

Intel Galileo Board User Guide

The Intel Galileo board was designed to add the power of an Intel processor to the simplicity of the Arduino platform. Intel Galileo gives you the freedom to create a wide range of DIY projects. Intel Galileo Blueprints will be a detailed guide that covers several projects based on the Intel Galileo board, exploiting the full potential of the board. You will first go through how to set up the development environment for the Galileo board. Next, you will connect different kinds of sensors to the Galileo board, and learn how to use the SD card reader of the board. You will then connect actuators to the Galileo board, like a relay and a servomotor, and write simple software to control these components. Later, you will access the Galileo board remotely in order to monitor the measurements done by the board and send the measured data to a Twitter feed at regular intervals. Finally, you will move on to more advanced topics, such as building a complete home automation system, building a mobile robot controlled by the Intel Galileo board and computer vision applications such as face recognition.

The Intel Galileo board is the first in a family of Arduino-certified development and prototyping boards based on Intel architecture. Intel provides Intel IoT Developer Kit which you can build and deploy application on top of Intel Galileo board. This book helps you getting started with Intel IoT and Intel Galileo. The following is a list of highlight topics: * Preparing Development Environment * Working with Arduino IDE Software * Accessing Internal Linux OS * Connecting to Internet Network * Yocto Embedded Linux-based OS * Intel Galileo I/O Programming from Yocto Linux. It covers topics about GPIO, UART, SPI and I2C * Working with XBee IEEE 802.15.4 Code samples are be provided as illustration with written in Python, C and Node.js.

The internet of things (IoT) has emerged to address the need for connectivity and seamless integration with other devices as well as big data platforms for analytics. However, there are challenges that IoT-based applications face including design and implementation issues; connectivity problems; data gathering, storing, and analyzing in cloud-based environments; and IoT security and privacy issues. Emerging Trends in IoT and Integration with Data Science, Cloud Computing, and Big Data Analytics is a critical reference source that provides theoretical frameworks and research findings on IoT and big data integration.

Highlighting topics that include wearable sensors, machine learning, machine intelligence, and mobile computing, this book serves professionals who want to improve their understanding of the strategic role of trust at different levels of the information and knowledge society. It is therefore of most value to data scientists, computer scientists, data analysts, IT specialists, academicians, professionals, researchers, and students working in the field of information and knowledge management in various disciplines that include but are not limited to information and communication sciences, administrative sciences and management, education, sociology, computer science, etc. Moreover, the book provides insights and supports executives concerned with the management of expertise, knowledge, information, and organizational development in different types of work communities and environments.

This book presents high-quality, original contributions (both theoretical and experimental) on software engineering, cloud computing, computer networks & internet technologies, artificial intelligence, information security, and database and distributed

computing. It gathers papers presented at ICRIC 2019, the 2nd International Conference on Recent Innovations in Computing, which was held in Jammu, India, in March 2019. This conference series represents a targeted response to the growing need for research that reports on and assesses the practical implications of IoT and network technologies, AI and machine learning, cloud-based e-Learning and big data, security and privacy, image processing and computer vision, and next-generation computing technologies.

This volume offers the proceedings of the 2nd UNet conference, held in Casablanca May 30 - June 1, 2016. It presents new trends and findings in hot topics related to ubiquitous computing/networking, covered in three tracks and three special sessions: Main Track 1: Context-Awareness and Autonomy Paradigms Track Main Track 2: Mobile Edge Networking and Virtualization Track Main Track 3: Enablers, Challenges and Applications Special Session 1: Smart Cities and Urban Informatics for Sustainable Development Special Session 2: Unmanned Aerial Vehicles From Theory to Applications Special Session 3: From Data to Knowledge: Big Data applications and solutions

If makerspaces allow young people to collaborate on building projects, then Arduino allows them to go to the next level. Arduino is a do-it-yourself kit that includes a microcontroller that makes using electronics more accessible. Basically, this means that even those who are not experts in electronics can do amazing things, such as build and program robots. This book opens young people up to the possibilities of this exciting world by explaining exactly what makerspaces and Arduino are and how virtually anyone can use these tools to build programmable devices, a skill that is essential in any STEM field.

