

Arduino Networking

Provides instructions for building thirty-three projects that interact with the physical world, including a stuffed monkey video game controller and a battery powered GPS that reports its location over Bluetooth.

Arduino NetworkingPackt Publishing Ltd

This book offers a holistic approach to the Internet of Things (IoT) model, covering both the technologies and their applications, focusing on uniquely identifiable objects and their virtual representations in an Internet-like structure. The authors add to the rapid growth in research on IoT communications and networks, confirming the scalability and broad reach of the core concepts. The book is filled with examples of innovative applications and real-world case studies. The authors also address the business, social, and legal aspects of the Internet of Things and explore the critical topics of security and privacy and their challenges for both individuals and organizations. The contributions are from international experts in academia, industry, and research.

Annotation In just 24 sessions of one hour or less, "Sams Teach Yourself Arduino Programming in 24 Hours "teaches you C programming on Arduino, so you can start creating inspired "DIY" hardwareprojects of your own Using this book's straightforward, step-by-stepapproach, you'll walk through everything from setting up yourprogramming environment to mastering C syntax and features, interfacing your Arduino to performing full-fledged prototyping. Every hands-on lesson and example builds on what you've alreadylearned, giving you a rock-solid foundation for real-world success " Step-by-step instructions carefully walk you through the most common Arduino programming tasks. Quizzes at the end of each chapter help you test your knowledge. By the Way notes present interesting information related to the discussion. Did You Know? tips offer advice or show you easier ways to perform tasks. Watch Out cautions alert you to possible problems and give you advice on how to avoid them. Learn how to ... Get the right Arduino hardware and accessories for your needsDownload the Arduino IDE, install it, and link it to your ArduinoQuickly create, compile, upload, and run your first Arduino programMaster C syntax, decision control, strings, data structures, and functionsUse pointers to work with memory—and avoid common mistakesStore data on your Arduino's EEPROM or an external SD cardUse existing hardware libraries, or create your ownSend output and read input from analog devices or digital interfacesCreate and handle interrupts in software and hardwareCommunicate with devices via the SPI interface and I2C protocolWork with analog and digital sensorsWrite Arduino C programs that control motorsConnect an LCD to your Arduino, and code the outputInstall an Ethernet shield, configure an Ethernet connection, and write networking programsCreate prototyping environments, use prototyping shields, and interface electronics to your Arduino.

Beginning Radio Networks with Arduino

Bluetooth Low Energy With Android and Arduino

Using Sensors, Networks, and Arduino to See, Hear, and Feel Your World

Breakthroughs in Research and Practice

Getting Started with Arduino

Build your own distributed sensor network to collect, analyze, and visualize real-time data about our human environment!including noise level, temperature, and people flow. With this hands-on book, you'll learn how to turn your project idea into working hardware, using the easy-to-learn Arduino microcontroller and off-the-shelf sensors. Authors Alasdair Allan and Kipp Bradford walk you through the entire process, from prototyping a simple sensor node to performing real-time analysis on data captured by a deployed multi-sensor network. Demonstrated at recent O'Reilly Strata Conferences, the future of distributed data is already here. If you have programming experience, you can get started immediately. Wire up a circuit on a sensor Add a microphone and infrared motion detector to your circuit Move from breadboard to prototype with Fritzing, a program that converts your circuit design into a graphical representation Simplify your design: learn use cases and limitations for using Arduino pins for power and grounding Build wireless networks with XBee radios and request data from multiple sensor platforms Visualize data from your sensor network with Processing or LabVIEW

Get ready to create distributed sensor systems and intelligent interactive devices using the ZigBee wireless networking protocol and Series 2 XBee radios. By the time you're halfway through this fast-paced, hands-on guide, you'll have built a series of useful projects, including a complete ZigBee wireless network that delivers remotely sensed data. Radio networking is creating revolutions in volcano monitoring, performance art, clean energy, and consumer electronics. As you follow the examples in each chapter, you'll learn how to tackle inspiring projects of your own. This practical guide is ideal for inventors, hackers, crafters, students, hobbyists, and scientists. Investigate an assortment of practical and intriguing project ideas Prep your ZigBee toolbox with an extensive shopping list of parts and programs Create a simple, working ZigBee network with XBee radios in less than two hours—for under \$100 Use the Arduino open source electronics prototyping platform to build a series of increasingly complex projects Get familiar with XBee's API mode for creating sensor networks Build fully scalable sensing and actuation systems with inexpensive components Learn about power management, source routing, and other XBee technical nuances Make gateways that connect with neighboring networks, including the Internet

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 devicesUp to 200,000per 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 focuses on 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 Sprint 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.

