for future development. It includes original and previously unpublished international research work highlighting research domains from different perspectives. This book is mainly intended for researchers and practitioners in academia and industry.

PROCEEDINGS OF THE 21ST INTERNATIONAL SYMPOSIUM ON HIGH VOLTAGE ENGINEERING

VOLUME 1

Springer Nature High voltage engineering is extremely important for the reliable design, safe manufacture and operation of electric devices, equipment and electric power systems. The 21st International Symposium on High Voltage Engineering, organized by the 90 years old Budapest School of High Voltage Engineering, provides an excellent

forum to present results, advances and discussions among engineers, researchers and scientists, and share ideas, knowledge and expertise on high voltage engineering. The proceedings of the conference presents the state of the art technology of the field. The content is simultaneously aiming to help practicing engineers to be able to implement based on the papers and researchers to link and further develop ideas.

WIRELESS ALGORITHMS, SYSTEMS, AND APPLICATIONS

16TH INTERNATIONAL CONFERENCE, WASA 2021, NANJING, CHINA, JUNE 25–27, 2021, PROCEEDINGS, PART II

Springer Nature The three-volume set constitutes the proceedings of the 16th International Conference on Wireless Algorithms, Systems, and Applications, WASA 2021, which was held during June 25-27, 2021. The conference took place in Nanjing, China.The 103 full and 57 short papers presented in these proceedings were carefully reviewed and selected from 315 submissions. The contributions in Part II of the set are subdivided into the following topical sections: Scheduling & Optimization II; Security; Data Center Networks and Cloud Computing; Privacy-Aware Computing; Internet of Vehicles; Visual Computing for IoT; Mobile Ad-Hoc Networks.

ADVANCES ON P2P, PARALLEL, GRID, CLOUD AND INTERNET COMPUTING

PROCEEDINGS OF THE 11TH INTERNATIONAL CONFERENCE ON P2P, PARALLEL, GRID, CLOUD AND INTERNET COMPUTING (3PGCIC–2016) NOVEMBER 5–7, 2016, SOONCHUNHYANG UNIVERSITY, ASAN, KOREA

Springer P2P, Grid, Cloud and Internet computing technologies have been very fast established as breakthrough paradigms for solving complex problems by enabling aggregation and sharing of an increasing variety of distributed computational resources at large scale. The aim of this volume is to provide latest research findings, innovative research results, methods and development techniques from both theoretical and practical perspectives related to P2P, Grid, Cloud and Internet computing as well as to reveal synergies among such large scale computing paradigms. This proceedings volume presents the results of the 11th International Conference on P2P, Parallel, Grid, Cloud And Internet Computing (3PGCIC-2016), held November 5-7, 2016, at Soonchunhyang University, Asan, Korea

ADVANCES IN ROBOTICS, AUTOMATION AND DATA ANALYTICS

SELECTED PAPERS FROM ICITES 2020

Springer Nature This book presents essentially a collection of proceedings that deliberate on the key challenges and recent trends on robotics, automation and data analytics which are the pillars of Industry 4.0. Solutions that are employed in the multitude spectra of innovative robotics & automation and data analytics are discussed. The readers are expected to gain an insightful view on the current trends, issues, mitigating factors as well as solutions from the book. This book consists of selected papers presented at the 2nd International Conference on Innovative Technology, Engineering and Sciences 2020 (iCITES) hosted virtually by Universiti Malaysia Pahang on 22nd December 2020. iCITES is a biennial conference, aimed at building a platform that allows relevant stakeholders to share and discuss their latest researches, ideas and survey reports from theoretical to a practical standpoint especially in the Innovative Robotics & Automation and Data Analytics tracks which was published in this book.