This book focuses on the development of wellness protocols for smart home monitoring, aiming to forecast the wellness of individuals living in ambient assisted living (AAL) environments. It describes in detail the design and implementation of heterogeneous wireless sensors and networks as applied to data mining and machine learning, which the protocols are based on. Further, it shows how these sensor and actuator nodes are deployed in the home environment, generating real-time data on object usage and other movements inside the home, and therefore demonstrates that the protocols have proven to offer a reliable, efficient, flexible, and economical solution for smart home systems. Documenting the approach from sensor to decision making and information generation, the book addresses various issues concerning interference mitigation, errors, security and large data handling. As such, it offers a valuable resource for researchers, students and practitioners interested in interdisciplinary studies at the intersection of wireless sensing processing, radio communication, the Internet of Things and machine learning, and in how they can be applied to smart home monitoring and assisted living environments.

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). What you'll learn

- How Linux libraries and applications are used and interact with sketches
- How to configure WiFi mPCIe
- How to develop and debug Intel's Galileo and Intel Galileo Gen 2 sketches using the Arduino IDE, native Linux applications, and hacking
- Integration of OpenCV and V4L2 in C/C++/Python to capture picture and videos, and to detect faces, eyes, and your emotional state with a Fisherfaces model
- How to exchange data using the 7160 LTE modem
- How to tweet with REST API 1.1 and OAuth authentication
- How to control a 6 DOF robot arm using a gripper based in coffee grains, as well as how to create a special API and hardware for six analogic controls
- Home Automation with node.js
- How to manage temperature sensors, barometric sensors, and PIR motion sensors, as well as how to create your own soil moisture sensors and keypad
- How to use a Power of Ethernet (PoE) module on Intel Galileo Gen 2

Who this book is for Software and hardware developers interested in embedded Linux and Arduino.

Table of Contents

Chapter 1: Intel Galileo Intel Galileo Gen 2

Chapter 2: Native Development

Chapter 3: Arduino IDE and the Wiring Language

Chapter 4: New APIs and Hacks

Chapter 5: Networking and Hacks

Chapter 6: Tweeting With REST API 1.1

Chapter 7: Using OpenCV

Chapter 8: Creating a Soil Moisture Sensor

Chapter 9: Home Automation and Dynamic Web

Chapter 10: Power Over Ethernet (PoE)

Chapter 11: Assembling and Controlling a Robotic Arm

Chapter 12: Using an LTE Modem

Appendix A: Intel Galileo I/O and Muxing

Appendix B: Intel Galileo Gen 2 I/O and Muxing

Appendix C: Video Capturing

Appendix D: Picture Grabber

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.

This book explores potentially disruptive and transformative healthcare-specific use cases made possible by the latest developments in Internet of Things (IoT) technology and Cyber-Physical Systems (CPS). Healthcare data can be subjected to a range of different investigations in order to extract highly useful and usable intelligence for the automation of traditionally manual tasks. In addition, next-generation healthcare applications can be enhanced by integrating the latest knowledge discovery and dissemination tools. These sophisticated, smart healthcare applications are possible thanks to a growing ecosystem of healthcare sensors and actuators, new ad hoc and application-specific sensor and actuator networks, and advances in data capture, processing, storage, and mining. Such applications also take advantage of state-of-the-art machine and deep learning algorithms, major strides in artificial and ambient intelligence, and rapid improvements in the stability and maturity of mobile, social, and edge computing models.

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).

Embedded Firmware Solutions is the perfect introduction and daily-use field guide--for the thousands of firmware designers, hardware engineers, architects, managers, and developers--to Intel's new firmware direction (including Quark coverage), showing how to integrate Intel® Architecture designs into their plans. Featuring hands-on examples and exercises using Open Source codebases, like Coreboot and EFI Development Kit (tianocore) and Chromebook, this is the first book that combines a timely and thorough overview of firmware solutions for the rapidly evolving embedded ecosystem with in-depth coverage of requirements and optimization.

This book starts by teaching you the essentials of the Intel Galileo board, its components, how to wire it, and how to use it safely. The book will teach you how to use and combine simple sensors to build more complex connected objects with the help of an Internet connection. You'll also learn how to control and read from your sensors by building a number of interesting projects. Finally, the book will familiarize you with the art of controlling your objects using mobile devices. By the end of the book, you'll be able to understand the key concepts of the Internet of Things, and what a "Thing" truly is. This book will make you ready and also more aware of what you can do with a Galileo board, while inspiring you with more ideas to build your own home projects.

