

IoT Raspberry Pi Course Details B M Embedded

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Introduction to IoT with Machine Learning and Image Processing using Raspberry Pi
Internet of Things Programming Projects

IoT Raspberry Pi Course Details B M Embedded

OMB No. 3484198536957 edited by

MADELINE HINTON

RASPBERRY PI 3 PROJECTS FOR JAVA PROGRAMMERS

"O'Reilly Media, Inc."

A practical project-based guide to help you build and control your IoT projects Key FeaturesLeverage the full potential of IoT with the combination of Raspberry Pi 3 and PythonBuild complex Python-based applications with IoTWork on various IoT projects and understand the basics of electronicsBook Description The Internet of Things (IOT) has managed to attract the attention of researchers and tech enthusiasts, since it powerfully combines classical networks with instruments and devices. In Internet of Things Programming Projects, we unleash the power of Raspberry Pi and Python to create engaging projects. In the first part of the book, you'll be introduced to the Raspberry Pi, learn how to set it up, and then jump right into Python programming. Then, you'll dive into real-world computing by creating a "Hello World" app using flash LEDs. As you make your way through the chapters, you'll go back to an age when analog needle meters ruled the world of data display. You'll learn to retrieve weather data from a web service and display it on an analog needle meter, and build a home security system using the Raspberry Pi. The next project has a modern twist, where we employ the Raspberry Pi to send a signal to a web service that will send you a text when someone is at the door. In the final project, you take what you've learned from the previous two projects and create an IoT robot car that you can use to monitor what your pets are up to when you are away. By the end of this book, you will be well versed in almost every possible way to make your IoT projects stand out. What you will learnInstall and set up a Raspberry Pi for IoT developmentLearn how to use a servo motor as an analog needle meter to read dataBuild a home security dashboard using an infrared motion detectorCommunicate with a web service that sends you a message when the doorbell ringsReceive data and display it with an actuator connected to the Raspberry PiBuild an IoT robot car that is controlled through the internetWho this book is for Internet of Things Programming Projects is for Python developers and programmers who are interested in building their own IoT applications and IoT-based projects. It is also targeted at IoT programmers and developers who are looking to build exciting projects with Python.

[Rust for the IoT](#) Springer Nature

Master the command line and Raspbian Linux as well as the physical connections of the Pi. With this book you'll develop skills applicable to other real world applications in both hardware and software development all while working on simple and fun IoT projects that you can do yourself. You'll learn to build programs on the top of Raspbian OS in Raspberry Pi boards. Start by using Raspbian shells to develop programs. Then follow projects and samples step-by-step to get new experiences in Raspbian OS development. You'll also learn the Wolfram Language and Mathematica, Scratch, IoT programs and IoT middleware, Node-RED, Interactive Data Visualization with Jupyter Notebook, and more. There are many features in Raspbian OS and on Raspberry Pi boards perfect for building an IoT program to suite various scenarios. The GPIO pins on your Raspberry Pi allow it to scale further to accomplish all kinds of projects and tasks. Raspbian OS Programming with the Raspberry Pi is your pathway to exploring all of this. What You'll Learn Discover the basics of programming in the Raspbian OS environment Work with the Raspbian Commandline Develop programs with the Wolfram Language and Mathematica Who This Book Is For Students and hobbyists interested in programming on Raspbian OS with Raspberry Pi boards.

[How To Learn Raspberry Pi](#) John Wiley & Sons

This book helps you to get started with Windows 10 IoT Core for Raspberry Pi 3 board. The following is highlight topic of this book: * Introduction to Raspberry Pi 3 and Windows 10 * Deploying Windows IoT Core on Raspberry Pi 3 * Running and Configuring Windows 10 IoT Core * Hello World - LED Blinking * Raspberry Pi GPIO Programming * Working with I2C/TWI Protocol * Working with SPI Protocol * Working with UART