This book provides knowledge, skills, and strategies an engineer requires to effectively integrate Internet of Things (IoT) into the field of mechanical engineering. Divided into three sections named IoT Strategies, IoT Foundation topics, and IoT system development, the volume covers introduction to IoT framework, its components, advantages, challenges, and practical process for effective implementation of IoT from mechanical engineering perspective. Further, it explains IoT systems and hands-on training modules, implementation, and execution of IoT Systems. Features: Presents exclusive material on application of IoT in mechanical engineering. Combines theory and practice including relevant terminologies and hands-on. Emphasis on use of IoT to streamline operations, reduce costs, and increased profits. Focuses on development and implementation of Raspberry Pi and Arduino based IoT systems. Illustrates use of IoT data to improve performance of robots, machines, and systems. This book aims at Researchers, Graduate students in Mechanical Engineering, Computer Programming, Automobile, Robotics, and Industry 4.0/Automation.

Arduino Networking

Connecting Arduino

Arduino MKR WIFI 1010 Development Workshop

Arduino Cookbook

One of the primary topics at the center of discussion, and very often debate, between industry professionals, government officials, and the general public is the current healthcare system and the potential for an overhaul of its processes and services. Many organizations concerned for the long-term care of patients wish to see new strategies, practices, and organizational tools developed to optimize healthcare systems all over the world. One of the central engines of the current shift toward reorientation of healthcare services is virtual and mobile healthcare. Virtual and Mobile Healthcare: Breakthroughs in Research and Practice explores the trends, challenges, and issues related to the emergence of mobile and virtual healthcare. The book also examines how mobile technologies can best be used for the benefit of both doctors and their patients. Highlighting a range of topics such as smart healthcare, electronic health records, and m-health, this publication is an ideal reference source for medical professionals, healthcare administrators, doctors, nurses, practitioners, and researchers in all areas of the medical field.

Leverage the powerful Arduino and XBee platforms to monitor and control your surroundings About This Book Build your own low-power, wireless network using ready-made Arduino and XBee hardware Create a complex project using the Arduino prototyping platform A guide that explains the concepts and builds upon them with the help of examples to form projects Who This Book Is For This book is targeted at embedded system developers and hobbyists who have some working knowledge of Arduino and who wish to extend their projects using wireless connectivity. What You Will Learn Interact with XBee boards using the XCTU program on Windows, OS X, or Linux Make your Arduino boards communicate remotely, using XBee modules in the advanced API mode Centrally collect and store measured sensor data, in the cloud or your own database Connect the coordinator Arduino to the Internet and send data to web services Control your environment automatically, based on sensor input from your network Interact with off-the-shelf ZigBee Home Automation devices Make your devices battery-powered and let them sleep to get months or even years of battery life In Detail Arduino has been established as the de facto standard microcontroller programming platform, being used for one-off do-it-yourself projects as well as prototypes for actual products. By providing a myriad of libraries, the Arduino community has made it very easy to interact with pretty much any piece of hardware out there. XBee offers a great range of low-power wireless solutions that are easy to work with, by taking all of the complexity of wireless (mesh) networking out of your hands and letting you focus on what to send without worrying about the how. Building wireless sensor networks is cost-effective as well as efficient as it will be done with Arduino support. The book starts with a brief introduction to various wireless protocols, concepts, and the XBee hardware that enables their use. Then the book expands to explain the Arduino boards to you, letting them read and send sensor data, collect that data centrally, and then even control your home from the Internet. Moving further more advanced topics such as interacting through the standard ZigBee Home Automation protocol, or making your application power-efficient are covered. By the end of the book, you will have all the tools needed to build complete, real-world solutions. Style and approach A hands-on guide, featuring a single home automation project that can be built as described or with endless variations. This book explains how to build the examples with the Arduino IDE and screenshots, allowing you to build the examples with the Arduino board is a popular board for embedded development. This book helps you to get started with Arduino Uno development. Several scenario samples are provided to accelerate your learning process. The following is highlight topics: * Preparing Development Environment * Setting Up Arduino Uno * Writing and Reading Digital Data * Serial Communication (UART) * PWM and Analog Input * Working with I2C * Working with SPI * Accessing EEPROM * Arduino Networking