This handbook provides a glimpse of the research that is underway in smart cities, with an examination of the relevant issues. It describes software infrastructures for smart cities, the role of 5G and Internet of things in future smart cities scenarios, the use of clouds and sensor-based devices for monitoring and managing smart city facilities, a variety of issues in the emerging field of urban informatics, and various smart city applications. Handbook of Smart Cities includes fifteen chapters from renowned worldwide researchers working on various aspects of smart city scale cyber-physical systems. It is intended for researchers, developers of smart city technologies and advanced-level students in the fields of communication systems, computer science, and data science. This handbook is also designed for anyone wishing to find out more about the on-going research thrusts and deployment experiences in smart cities. It is meant to provide a snapshot of the state-of-the-art at the time of its writing in several software services and cyber infrastructures as pertinent to smart cities. This handbook presents application case studies in video surveillance, smart parking, and smart building management in the smart city context. Unique experiences in designing and implementing the applications or the issues involved in developing smart city level applications are described in these chapters. Integration of machine learning into several smart city application scenarios is also examined in some chapters of this handbook.

This book constitutes the refereed proceedings of the 4th International Conference on Technology Trends, CITT 2018, held in Babahoyo, Ecuador, in August 2018. The 53 revised full papers presented were carefully reviewed and selected from 204 submissions. The papers are organized in topical sections on communications; security and privacy; computer and software engineering; computational intelligence; e-government and e-participation.

The Intel Galileo board is the first in a family of Arduino-certified development and prototyping boards based on Intel architecture. Microsoft provides Windows for IoT Program which we can build and deploy application on top of Intel Galileo board using Windows Platform. This book helps you getting started with Windows for IoT program and Intel Galileo. The following is a list of highlight topics: * Preparing Development Environment * Deploying Windows IoT on Intel Galileo * Digital I/O * Analog I/O * Serial Communication * Working with SPI and I2C

This book constitutes the thoroughly refereed post-workshop proceedings of the Second International Symposium, SETE 2017, held in conjunction with ICWL 2017, Cape Town, South Africa, in September 2017. The 52 full and 13 short papers were carefully reviewed and selected from 123 submissions. This symposium attempts to provide opportunities for the crossfertilization of knowledge and ideas from researchers in diverse fields that make up this interdisciplinary research area.

Linux is a powerful open-source operating system that has been around for many years and is widely used for running servers and websites. But most students and Makers encounter it for the first time when they are working on projects with their Raspberry Pi or similar single-board computers (SBCs) such as BeagleBone Black or Intel Galileo. Linux for Makers is the first book that explains the Linux operating system specifically for Makers, as opposed to programmers and administrators. By gaining a deeper understanding of Linux, Makers can add another useful tool to their kit that will help them build their projects more easily. Written with the Maker in mind, this book will focus mostly on Rasbian running on the Raspberry Pi as it is the most prolific in the ecosystem today. However most of the topics covered will apply broadly to other Linux distributions and will be called out when they may differ. Many times users cut and paste from a website tutorial into the Linux command line without understanding what they are actually doing only to be frustrated when they want to modify or tweak something to suit their needs. Also, many Makers shy away from using the Raspberry Pi or similar board because they feel Linux is too foreign and they think using a command line will be more difficult than using a GUI. This book aims to overcome those fears and provide a foundation for further learning and exploration. To that end, this book will focus on the basic principles that a Maker would need to know as opposed to other resources that go into detail that is not particularly relevant to building projects.

This book (CCIS 899) constitutes the refereed proceedings of the First International Conference on Applications of Computing and Communication Technologies, ICACCT 2018, held in Delhi, India, in March 2018. The 30 full papers were carefully reviewed and selected from 109 submissions. The papers are organized in topical sections on communication and system technologies, computing and network technologies, application and services.