INTERNATIONAL CONFERENCE ON COMPUTATIONAL AND INFORMATION SCIENCES (ICCIS) 2014

DEStech Publications, Inc The 6th International Conference on Computational and Information Sciences (ICCIS2014) will be held in NanChong, China. The 6th International Conference on Computational and Information Sciences (ICCIS2014)aims at bringing researchers in the areas of computational and information sciences to exchange new ideas and to explore new ground. The goal of the conference is to push the application of modern computing technologies to science, engineering, and information technologies.Following the success of ICCIS2004,ICCIS2010 and ICCIS2011,ICCIS2012,ICCIS2013,ICCIS2014 conference will consist of invited keynote presentations and contributed presentations of latest developments in computational and information sciences. The 2014 International Conference on Computational and Information Sciences (ICCIS 2014), now in its sixth run, has become one of the premier conferences in this dynamic and exciting field. The goal of ICCIS is to catalyze the communications among various communities in computational and information sciences. ICCIS provides a venue for the participants to share their recent research and development, to seek for collaboration resources and opportunities, and to build professional networks.

DATA SCIENCE AND INTERNET OF THINGS

RESEARCH AND APPLICATIONS AT THE INTERSECTION OF DS AND IOT

Springer Nature This book focuses on the combination of IoT and data science, in particular how methods, algorithms, and tools from data science can effectively support IoT. The authors show how data science methodologies, techniques and tools, can translate data into information, enabling the effectiveness and usefulness of new services offered by IoT stakeholders. The authors posit that if IoT is indeed the infrastructure of the future, data structure is the key that can lead to a significant improvement of human life. The book aims to present innovative IoT applications as well as ongoing research that exploit modern data science approaches. Readers are offered issues and challenges in a cross-disciplinary scenario that involves both IoT and data science fields. The book features contributions from academics, researchers, and professionals from both fields.

LTE CELLULAR NARROWBAND INTERNET OF THINGS NB-IOT

PRACTICAL PROJECTS FOR THE CLOUD AND DATA VISUALIZATION

CRC Press NB-IoT is the Internet of Things (IoT) technology used for cellular communication. NB-IoT devices deliver much better capability and performance, such as: increased area coverage of up to one kilometer; a massive number of devices--up to 200,000--per a single base-station area; longer battery lifetime of ten years; and better indoor and outdoor coverage for areas with weak signal, such as underground garages. The cellular NB-IoT technology is a challenging technology to use and understand. With more than 30 projects presented in this book, covering many use cases and scenarios, this book provides hands-on and practical experience of how to use the cellular NB-IoT for smart applications using Arduino(TM), Amazon Cloud, Google Maps, and charts. The book starts by explaining AT commands used to configure the NB-IoT modem; data serialization and deserialization; how to set up the cloud for connecting NB-IoT devices; setting up rules, policy, security certificates, and a NoSQL database on the cloud; how to store and read data in the cloud; how to use Google Maps to visualize NB-IoT device geo-location; and how to use charts to visualize sensor datasets. Projects for Arduino are presented in four parts. The first part explains how to connect the device to the mobile operator and cellular network; perform communication using different network protocols, such as TCP, HTTP, SSL, or MQTT; how to use GPS for geo-location applications; and how to upgrade NB-IoT modem firmware over the air. The second part explains the microcontroller unit and how to build and run projects, such as a 7-segment display or a real-time clock. The third part explains how NB-IoT can be used with sensor devices, such as ultrasonic and

environmental sensors. Finally, the fourth part explains how NB-IoT can be used to control actuators, such as stepper motors and relays. This book is a unique resource for understanding practical uses of the NB-IoT technology and serves as a handbook for technical and non-technical readers who are looking for practicing and exercising the cellular NB-IoT technology. The book can be used by engineers, students, researchers, system integrators, mobile operators' technical staff, and electronics enthusiasts. To download the software which can be used with the book, go to: https: //github.com/5ghub/NB-IoT About the Author: Hossam Fattah is a technology expert in 4G/5G wireless systems and networking. He received his Ph.D. in Electrical and Computer Engineering from University of British Columbia, Vancouver, Canada in 2003. He received his Master of Applied Science in Electrical and Computer Engineering from University of Victoria, Victoria, Canada in 2000. He completed his B.Sc. degree in Computers and Systems Engineering from Al-Azhar University, Cairo, Egypt in 1995. Between 2003 and 2011, he was in academia and industry, including Texas A&M University. Between 2011 and 2013, he was with Spirent Communications, NJ, USA. Since 2013, he has been with Microsoft, USA. He is also an affiliate associate professor at University of Washington, Tacoma, WA, USA, teaching graduate courses on IoT and distributed systems and collaborating on 5G research and innovations. He has had many patents and technical publications in conferences and journals. He is a registered professional Engineer with the Association of Professional Engineers, British Columbia, Canada. He is the author of the recent book 5G LTE Narrowband Internet of Things (NB-IoT). His research interest is in wireless communications and radio networks and protocols, cellular quality of service, radio resource management, traffic and packet scheduling, network analytics, and mobility.