[Learning Computer Architecture with Raspberry Pi](#) CRC Press

Get familiar with all the concepts related to Raspberry Pi and MQTT, build innovative IoT projects, and discover how to scale these projects to the next level Key FeaturesLearn some of the most popular tools used in IoT - Raspberry Pi, MQTT, ESP8266 and moreBuild exciting projects such as an IoT weather station and a smart switch boardDiscover the advantages of taking your MQTT broker globalBook Description The future of IoT has the potential to be limitless. Wouldn't it be great if you could add it to your own technological stacks? But where to start? With the basics, of course. In this book, you will start by learning about the most popular hardware and communication protocol, Raspberry Pi and MQTT. You will see how to use them together by setting up your own MQTT server on Raspberry Pi and understand how it works. This book explores MQTT in detail, including the clients and devices that you can connect to your server. You will discover two very popular IoT

development boards among project developers: the ESP8266 and ESP32 development boards. Then, you will learn how to build interactive dashboards on your Pi and monitor your client devices. The book also shows you how to build a dashboard using another popular software - Node-RED. You will be able to put your skills to the test by creating two full-scale projects. That's not all: you will also learn how to host your own MQTT server on a virtual cloud service. Finally, you will be guided on how to move forward from here, what technologies to learn, and some project recommendations to polish or test your knowledge. By the end of this book, you will be able to build meaningful projects using Raspberry Pi and MQTT and create dashboards for your projects on Node-RED. What you will learnConfigure and use a Raspberry Pi for IoT projectsImplement the MQTT communication protocol for projectsUnderstand how to set up the NodeMCU and ESP32 boards as MQTT clientsControl a NodeMCU board through a Node-RED dashboard hosted on Raspberry PiGet LAMP server, Home Assistant, and MariaDB on the Raspberry PiSet up an online MQTT broker on a cloud service or enterprise service provider platformBuild full-scale, end-to-end prototype projectsWho this book is for This book is for students who are interested in IoT and want to build projects using the available developer hardware. Educators who want to introduce a course on IoT into their curriculum, technology enthusiasts, and IoT developers who are just getting started will also benefit from this book. No prior knowledge about the two main topics that the book covers is required - Raspberry Pi and MQTT. A basic understanding of what IoT is will also be useful but not mandatory.

[Learn IoT Programming Using Node-RED](#) Packt Publishing Ltd

IOT (Internet Of Things) IOT Architecture - Raspberry Pi - Introduction & Installation Arduino vs Raspberry Pi - Raspberry Pi + Windows 10 IoT Core IOT kit.What is the IoT? Everything you need to know about the Internet of Things right nowThe Internet of Things, or IoT, refers to the billions of physical devices around the world that are now connected to the internet, all collecting and sharing data. Thanks to the arrival of super-cheap computer chips and the ubiquity of wireless networks, it's possible to turn anything, from something as small as a pill to something as big as an aeroplane, into a part of the IoT. Connecting up all these different objects and adding sensors to them adds a level of digital intelligence to devices that would be otherwise dumb, enabling them to communicate real-time data without involving a human being. The Internet of Things is making the fabric of the world around us more smarter and more responsive, merging the digital and physical universes.What is the history of the Internet of Things?The idea of adding sensors and intelligence to basic objects was discussed throughout the 1980s and 1990s (and there are arguably some much earlier ancestors), but apart from some early projects -- including an internet-connected vending machine -- progress was slow simply because the technology wasn't ready. Chips were too big and bulky and there was no way for objects to communicate effectively.Processors that were cheap and power-frugal enough to be all but disposable were needed before it finally became cost-effective to connect up billions of devices. The adoption of RFID tags -- low-power chips that can communicate wirelessly solved some of this issue, along with the increasing availability of broadband internet and cellular and wireless networking. The adoption of IPv6 which, among other things, should provide enough IP addresses for every device the world (or indeed this galaxy) is ever likely to need was also a necessary step for the IoT to scale. Kevin Ashton coined the phrase 'Internet of Things' in 1999, although it took at least another decade for the technology to catch up with the vision.IoT makes once "dumb" devices "smarter" by giving them the ability to send data over the internet, allowing the device to communicate with people and other IoT-enabled things.The connected "smart home" is a good example of IoT in action. Internet-enabled thermostats, doorbells, smoke detectors and security alarms create a connected hub where data is shared between physical devices and users can remotely control the "things" in that hub (i.e., adjusting temperature settings, unlocking doors, etc.) via a mobile app or website. Far from being restricted to just the home, the Internet of Things can be found in an array of devices, industries and settings. From smart blackboards in school classrooms to medical devices that can detect signs of Parkinson's disease, IoT is rapidly making the world smarter by connecting the physical and the digital. How does the IoT work?The "things" that make up the IoT can be anything from a wearable fitness trackers to an autonomous vehicle. No matter what function they serve for users, these devices must have the following components for them to properly operate as parts of their respective IoT systems.Sensors. Data is first collected from the environment for the IoT system to begin processing. It is collected by sensors in devices that can measure observable occurrences or changes in the environment. The kind of data being measured by the device depends on its function: It can be a person's pulse in the case of a fitness tracker or the distance of the nearest object in that of an autonomous vehicle.