Learn to easily build gadgets, gizmos, robots, and more using Arduino Written by Arduino expert Jeremy Blum, this unique book uses the popular Arduino microcontroller platform as an instrument to teach you about topics in electrical engineering, programming, and human-computer interaction. Whether you're a budding hobbyist or an engineer, you'll benefit from the perfectly paced lessons that walk you through useful, artistic, and educational exercises that gradually get more advanced. In addition to specific projects, the book shares best practices in programming and design that you can apply to your own projects. Code snippets and schematics will serve as a useful reference for future projects even after you've mastered all the topics in the book. Includes a number of projects that utilize different capabilities of the Arduino, while interfacing with external hardware Features chapters that build upon each other, tying in concepts from previous chapters to illustrate new ones Includes aspects that are accompanied by video tutorials and other multimedia content Covers electrical engineering and programming concepts, interfacing with the world through analog and digital sensors, communicating with a computer and other devices, and internet connectivity Explains how to combine smaller topics into more complex projects Shares downloadable materials and source code for everything covered in the book Projects compatible with many official Arduino boards including Arduino Uno; Arduino Leonardo; Arduino Mega 2560; Arduino Due; Arduino Nano; Arduino Mega ADK; LilyPad Arduino and may work with Arduino-compatible boards such as Freeduino and new third party certified boards such as the Intel Galileo Exploring Arduino takes you on an adventure and provides you with exclusive access to materials not found anywhere else!

This book is for anyone who has ever been curious about using the Intel Galileo to create electronics projects. Some programming background is useful, but if you know how to use a personal computer, with the aid of the step-by-step instructions in this book, you can construct complex electronics projects that use the Intel Galileo.

The book presents a collection of peer-reviewed articles from the International Conference on Advances and Applications of Artificial Intelligence and Machine Learning - ICAAIML 2020. The book covers research in the areas of artificial intelligence, machine learning, and deep learning applications in healthcare, agriculture, business and security. This volume contains research papers from academicians, researchers as well as students. There are also papers on core concepts of computer networks, intelligent system design and deployment, real-time systems, wireless sensor network, sensors and sensor nodes, software engineering, and image processing. This book will be a valuable resource for students, academics and practitioners in industry working on AI applications.

This book discusses emerging technologies in the field of the Internet of Things and big data, an area that will be scaled in next two decades. Written by a team of leading experts, it is the only book focusing on the broad areas of both the Internet of things and big data. The thirteen chapters present real-time experimental methods and theoretical explanations, as well as the implementation of these technologies through various applications. Offering a blend of theory and hands-on practices, the book enables graduate, postgraduate and research students who are involved in real-time project scaling techniques to understand projects and their execution. It is also useful for senior computer students, researchers and industry workers who are involved in experimenting with the Internet of Things and big data technologies, helping them to solve the real-time problem. Moreover, the chapters covering cutting-edge technologies help multidisciplinary researchers who are bridging the gap of two different outset real-time problems.

This book addresses biometrics from a biomedical engineering point of view. Divided into five sections, it discusses topics including the influence of pathologies on various biometric modalities (e.g. face, iris, fingerprint), medical and security biometrics, behavioural biometrics, instrumentation, wearable technologies and imaging. The final chapters also present a number of case studies. The book is suitable for advanced graduate and postgraduate students, engineers and researchers, especially those in signal and image processing, biometrics, and biomedical engineering.

The increase in connected devices in the internet of things (IoT) is leading to an exponential increase in the data that an organization is required to manage. To successfully utilize IoT in businesses, big data analytics are necessary in order to efficiently sort through the increased data. The combination of big data and IoT can thus enable new monitoring services and powerful processing of sensory data streams. The Handbook of Research on Big Data and the IoT is a pivotal reference source that provides vital research on emerging trends and recent innovative applications of big data and IoT, challenges facing organizations and the implications of these technologies on society, and best practices for their implementation. While highlighting topics such as bootstrapping, data fusion, and graph mining, this publication is ideally designed for IT specialists, managers, policymakers, analysts, software engineers, academicians, and researchers.

Knowledge for Free... Get that job, you aspire for! Want to switch to that high paying job? Or are you already been preparing hard to give interview the next weekend? Do you know how many people get rejected in interviews by preparing only concepts but not focusing on actually which questions will be asked in the interview? Don't be that person this time. This is the most comprehensive IoT (Internet of Things) interview questions book that you can ever find out. It contains: 500 most frequently asked and important IoT (Internet of Things) interview questions and answers Wide range of questions which cover not only basics in IoT (Internet of Things) but also most advanced and

complex questions which will help freshers, experienced professionals, senior developers, testers to crack their interviews.