INTERNET OF THINGS AND SENSORS NETWORKS IN 5G WIRELESS COMMUNICATIONS

MDPI The Internet of Things (IoT) has attracted much attention from society, industry and academia as a promising technology that can enhance day to day activities, and the creation of new business models, products and services, and serve as a broad source of research topics and ideas. A future digital society is envisioned, composed of numerous wireless connected sensors and devices. Driven by huge demand, the massive IoT (mIoT) or massive machine type communication (mMTC) has been identified as one of the three main communication scenarios for 5G. In addition to connectivity, computing and storage and data management are also long-standing issues for low-cost devices and sensors. The book is a collection of outstanding technical research and industrial papers covering new research results, with a wide range of features within the 5G-and-beyond framework. It provides a range of discussions of the major research challenges and achievements within this topic.

THE 10TH INTERNATIONAL CONFERENCE ON COMPUTER ENGINEERING AND NETWORKS

Springer Nature This book contains a collection of the papers accepted by the CENet2020 – the 10th International Conference on Computer Engineering and Networks held on October 16-18, 2020 in Xi'an, China. The topics focus but are not limited to Internet of Things and Smart Systems, Artificial Intelligence and Applications, Communication System Detection, Analysis and Application, and Medical Engineering and Information Systems. Each part can be used as an excellent reference by industry practitioners, university faculties, research fellows and undergraduates as well as graduate students who need to build a knowledge base of the most current advances and state-of-practice in the topics covered by this conference proceedings. This will enable them to produce, maintain, and manage systems with high levels of trustworthiness and complexity.

ARTIFICIAL INTELLIGENCE AND EVOLUTIONARY COMPUTATIONS IN ENGINEERING SYSTEMS

PROCEEDINGS OF ICAIECES 2017

Springer The book is a collection of high-quality peer-reviewed research papers presented in the International Conference on Artificial Intelligence and Evolutionary Computations in Engineering Systems (ICAIECES 2017). The book discusses wide variety of industrial, engineering and scientific applications of the emerging techniques. Researchers from academia and industry have presented their original work and ideas, information, techniques and applications in the field of communication, computing and power technologies.

ARTIFICIAL INTELLIGENCE AND SECURITY

5TH INTERNATIONAL CONFERENCE, ICAIS 2019, NEW YORK, NY, USA, JULY 26-28, 2019, PROCEEDINGS, PART II

Springer The 4-volume set LNCS 11632 until LNCS 11635 constitutes the refereed proceedings of the 5th International Conference on Artificial Intelligence and Security, ICAIS 2019, which was held in New York, USA, in July 2019. The conference was formerly called "International Conference on Cloud Computing and Security" with the acronym ICCCS. The total of 230 full papers presented in this 4-volume proceedings was carefully reviewed and selected from 1529 submissions. The papers were organized in topical sections as follows: Part I: cloud computing; Part II: artificial

intelligence; big data; and cloud computing and security; Part III: cloud computing and security; information hiding; IoT security; multimedia forensics; and encryption and cybersecurity; Part IV: encryption and cybersecurity.

THE HACKER'S HARDWARE TOOLKIT

133 GADGETS, 8 CATEGORIES

PROCEEDINGS OF THE 3RD INTERNATIONAL CONFERENCE ON ELECTRICAL AND INFORMATION TECHNOLOGIES FOR RAIL TRANSPORTATION (EITRT) 2017

ELECTRICAL TRACTION

Springer The proceedings collect the latest research trends, methods and experimental results in the field of electrical and information technologies for rail transportation. The topics cover novel traction drive technologies of rail transportation, safety technology of rail transportation system, rail transportation information technology, rail transportation operational management technology, rail transportation cutting-edge theory and technology etc. The proceedings can be a valuable reference work for researchers and graduate students working in rail transportation, electrical engineering and information technologies.