Arduino MKR WIFI 1010 is a new Arduino board with WiFi capability that enables to build IoT application. This book helps you to get started with Arduino MKR WIFI 1010. The following is a list of topics in this book. * Setting up Development Environment * Sketch Programming * Working with SPI * Working with I2C * Arduino WiFi Networking * Working with Internal RTC and Sleep Mode

The IoT Framework for Mechanical Engineers

Arduino Uno: A Hands-On Guide for Beginners

Python Programming for Arduino

Guide to Networking Essentials

Web, Artificial Intelligence and Network Applications

Effective networking isn't a result of luck – it requires hard work and persistence. Personal relationships are always the key to good business. One of the most powerful networking practices is to provide immediate value to a new connection. Learning networking basics is only a gateway to career ... A network connects computers, mobile phones, peripherals, and even IoT devices. Switches, routers, and wireless access points are the essential networking basics. Through them, devices connected to your network can communicate with one another and with other networks, like the Internet. Managing central 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 Interactively control your devices from any web browser Develop IoT applications 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.

The implementation of wireless sensor networks has wide-ranging applications for monitoring various physical and environmental settings. However, certain limitations with these technologies must be addressed in order to effectively utilize them. The Handbook of Research on Advanced Wireless Sensor Network Applications, Protocols, and Architectures is a pivotal reference source for the latest research on recent innovations and developments in the field of wireless sensors. Examining the advantages and challenges presented by the application of these networks in various areas, this book is ideally designed for academics, researchers, students, and IT developers.

This book explains how to build the examples with the Arduino Nano 33 IoT board. The book is designed with step-by-step approaching. Various project samples are provided to accelerate your learning. The following is a list of highlight topics in this book: * Setting up Development Environment * Sketch Programming * Working with digital, analog and PWM * Serial communication * Working with SPI * Working with I2C * Arduino WiFi Networking * Working with Internal RTC and Sleep Mode * Working with Arduino Cloud * Working with Accelerator and Gyroscope * Working with Bluetooth Low Energy (BLE)

Smart Home Automation with Linux and Raspberry Pi

Learning Networking Vol1

Cyber Security, Privacy and Networking

Handbook of Research on Advanced Wireless Sensor Network Applications, Protocols, and Architectures

Proceedings of ICSPN 2021

Intel has released Intel Curie which deployed on Arduino and Genuino 101. This book helps you to get started with Arduino and Genuino 101 development using Sketch. The following is highlight topics: * Setting up Development Environment * Sketch Programming: Digital and Analog I/O * Working with SPI * Working with I2C * BLE Programming * Working with Accelerator and Gyroscope * Working with RTC * Accessing EEPROM * Working with Arduino Firmata * Arduino Networking

This book is intended for those who want to build their own network-connected projects using the Arduino platform. You will be able to build exciting projects that connect to your local network and the Web. You will need to have some basic experience in electronics and web programming languages. You will also need to know the basics of the Arduino platform as the projects mainly deal with the networking aspects of the Arduino Ethernet shield.

The book has been designed in such a way that every successive chapter has increasing complexity in terms of material that is covered and also more practical value. The book has conceptualized on introducing Arduino, programming Arduino with C and DIY projects where each section concludes with a practical approach that integrates the concepts that you learned in that section. It also describes the general hardware and software needed for the projects covered in the book (unique specific requirements for project are covered in the relevant chapter). If you are a student, a hobbyist, a developer, or a designer with little or no programming and hardware prototyping experience and you want to develop IoT applications, then this book is for you. If you are a software developer and interested in gaining experience with hardware domain, this book will help you to get started.

This book covers selected high-quality research papers presented in the International Conference on Cyber Security, Privacy and Networking (ICSPN 2021), organized during 17-19 September 2021 in India in Online mode. The objectives of ICSPN 2021 is to provide a premier international platform for deliberations on strategies, recent trends, innovatively approaches, discussions and presentations on network security, privacy and networking. The book is intended for researchers and developers from the perspective of providing security awareness and its best practices for the real world. Moreover, the motivation to organize this conference is to promote research by sharing innovative ideas among all levels of the scientific community, and to provide opportunities to develop creative solutions to various security, privacy and networking problems.

Building Wireless Sensor Networks

Making Things Talk

Beginning Sensor Networks with Arduino and Raspberry

Distributed Network Data

Proceedings of the Workshops of the 34th International Conference on Advanced Information Networking and Applications (WAINA-2020)

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 an invaluable approach to building 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.