This open access book constitutes the refereed proceedings of the 18th International Conference on String Processing and Information Retrieval, ICOST 2020, held in Hammamet, Tunisia, in June 2020.* The 17 full papers and 23 short papers presented in this volume were carefully reviewed and selected from 49 submissions. They cover topics such as: IoT and AI solutions for e-health; biomedical and health informatics; behavior and activity monitoring; behavior and activity monitoring; and wellbeing technology. *This conference was held virtually due to the COVID-19 pandemic.

This book presents software engineering methods in the context of the intelligent systems. It discusses real-world problems and exploratory research describing novel approaches and applications of software engineering, software design and algorithms. The book constitutes the refereed proceedings of the Software Engineering Methods in Intelligent Algorithms Section of the 8th Computer Science On-line Conference 2019 (CSOC 2019), held on-line in April 2019.

Take a practioner's approach in analyzing the Internet of Things (IoT) devices and the security issues facing an IoT architecture. You'll review the architecture's central components, from hardware communication interfaces, such as UARTand SPI, to radio protocols, such as BLE or ZigBee. You'll also learn to assess a device physically by opening it, looking at the PCB, and identifying the chipsets and interfaces. You'll then use that information to gain entry to the device or to perform other actions, such as dumping encryption keys and firmware. As the IoT rises to one of the most popular tech trends, manufactures need to take necessary steps to secure devices and protect them from attackers. The IoT Hacker's Handbook breaks down the Internet of Things, exploits it, and reveals how these devices can be built securely. What You'll Learn Perform a threat model of a real-world IoT device and locate all possible attacker entry points Use reverse engineering of firmware binaries to identify security issues Analyze, assess, and identify security issues in exploited ARM and MIPS based binaries Sniff, capture, and exploit radio communication protocols, such as Bluetooth Low Energy (BLE), and ZigBee Who This Book is For Those interested in learning about IoT security, such as pentesters working in different domains, embedded device developers, or IT people wanting to move to an Internet of Things security role.

Manage and control Internet-connected devices from Windows and Raspberry Pi. Master the Windows IoT Core application programming interface and feature set to develop Internet of Things applications on the Raspberry Pi using your Windows and .NET programming skills. Windows 10 for the Internet of Things presents a set of example projects covering a wide range of techniques designed specifically to jump start your own Internet of Things creativity. You'll learn everything you need to know about Windows IoT Core in order to develop Windows and IoT applications that run on the Pi. Microsoft's release of Windows IoT Core is groundbreaking in how it makes the Raspberry Pi and Internet of Things programming accessible to Windows developers. Now it's possible to develop for the Raspberry Pi using native Windows and all the related programming skills that Windows programmers have learned from developing desktop and mobile applications. Windows 10 becomes a gateway by which many can experience hardware and Internet of Things development who may never have had the opportunity otherwise. However, even savvy Windows programmers require help to get started with hardware development. This book, Windows 10 for the Internet of Things, provides just the help you need to get started in putting your Windows skills to use in a burgeoning new world of development for small devices that are ubiquitously connected to the Internet. What You Will Learn Learn Windows 10 on the Raspberry Pi Read sensor data and control actuators Connect to and transmit data into the cloud Remotely control your devices from any web browser Develop IOT applications under Windows using C# and Python Store your IOT data in a database for later analysis Who This

Book Is For Developers and enthusiasts wanting to take their skills in Windows development and jump on board one of the largest and fastest growing trends to hit the technology world in years – that of connecting everyday devices to the Internet. This book shows how to develop for Microsoft's operating-system for devices, Windows 10 IoT Core. Readers learn to develop in C# and Python using Visual Studio, for deployment on devices such as the Raspberry Pi and the Arduino.