EXPLORING BEAGLEBONE

TOOLS AND TECHNIQUES FOR BUILDING WITH EMBEDDED LINUX

John Wiley & Sons In-depth instruction and practical techniques for building with the BeagleBone embedded Linux platform Exploring BeagleBone is a hands-on guide to bringing gadgets, gizmos, and robots to life using the popular BeagleBone embedded Linux platform. Comprehensive content and deep detail provide more than just a BeagleBone instruction manual—you'll also learn the underlying engineering techniques that will allow you to create your own projects. The book begins with a foundational primer on essential skills, and then gradually moves into communication, control, and advanced applications using C/C++, allowing you to learn at your own pace. In addition, the book's companion website features instructional videos, source code, discussion forums, and more, to ensure that you have everything you need. The BeagleBone's small size, high performance, low cost, and extreme adaptability have made it

a favorite development platform, and the Linux software base allows for complex yet flexible functionality. The BeagleBone has applications in smart buildings, robot control, environmental sensing, to name a few; and, expansion boards and peripherals dramatically increase the possibilities. Exploring BeagleBone provides a reader-friendly guide to the device, including a crash course in computer engineering. While following step by step, you can: Get up to speed on embedded Linux, electronics, and programming Master interfacing electronic circuits, buses and modules, with practical examples Explore the Internet-connected BeagleBone and the BeagleBone with a display Apply the BeagleBone to sensing applications, including video and sound Explore the BeagleBone's Programmable Real-Time Controllers Hands-on learning helps ensure that your new skills stay with you, allowing you to design with electronics, modules, or peripherals even beyond the BeagleBone. Insightful guidance and online peer support help you transition from beginner to expert as you master the techniques presented in Exploring BeagleBone, the practical handbook for the popular computing platform.

LPWAN TECHNOLOGIES FOR IOT AND M2M APPLICATIONS

Academic Press LPWAN Technologies for IoT and M2M Applications provides insight into LPWAN technologies, also presenting a wide range of applications and a discussion on security issues and future challenges and research directions. This book is a beneficial and insightful resource for university researchers, graduate students and R&D engineers who are designing networks and implementing IoT applications. To support new requirements for this emerging industry, a new paradigm of Low Power Wide Area Networks (LPWAN) has recently evolved, including LoRa, Sigfox and NB-IoT, hence this book presents the latest updates.

PRO GIT

Apress Pro Git (Second Edition) is your fully-updated guide to Git and its usage in the modern world. Git has come a long way since it was first developed by Linus Torvalds for Linux kernel development. It has taken the open source world by storm since its inception in 2005, and this book teaches you how to use it like a pro. Effective and well-implemented version control is a necessity for successful web projects, whether large or small. With this book you'll learn how to master the world of distributed version workflow, use the distributed features of Git to the full, and extend Git to meet your every need. Written by Git pros Scott Chacon and Ben Straub, Pro Git (Second Edition) builds on the hugely successful first edition, and is now fully updated for Git version 2.0, as well as including an indispensable

chapter on GitHub. It’s the best book for all your Git needs.

ADVANCED BAOFENG BF-F8HP

Do you want to explore all that your radio can do? Enjoy doing things yourself instead of buying pre-made solutions? Like to tinker and disassemble things? Then this is the book for you!You won't find instructions on how to turn your radio on, or do simple programming from the keypad. You will, however, find out how to use some of the more advanced features the radio can do and how to program those advanced features using the freely available CHIRP programming software, the manufacturer's programming software, and RT Systems programming software.This book also covers how to completely disassemble your radio, and how to fix some shortcomings while you are in there.Want to fix that squelch that doesn't seem to work? Check! How about the poor transmit audio? Check! Want to build your own cables for programming, APRS, and repeater operation? Check, check, and check! When you are done with the basics and want more, this is the book you want. Pick up your copy today and start having some real fun!