Arduino and Genuino MKR1000 are IoT development board which is based on the Atmel ATSAMW25 SoC. This book helps you to get started with Arduino and Genuino MKR1000 development. The following is highlight topics in this book: * Setting up Development Environment * Sketch Programming * Working with SPI * Working with I2C * Arduino WiFi Networking * Building IoT Application * Working with Internal RTC and Sleep Mode * Controlling Arduino through Firmata Protocol * Working with Firmata Protocol over WiFi * Arduino Cloud Security concerns around the rapid growth and variety of devices that are controlled and managed over the Internet is an immediate potential threat to all who own or use them. This book examines the issues surrounding these problems, vulnerabilities, what can be done to solve the problems, investigating the roots of the problems and how programming and attention to good security practice can combat the threats today that are a result of lax security processes on the Internet of Things, cloud computing and social media.

Presents an introduction to the open-source electronics prototyping platform.

Practical Projects for the Cloud and Data Visualization

with ZigBee, XBee, Arduino, and Processing

Beginning Sensor Networks with Arduino and Raspberry Pi

Arduino Internals

Programming and Networking with the Ethernet Shield

This book helps you to get started with Arduino UNO WIFI board. It explores how to upload the sketch program over WIFI. The following is highlight topics in this book: * Setting up Development Environment * Sketch Programming * Working with SPI * Working with I2C * Working with Arduino Firmata * Arduino WiFi Networking * Arduino Programming over WiFi (OTA)

Create your own LoRa wireless projects for non-industrial use and gain a strong basic understanding of the LoRa technology, LoRa WAN, and LPWAN. You'll start by building your first LoRa wireless channel and then move on to various interesting projects such as setting up networks with a LoRa gateway, communicating with IoT servers and the Internet of Things, and real-time GPS tracking. With LoRa wireless and LoRaWAN, you can build a wide array of applications in the area of smart agriculture, smart cities, smart environment, smart healthcare, smart homes and buildings, smart industrial control, smart metering, smart supply chain and logistics.

Beginning LoRa Radio Networks with Arduino provides a practical introduction and uses affordable and easy to obtain hardware to build projects with the Arduino development environment. What You'll Learn Understand the hardware need to build LoRaWAN Use the Arduino development environment to write code Connect to Arduino hardware and upload programs and communicate with them Setup networks with LoRa gateway Show real time track with tail, and path history Who This Book Is For Inventors, hackers, crafters, students, hobbyists, and scientists

Smart Home Automation with Linux and Raspberry Pi shows you how to automate your lights, curtains, music, and more, and control everything via a laptop or mobile phone. You'll learn how to use Linux, including Linux on Raspberry Pi, to control appliances and everything from kettles to curtains, including how to hack game consoles and even incorporate LEGO Mindstorms into your smart home schemes. You'll discover the practicalities on wiring a house in terms of both power and networking, along with the selection and placement of servers. There are also explanations on handling communication to (and from) your computer with speech, SMS, email, and web. Finally, you'll see how your automated appliances can collaborate to become a smart home. Smart Home Automation with Linux was already an excellent resource for home automation, and in this second edition, Steven Godwin will show you how a house can be fully controlled by its occupants, all using open source software and even open source hardware like Raspberry Pi and Arduino.

Tomsho's GUIDE TO NETWORKING ESSENTIALS, Eighth Edition, equips students with the knowledge, skills and confidence needed to work with network infrastructure devices and network operating systems in a small to midsize network environment. Focusing on troubleshooting and computer networking technologies, it delivers a comprehensive, reader-friendly introduction to network protocols and network devices, including wireless and cybersecurity technologies. Updated content reflects the latest networking technologies and operating systems, including new Ethernet standards, and an entire chapter is devoted to the Internet of Things (IoT). The new edition also adds certification mapping to the Microsoft Technology Associate (MTA Exam 988-366) in Networking Fundamentals. Its emphasis on real-world problem solving equips students to succeed in any computer networking environment. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Arduino Programming Simply by Depth

Arduino and Genuino 101 Development Workshop

Build Long Range, Low Power Wireless IoT Networks

Building Wireless Sensor Networks Using Arduino

Arduino UNO WIFI Development Workshop

This is the book for you if you are a student, hobbyist, developer, or designer with little or no programming and hardware prototyping experience, and you want to develop IoT applications. If you are a software developer or a hardware designer and want to create connected devices applications, then this book will help you get started.