Interact with the world and rapidly prototype IoT applications using Python About This Book Rapidly prototype even complex IoT applications with Python and put them to practical use Enhance your IoT skills with the most up-to-date applicability in the field of wearable tech, smart environments, and home automation Interact with hardware, sensors, and actuators and control your DIY IoT projects through Python Who This Book Is For The book is ideal for Python developers who want to explore the tools in the Python ecosystem in order to build their own IoT applications and work on IoT-related projects. It is also a very useful resource for developers with experience in other programming languages that want to easily prototype IoT applications with the Intel Galileo Gen 2 board. What You Will Learn Prototype and develop IoT solutions from scratch with Python as the programming language Develop IoT projects with Intel Galileo Gen 2 board along with Python Work with the different components included in the boards using Python and the MRAA library Interact with sensors, actuators, and shields Work with UART and local storage Interact with any electronic device that supports the I2C bus Allow mobile devices to interact with the board Work with real-time IoT and cloud services Understand Big Data and IoT analytics In Detail Internet of Things (IoT) is revolutionizing the way devices/things interact with each other. And when you have IoT with Python on your side, you'll be able to build interactive objects and design them. This book lets you stay at the forefront of cutting-edge research on IoT. We'll open up the possibilities using tools that enable you to interact with the world, such as Intel Galileo Gen 2, sensors, and other hardware. You will learn how to read, write, and convert digital values to generate analog output by programming Pulse Width Modulation (PWM) in Python. You will get familiar with the complex communication system included in the board, so you can interact with any shield, actuator, or sensor. Later on, you will not only see how to work with data received from the sensors, but also perform actions by sending them to a specific shield. You'll be able to connect your IoT device to the entire world, by integrating WiFi, Bluetooth, and Internet settings. With everything ready, you will see how to work in real time on your IoT device using the MQTT protocol in python. By the end of the book, you will be able to develop IoT prototypes with Python, libraries, and tools. Style and approach This book takes a tutorial-like approach with mission critical chapters. The initial chapters are introductions that set the premise for useful examples covered in later chapters.

Over 50 recipes that will help you use the Intel Galileo board to build exciting network-connected projects About This Book • Create networking applications using the Intel Galileo board • Control your web-based projects in real time from anywhere in the world • Connect to the Temboo web service to interact with a huge range of APIs Who This Book Is For If you have already worked on ARM boards like Arduino, but now want to learn Intel Galileo, then this book is for you. Knowledge of C programming language is required. What You Will Learn • Set up your Galileo board for the Internet of Things • Connect external sensors to the Intel Galileo • Create and run a web server on the Galileo board • Control hardware devices from the Galileo • Host web-based applications on the Intel Galileo • Monitor data from the cloud using the Galileo • Build a complete home automation hub using the Galileo board In Detail Arduino is an electronic prototyping platform used by millions of people around the world. Intel Galileo is fully Arduino compatible; hence it combines the high performance of Intel with the simplicity of Arduino Software Development Environment. This makes it the ideal platform to build exciting projects, especially in the field of web-based connected applications and the Internet of Things. The book features several recipes all based on the Intel Galileo board, and that exploit the powerful

features of the board. Each chapter explores a given field using the Galileo board. The book is mainly divided in three parts. The first part is all about learning the basics of the Intel Galileo board, but it uses some of the powerful features of the board such as connecting external sensors and complex hardware devices, compared with more basic Arduino boards. Then, the book dives into the topics related to networking and the Internet of Things. You will learn how to run a web server on the board and log data using a cloud-based service. Finally, the book ends with a chapter that aims to build a complete home automation hub using the Galileo board. This chapter uses everything that was learned in the book to make a home automation system using the Galileo board and Arduino. Style and approach This book contains exciting recipes that will help you create projects using the Intel Galileo platform to build systems in various domains like local networking applications, the Internet of Things, and home automation. Each recipe is explained in a step-by-step fashion, always starting with the assembly of the hardware, followed by basic tests of all hardware components. At the end, an exciting project is built using the knowledge acquired in the rest of the book.

Quick Boot is designed to give developers a background in the basic architecture and details of a typical boot sequence. More specifically, this book describes the basic initialization sequence that allows developers the freedom to boot an OS without a fully featured system BIOS. Various specifications provide the basics of both the code bases and the standards. This book also provides insights into optimization techniques for more advanced developers. With proper background information, the required specifications on hand, and diligence, many developers can create quality boot solutions using this text. Pete Dice is Engineering Director of Verifone, where he manages OS Engineering teams in Dublin, Ireland and Riga Latvia. Dice successfully launched Intel(R) Quark(TM), Intel's first generation SoC as well as invented the Intel(R) Galileo(TM) development board and developed a freemium SW strategy to scale Intel IoT gateway features across product lines. He is also credited with architecting the "Moon Island" software stack and business model.