GERMAN EXPRESSIONISM

THE GRAPHIC IMPULSE

The Museum of Modern Art Catalog of an exhibition held at the Museum of Modern Art, New York, Mar. 27-July 11, 2011.

ADVANCED MACHINE LEARNING TECHNOLOGIES AND APPLICATIONS

PROCEEDINGS OF AMLTA 2021

Springer Nature This book presents the refereed proceedings of the 6th International Conference on Advanced Machine Learning Technologies and Applications (AMLTA 2021) held in Cairo, Egypt, during March 22–24, 2021, and organized by the Scientific Research Group of Egypt (SRGE). The papers cover current research Artificial Intelligence Against COVID-19, Internet of Things Healthcare Systems, Deep Learning Technology, Sentiment analysis, Cyber-Physical System, Health Informatics, Data Mining, Power and Control Systems, Business Intelligence, Social media, Control Design, and Smart Systems.

AN EMBEDDED SOFTWARE PRIMER

Addison-Wesley Professional Simon introduces the broad range of applications for embedded software and then reviews each major issue facing developers, offering practical solutions, techniques, and good habits that apply no matter which processor, real-time operating systems, methodology, or application is used.

MEASUREMENT MADE SIMPLE WITH ARDUINO

21 DIFFERENT MEASUREMENTS, COVERS ALL PHYSICAL AND ELECTRICAL PARAMETER WITH CODE AND CIRCUIT

Manoj R. Thakur This book gives insides of electrical and physical parameter measurements using arduino such as AC current, Frequency, pH, Liquid Level, flow, Air pressure and many more. The book layout is kept very simple like experiment notes 1. Discuss the measurement parameter 2. Sensor description 3. Circuit and its calculation 4. Circuit design 5. Programming 6. Results.

BEGINNING ARDUINO

Apress In Beginning Arduino, you will learn all about the popular Arduino microcontroller by working your way through an amazing set of 50 cool projects. You'll progress from a complete beginner regarding Arduino programming and electronics knowledge to intermediate skills and the confidence to create your own amazing Arduino projects. Absolutely no experience in programming or electronics required! Rather than requiring you to wade through pages of theory before you start making things, this book has a hands-on approach. You will dive into making projects right from the start, learning how to use various electronic components and how to program the Arduino to control or communicate with those components. Each project is designed to build upon the knowledge learned in earlier projects and to further your knowledge in programming as well as skills with electronics. By the end of the book you will be able create your own projects confidently and with creativity. Please note: the print version of this title is black & white; the eBook is full color. You can download the color diagrams in the book from http://www.apress.com/9781430232407

HOW TO PUBLISH DATA

5G LTE NARROWBAND INTERNET OF THINGS (NB-IOT)

CRC Press This book explains the 3GPP technical specifications for the upcoming 5G Internet of Things (IoT) technology based on latest release which is Release 15. It details the LTE protocol stack of an IoT device, architecture and framework, how they are functioning and communicate with cellular infrastructure, and supported features and capability. NB-IoT is designed to connect a large number of devices in a wide range of application domains forming so-called Internet of Things (IoT). Connected devices are to communicate through cellular infrastructure. This technology is new within the 3GPP specifications and is part of upcoming new wireless technology known as 5G. Table of Contents Preface. Acknowledgments. Author. List of Abbreviations. 1. Internet of Things. 2. 4G and 5G Systems. 3. Radio Resource Control Sublayer. 4. Packet Data Convergence Protocol Sublayer. 5. Radio Link Control Sublayer. 6. Medium Access Control Sublayer. 7. Physical Sublayer. 8. Quality of Service Architecture. 9. Use Cases and Deployment. References. Index.

ZERO TO HERO: ESP8266

GET STARTED WITH INTERNET OF THINGS WITH ESP8266 AND ARDUINO IDE

Manoj R. Thakur Super book for becoming super hero in Internet of Things world. It takes you from zero to become master in ESP8266 programming using Arduino IDE. IoT is recent trend in market you can built anything with help of this book, covers from basics to advance level. Includes getting data to VB.net, drawing graphs, using google gadgets to show gauges, hardware design aspects and much more.