[Practical Python Programming for IoT](#) McGraw Hill Professional

Program edge devices by learning low-code programming and essentials of IoT systems. KEY FEATURES ● In-depth practical demonstration of the IoT architecture with numerous examples. ● Includes graphical illustrations and uses of popular full-stack tools. ● Access to hardware components and software packages to build powerful IoT systems. DESCRIPTION Learn IoT Programming with Node-RED is an excellent source of practical knowledge for developing a

successful Internet of Things system, starting with the very first step of programming a Raspberry Pi, and using numerous open-source software development tools. To begin, the book will provide you with a practical experience of visual programming, fundamentals of Node-RED, and the architecture of an Internet of Things system. The book covers data collecting capabilities and the development of real-time streaming functionalities. The book describes how to set up an Internet of Things infrastructure, manage software development, and integrate physical devices. The book provides IoT projects based on temperature and humidity data recorded as time series. It teaches you how to design the software using a simulated model of the hardware and use the same code to execute it in the actual hardware. Node-RED, Pusher, InfluxDB, and Grafana are some of the professional tools you will learn in this book. After reading the book, you will gain the knowledge to create your own applications that will be connected to the physical environment by means of a range of sensors.

WHAT YOU WILL LEARN

- Create IoT systems with NodeRED visual programming.
- Learn to transfer data from IoT devices to machines for analysis using Pusher, a free platform.
- Store time-series data streams to InfluxDB.
- Use NodeRED to process data and execute statistical calculations on the remote machine.
- Create user-friendly Grafana dashboards for environmental monitoring.

WHO THIS BOOK IS FOR IoT engineers, roboticists, and embedded system programmers who are interested in learning low-code development and programming hardware devices may benefit from this book. Prior knowledge of Linux and Raspberry Pi may be helpful.

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1. Introduction to IoT Applications and Their Software Architecture
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PROGRAMMING THE INTERNET OF THINGS

Packt Publishing Ltd

The Raspberry Pi makes an ideal match for the Internet of Things. To put it to good use in IoT you need two areas of expertise, electronics and programming, and this presents a barrier to getting started. However, there is an overlooked route that can provide a shortcut. Pi OS, the Raspberry Pi's operating system, is Linux-based and Linux drivers are available for many off-the-shelf IoT devices. These provide a very easy-to-use, high-level, way of working. The problem that this book solves is that there is very little documentation to help you get started. Throughout this book you will find a practical approach to understanding electronic circuits and datasheets and translating this to code, specifically using Python. Python is an excellent language for learning about the IoT or physical computing. It might not be as fast as C, but it is much easier to use for complex data processing. The emphasis in this book is on understanding how things work so that you can apply your new knowledge to your own projects. You can use any Python development system that you know, but the programs in the book have been developed using Visual Studio Code and its remote development facilities. The first IoT program anyone writes is "Blinky" to flash an LED and this book is no exception, but it might not be quite what you expect. Instead of using a GPIO line, it uses the Linux LED driver - no hardware and no fuss. The GPIO isn't left out, however, as the next three chapters focus on its use via the new GPIO character driver, which replaces the old and very common sysfs GPIO driver. This is the way to do modern GPIO. A key component in any look at Linux and its relationship to hardware is the relatively new Device Tree. While most accounts of this resource are aimed at device driver writers, this one is aimed at device driver users and to this end we look at several devices, including the DHT22 temperature and humidity sensor. After a brief detour into some basic electronics, we see how Pulse Width Modulation is supported via a driver. From here we tackle the two standard buses, I2C and SPI, first going through the basics and then looking at the two attempts to impose a higher organization, the hardware monitoring system, Hwmon, and Industrial I/O, IIO. The third standard bus, although generally not supported in hardware, is the 1-Wire bus. This is covered in detail and even includes an introduction to using Netlink, which uses the sockets API to send messages to and from the kernel to access the driver. The final chapter takes things to the next level and considers creating your own custom overlays by writing fragments to the device tree. This is the second title jointly authored by Harry Fairhead and Mike James and can be seen as the alternative approach to that outlined in Raspberry Pi IoT In Python Using GPIO Zero. For both books, Harry brings his expertise in electronics and the IoT and Mike contributes the Python code. Harry Fairhead is the author of other IoT-related titles including Raspberry Pi IoT in C, Second Edition; Micro: bit IoT in C, Second Edition; Applying C For The IoT With Linux and Fundamental C: Getting Closer To The Machine. Mike James is the author of Programmer's Python: Everything is an Object and other programming and computer science titles in the I Programmer Library.