Arduino Internals guides you to the heart of the Arduino board. Author Whose shares his intimate knowledge of the Arduino board—in secrets, its strengths and possible alternatives if its component parts are laid open to scrutiny in this book. You'll learn to build new, improved Arduino boards and peripherals, while conforming to the Arduino reference design. Arduino Internals begins by reviewing the current Arduino hardware and software landscape. In particular, it offers a clear analysis of how the Internet of Things best works and when and how to use its derivatives. The chapter on the "hardware heart" is vital for the rest of the book and should be studied in some detail. Furthermore, Arduino Internals offers important information about the CPU running the Arduino board, the memory contained within it and the peripherals mounted on it. To be able to write software that runs optimally on what is a fairly small embedded board, one must understand how the different parts interact. Later in the book, you'll learn how to replace certain parts with more powerful alternatives and how to design Arduino peripherals and shields. Since Arduino Internals addresses both sides of the Arduino hardware-software boundary, the author analyzes the complex toolchain and again provides suggestions on how to replace it with something more suitable for your own purposes. You'll also learn about how libraries enable you to change the way Arduino and software interact, and how to write your own library implementing algorithms you've devised yourself. Arduino Internals also suggests alternative programming environments, since many Arduino hackers have a background language other than C or Java. Of course, it is possible to optimize the way in which hardware and software interact—an entire chapter is dedicated to this field. Arduino Internals doesn't just focus on the different parts of Arduino architecture, but also on the ways in which example projects can take advantage of the new and improved Arduino board. Wheel employs example projects to exemplify the hacks and algorithms taught throughout the book. Arduino projects straddling the hardware-software boundary often require collaboration between people of different talents and skills which cannot be taken for granted. For this reason, Arduino Internals contains a whole chapter dedicated to collaboration and open source cooperation to make those tools and skills explicit. One of the crowning achievements of an Arduino hacker is to design a shield or peripheral residing on the Arduino board, which is the focus of the following chapter. A later chapter takes specialization further by examining Arduino protocols and communications, a field immediately relevant to shields and the communication between peripherals and the board. Finally, Arduino Internals integrates different skills and design techniques by presenting several projects that challenge you to put your newly-acquired skills to the test. Please note the print version of this title is black & white; the ebook is full color.

Looks at the techniques of interactive design, covering such topics as 2D and 3D graphics, sound, computer vision, and geolocation.

In just 24 sessions of one hour or less, you Sams Teach Yourself Arduino Programming in 24 Hours teaches you C programming on Arduino, so you can start creating inspired "DIY" hardwareprojects of your own! Using this book's straightforward, step-by-stepapproach, you'll walk through everything from setting up yourprogramming environment to mastering C syntax and features, interfacing your Arduino to performing full-fledged prototyping.Every hands-on lesson and example builds on what you've alreadylearned, giving you a rock-solid foundation for real-world success! Step-by-step instructions carefully walk you through the most common Arduino programming tasks. Quizzes at the end of each chapter help you test your knowledge. By the Way notes present interesting information related to the discussion. Did You Know? tips offer advice or show you easier ways to perform tasks. Watch Out! cautions alert you to possible problems and give you advice on how to avoid them. Learn how to... Get the right Arduino hardware and accessories for your needs Download the Arduino IDE, install it, and link it to your Arduino Quickly create, compile, upload, and run your first Arduino program Master C syntax, decision control, strings, data structures, and functions Use pointers to work with memory—and avoid common mistakes Store data on your Arduino's EEPROM or an external SD card Use existing hardware libraries, or create your own Send output and read input from analog devices or digital interfaces Create and handle interrupts in software and hardware Communicate with devices via the SPI interface and I2C protocol Work with analog and digital sensors Write Arduino C programs that control motors Connect an LCD to your Arduino, and code the output Install an Ethernet shield, configure an Ethernet connection, and write networking programs Create prototyping environments, use prototyping shields, and interface electronics to your Arduino

Security Designs for the Cloud, IoT, and Social Networking

LTE Cellular Narrowband Internet of Things (NB-IoT)