THE 5G MYTH

Walter de Gruyter GmbH & Co KG

USB COMPLETE

THE DEVELOPER'S GUIDE

Computing: general.

THE DEFINITIVE GUIDE TO THE ARM CORTEX-M0

Elsevier The Definitive Guide to the ARM Cortex-M0 is a guide for users of ARM Cortex-M0 microcontrollers. It presents many examples to make it easy for novice embedded-software developers to use the full 32-bit ARM Cortex-M0 processor. It provides an overview of ARM and ARM processors and discusses the benefits of ARM Cortex-M0 over 8-bit or 16-bit devices in terms of energy efficiency, code density, and ease of use, as well as their features and applications. The book describes the architecture of the Cortex-M0 processor and the programmers model, as well as Cortex-M0 programming and instruction set and how these instructions are used to carry out various operations. Furthermore, it considers how the memory architecture of the Cortex-M0 processor affects software development; Nested Vectored Interrupt Controller (NVIC) and the features it supports, including flexible interrupt management, nested interrupt support, vectored exception entry, and interrupt masking; and Cortex-M0 features that target the embedded operating system. It also explains how to develop simple applications on the Cortex-M0, how to program the Cortex-M0 microcontrollers in assembly and mixed-assembly languages, and how the low-power features of the Cortex-M0 processor are used in programming. Finally, it describes a number of ARM Cortex-M0 products, such as microcontrollers, development boards, starter kits, and development suites. This book will be useful to both new and advanced users of ARM Cortex devices, from students and hobbyists to researchers, professional embedded- software developers, electronic enthusiasts, and even semiconductor product designers. The first and definitive book on the new ARM Cortex-M0 architecture targeting the large 8-bit and 16-bit microcontroller market Explains the Cortex-M0 architecture and how to program it using practical examples Written by an engineer at ARM who was heavily involved in its development

DATA SCIENCE AND INTERNET OF THINGS

RESEARCH AND APPLICATIONS AT THE INTERSECTION OF DS AND IOT

Springer This book focuses on the combination of IoT and data science, in particular how methods, algorithms, and tools from data science can effectively support IoT. The authors show how data science methodologies, techniques and

tools, can translate data into information, enabling the effectiveness and usefulness of new services offered by IoT stakeholders. The authors posit that if IoT is indeed the infrastructure of the future, data structure is the key that can lead to a significant improvement of human life. The book aims to present innovative IoT applications as well as ongoing research that exploit modern data science approaches. Readers are offered issues and challenges in a cross-disciplinary scenario that involves both IoT and data science fields. The book features contributions from academics, researchers, and professionals from both fields.

INTELLIGENT INTERNET OF THINGS

FROM DEVICE TO FOG AND CLOUD

Springer Nature This holistic book is an invaluable reference for addressing various practical challenges in architecting and engineering Intelligent IoT and eHealth solutions for industry practitioners, academic and researchers, as well as for engineers involved in product development. The first part provides a comprehensive guide to fundamentals, applications, challenges, technical and economic benefits, and promises of the Internet of Things using examples of real-world applications. It also addresses all important aspects of designing and engineering cutting-edge IoT solutions using a cross-layer approach from device to fog, and cloud covering standards, protocols, design principles, reference architectures, as well as all the underlying technologies, pillars, and components such as embedded systems, network, cloud computing, data storage, data processing, big data analytics, machine learning, distributed ledger technologies, and security. In addition, it discusses the effects of Intelligent IoT, which are reflected in new business models and digital transformation. The second part provides an insightful guide to the design and deployment of IoT solutions for smart healthcare as one of the most important applications of IoT. Therefore, the second part targets smart healthcare-wearable sensors, body area sensors, advanced pervasive healthcare systems, and big data analytics that are aimed at providing connected health interventions to individuals for healthier lifestyles.