Write powerful programs for your Intel® Galileo—no experience required! This hands-on guide offers a step-by-step introduction to programming the Intel® Galileo using Arduino™ software. Written by an experienced electronics hobbyist, *Programming the Intel® Galileo: Getting Started with the Arduino™-Compatible Development Board* shows how to set up your board, configure the software, and quickly start writing sketches. You will discover how to work with the Galileo's inputs and outputs, use libraries, interface with the Web, and control external hardware. From there, you will learn to engineer and program your own useful and fun Galileo gadgets.

- Explore the features and capabilities of the Intel® Galileo
- Power up your board and install the Arduino IDE
- Learn C programming basics and start writing sketches
- Control LEDs, LCD, and servo motors
- Process input from temperature and light sensors
- Connect to the Internet through Ethernet and WiFi
- Share sensor readings and other data via the cloud
- Go further and design, build, and test your own projects

This book constitutes the refereed post-conference proceedings of the 4th International Workshop on Lightweight

Cryptography for Security and Privacy, LightSec 2015, held in Bochum, Germany, in September 2015. The 9 full papers presented were carefully reviewed and selected from 17 submissions. The papers are organized in the following topical sections: cryptanalysis, lightweight constructions, implementation challenges.

A Systematic Approach to Learn the Principles, Paradigms and Applications of Internet of Things DESCRIPTION In this book, Principles, Paradigm frameworks, and Applications of IoT (Internet of Things) in the modern era are presented. It also provides a sound understanding of the IoT concepts, architecture, and applications, and improves the awareness of readers about IoT technologies and application areas. A key objective of this book is to provide a systematic source of reference for all aspects of IoT. This book comprises nine chapters with close co-operation and contributions from four different authors, spanning across four countries and providing a global, broad perspective on major topics on the Internet of Things. KEY FEATURES - IoT applications in various sectors like Education, Smart City, Politics, Healthcare, Agriculture, etc. - Adoption of the IoT technology and strategies for various sectors - To present case studies and innovative applications of the IoT - To analyze and present the state of the art of the IoT and related technologies and methodologies - To propose new models, practical solutions and technological advances of the IoT WHAT WILL YOU LEARN - Become aware of the IoT components, their connectivity to form the IoT altogether, and future possibilities with IoT. - Understand how the various components of cloud computing work together to form the basic architecture of cloud computing. - Examine the relationship between the various layers in the IoT architecture. - Understand the programming framework for the Internet of Things (IoT) and various programming paradigms. WHO THIS BOOK IS FOR This book is intended for professionals, researchers, instructors, and designers of a smart system, who will benefit from reading this book. TABLE OF CONTENTS 1. IoT Introduction 2. IoT Architectures and Protocols 3. Programming Framework for IoT 4. Virtualization and IoT 5. Security, Privacy and Challenges in IoT 6. IoT Applications Areas 7. IoT and Cloud 8. Smart City Using IoT integration 9. Case Studies 10. Important Key Terms 11. References

This volume gathers selected, peer-reviewed original contributions presented at the International Conference on Computational Vision and Bio-inspired Computing (ICCVBIC) conference which was held in Coimbatore, India, on November 29-30, 2018. The works included here offer a rich and diverse sampling of recent developments in the fields of Computational Vision, Fuzzy, Image Processing and Bio-inspired Computing. The topics covered include computer vision; cryptography and digital privacy; machine learning and artificial neural networks; genetic algorithms and computational intelligence; the Internet of Things; and biometric systems, to name but a few. The applications discussed range from security, healthcare and epidemic control to urban computing, agriculture and robotics. In this book, researchers, graduate students and professionals will find innovative solutions to real-world problems in industry and

society as a whole, together with inspirations for further research.

The agricultural sector can benefit immensely from developments in the field of smart farming. However, this research area focuses on providing specific fixes to particular situations and falls short on implementing data-driven frameworks that provide large-scale benefits to the industry as a whole. Using deep learning can bring immense data and improve our understanding of various earth sciences and improve farm services to yield better crop production and profit.

Smart Agricultural Services Using Deep Learning, Big Data, and IoT is an essential publication that focuses on the application of deep learning to agriculture. While highlighting a broad range of topics including crop models, cybersecurity, and sustainable agriculture, this book is ideally designed for engineers, programmers, software developers, agriculturalists, farmers, policymakers, researchers, academicians, and students.

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