Short-range Wireless Sensor Networking

Virtual and Mobile Healthcare: Breakthroughs in Research and Practice

Arduino Leonardo and Arduino Micro: A Hands-On Guide for Beginners

All the information you need, in one place. The Arduino Ethernet Shield is a powerful device for connecting Arduinos to local area networks and to the Internet. But despite its popularity, few authors have attempted to explain how to use this shield to its full potential - leaving new users and less-experienced programmers to piece together fragments of information. In Connecting Arduino, Bob Hammel guides the reader through the processes and key concepts involved in writing projects that use the Ethernet Shield. More than just a recipe book, this in-depth series of tutorials explores all aspects of the Ethernet library, and discusses how to work with Internet protocols such as HTTP and DNS. You don't need a computer science degree to understand it, only a basic knowledge of how to write Arduino sketches. Using clear, easy-to-follow examples, you will learn how to: - Connect your Arduino to your network router - Work with the SD card reader built-in to the Ethernet Shield - Download files and webpages from the Internet to your Arduino - Serve files and make the information contained in a sketch available to the world - Create a web-based user interface and API to control your projects - Build a local DNS server - Design and implement application protocols for Internet and network communication This is the definitive guide to the Arduino Ethernet Shield - the documentation everyone else wishes they'd had; the best starting point for creating standalone, Internet-enabled devices; and your gateway to the Internet of Things.

This proceedings book presents the latest research findings, and theoretical and practical perspectives on innovative methods and development techniques related to the emerging areas of Web computing, intelligent systems and Internet computing. The Web has become an important source of information, and techniques and methodologies that extract quality information are of paramount importance for many Web and Internet applications. Data mining and knowledge discovery play a key role in many of today's major Web applications, such as e-commerce and computer security. Moreover, Web services provide a new platform for enabling service-oriented systems. The emergence of large-scale distributed computing paradigms, such as cloud computing and mobile computing systems, has opened many opportunities for collaboration services, which are at the core of any information system. Artificial intelligence (AI) is an area of computer science that builds intelligent systems and algorithms that work and react like humans. AI techniques and computational intelligence are powerful tools for learning, adaptation, reasoning and planning, and they have the potential to become enabling technologies for future intelligent networks. Research in the field of intelligent systems, robotics, neuroscience, artificial intelligence and cognitive sciences is vital for the future development and innovation of Web and Internet applications.

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.

Arduino Leonardo and Arduino Micro are development boards which runs ATmega32U4. This book helps you to get started with Arduino Leonardo and Arduino/Genuino Micro development. Several case samples are provided to accelerate your learning. The following is highlight topics in this books: * Preparing Development Environment * Setting Up Arduino Leonardo and Arduino Micro Writing and Reading Digital Data * PWM and Analog Input * Working with I2C * Working with SPI * Accessing EEPROM * Arduino Networking * Keyboard and Mouse HID

Arduino Nano 33 IoT Development Workshop

Arduino Programming in 24 Hours, Sams Teach Yourself

Internet of Things and Its Applications

Beginning Arduino

Intel Galileo Networking Cookbook

Beginning Sensor Networks with Arduino and Raspberry Pi teaches you how to build sensor networks with Arduino, Raspberry Pi, and XBee radio modules, and even shows you how to turn your Raspberry Pi into a MySQL database server to store your sensor data! First you'll learn about the different types of sensors and sensor networks, including how to build a simple XBee network. Then you'll walk through building an Arduino-based temperature sensor and data collector, followed by building a Raspberry Pi-based sensor node. Next you'll learn different ways to store sensor data, including writing to an SD card, sending data to the cloud, and setting up a Raspberry Pi MySQL server to host your data. You even learn how to connect to and interact with a MySQL database server directly from an Arduino! Finally you'll learn how to put it all together by connecting your Arduino sensor node to your new Raspberry Pi database server. If you want to see how well Arduino and Raspberry Pi can get along, especially to create a sensor network, then Beginning Sensor Networks with Arduino and Raspberry Pi is just the book you need.

Microcontrollers like Arduino provide a great introduction to physical computing, allowing you to design: environment sensors and controls; visual and auditory alerts based on input; and devices comprising the Internet of Things. In Arduino Succinctly, author Marko Švaljek explains the fundamentals of the Arduino Uno board and how it interacts with common components. Table of Contents Introduction and Getting Started Building Circuits with LEDs Working with Buttons Using Buzzers Measuring Environment Conditions Detecting Objects Networking Conclusion

The Internet of Mechanical Things

Open-Source Electronics Platforms

Programming Interactivity

Arduino and Genuino MKR1000 Development Workshop

Windows 10 for the Internet of Things