PRACTICAL ARDUINO

COOL PROJECTS FOR OPEN SOURCE HARDWARE

Apress Create your own Arduino-based designs, gain in-depth knowledge of the architecture of Arduino, and learn the user-friendly Arduino language all in the context of practical projects that you can build yourself at home. Get hands-

on experience using a variety of projects and recipes for everything from home automation to test equipment. Arduino has taken off as an incredibly popular building block among ubicomp (ubiquitous computing) enthusiasts, robotics hobbyists, and DIY home automation developers. Authors Jonathan Oxer and Hugh Blemings provide detailed instructions for building a wide range of both practical and fun Arduino-related projects, covering areas such as hobbies, automotive, communications, home automation, and instrumentation. Take Arduino beyond "blink" to a wide variety of projects from simple to challenging Hands-on recipes for everything from home automation to interfacing with your car engine management system Explanations of techniques and references to handy resources for ubiquitous computing projects Supplementary material includes a circuit schematic reference, introductions to a range of electronic engineering principles and general hints & tips. These combine with the projects themselves to make Practical Arduino: Cool Projects for Open Source Hardware an invaluable reference for Arduino users of all levels. You'll learn a wide variety of techniques that can be applied to your own projects.

THE DEBIAN ADMINISTRATOR'S HANDBOOK

DEBIAN JESSIE FROM DISCOVERY TO MASTERY

Freexian Debian GNU/Linux, a very popular non-commercial Linux distribution, is known for its reliability and richness. Built and maintained by an impressive network of thousands of developers throughout the world, the Debian project is cemented by its social contract. This foundation text defines the project's objective: fulfilling the needs of users with a 100% free operating system. The success of Debian and of its ecosystem of derivative distributions (with Ubuntu at the forefront) means that an increasing number of administrators are exposed to Debian's technologies. This Debian Administrator's Handbook, which has been entirely updated for Debian 8 “Jessie”, builds on the success of its 6 previous editions. Accessible to all, this book teaches the essentials to anyone who wants to become an effective and independent Debian GNU/Linux administrator. It covers all the topics that a competent Linux administrator should master, from installation to updating the system, creating packages and compiling the kernel, but also monitoring, backup and migration, without forgetting advanced topics such as setting up SELinux or AppArmor to secure services, automated installations, or virtualization with Xen, KVM or LXC. This book is not only designed for professional system administrators. Anyone who uses Debian or Ubuntu on their own computer is de facto an administrator and will find tremendous value in knowing more about how their system works. Being able to understand and resolve problems will save you invaluable time. Learn more about the book on its official website: debian-handbook.info

JOURNAL OF ICT STANDARDIZATION

Objectives: Bring papers on de-jure as well as de-facto standards to the readers Cover pre-development, including technologies with potential of becoming a standard, as well as developed / deployed standards Publish on-going work with potential of becoming a standard technology Publish papers giving explanation of standardization process Publish tutorial type papers giving new comers a understanding of standardization Aim: - The aim of this journal is to publish standardized as well as related work making "standards" accessible to a wide public - from practitioners to new comers. - The journal aims at publishing in-depth as well as overview work including papers discussing standardization process and those helping new comers to understand how standards work. Scope: - Bring up-to-date information regarding standardization in the field of Information and Communication Technology (ICT) covering all protocol layers and technologies in the field

ICWE 2021 WORKSHOPS

ICWE 2021 INTERNATIONAL WORKSHOPS, BECS AND INVITED PAPERS, BIARRITZ, FRANCE, MAY 18–21, 2021, REVISED SELECTED PAPERS

Springer This book constitutes the thoroughly refereed post-workshop proceedings of the 21th International Conference on Web Engineering, ICWE 2021, held in Biarritz, France, in May 2021.* The first international workshop on Big data-driven Edge Cloud Services (BECS 2021) was held to provide a venue in which scholars and practitioners can share their experiences and present on-going work on providing value-added Web services for users by utilizing big data in edge cloud environments. The 5 revised full papers and 1 revised short contribution selected from 11 submissions are presented with 2 invited papers. *The conference was held virtually due to the COVID-19 pandemic.