Raspberry Pi Technology Udayakumar.G.Kulkarni

Learn how to program the Internet of Things with this hands-on guide. By breaking down IoT programming complexities in step-by-step, building-block fashion, author and educator Andy King shows you how to design and build your own full-stack, end-to-end IoT solution--from device to cloud. This practical book walks you through tooling, development environment setup, solution design, and implementation. You'll learn how a typical IoT ecosystem works, as well as how to tackle integration challenges that crop up when implementing your own IoT solution. Whether you're an engineering student learning the basics of the IoT, a tech-savvy executive looking to better understand the nuances of IoT technology stacks, or a programmer building your own smart house solution, this practical book will help you get started. Design an end-to-end solution that implements an IoT use case Set up an IoT-centric development and testing environment Organize your software design by creating abstractions in Python and Java Use MQTT, CoAP, and other protocols to connect IoT devices and services Create a custom JSON-based data format that's consumable across a range of platforms and services Use cloud services to support your IoT ecosystem and provide business value for stakeholders

Learning Internet of Things Packt Pub Limited

End to end solutions for IoT enthusiasts and web developers About This Book Leverage the capability of IoT with the combination of Raspberry Pi 3 and JavaScript (ES5/ES6) Develop a health monitoring device along with some cool projects like Smart Agriculture & Raspberry Pi 3 based surveillance. A practical book which will help you build Mobile/Web/Desktop apps that will show how to manage and monitor data from sensors and actuators in real time. Who This Book Is For This book targets IoT enthusiasts and web developers who would like to build IoT-based applications with Raspberry Pi, Arduino and JavaScript. Some knowledge about electronics and familiarity with programming concepts (JavaScript - ES5/ES6) is expected. What You Will Learn Integrate sensors and actuators with the cloud and control them for your Smart Weather Station. Develop your very own Amazon Alexa integrating with your IoT solution Define custom rules and execute jobs on certain data events using IFTTT Build a simple surveillance solutions using Amazon Rekognition & Raspberry Pi 3 Design a fall detection system and build a notification system for it. Use Amazon Rekognition for face detection and face recognition in your Surveillance project In Detail In this world of technology upgrades, IoT is currently leading with its promise to make the world a more smarter and efficient place. This book will show you how to build simple IoT solutions that will help you to understand how this technology works. We would not only explore the IoT solution stack, but we will also see how to

do it with the world's most misunderstood programming language - JavaScript. Using Raspberry Pi 3 and JavaScript (ES5/ES6) as the base to build all the projects, you will begin with learning about the fundamentals of IoT and then build a standard framework for developing all the applications covered in this book. You will then move on to build a weather station with temperature, humidity and moisture sensors and further integrate Alexa with it. Further, you will build a smart wearable for understanding the concept of fall detection. You will then extend it with the 'If This Then That' (IFTTT) rules engine to send an email on fall detection. Finally, you will be working with the Raspberry Pi 3 camera module and surveillance with a bit of facial detection using Amazon Rekognition platform. At the end of the book, you will not only be able to build standalone exciting IoT applications but also learn how you can extend your projects to another level. Style and Approach This book will follow a project based approach where each chapter will teach the readers to build a standalone project. It will not only guide you to build exciting projects but will also teach you to extend your project to another level.

Mastering IOT BPB Publications

Learn the art of building enticing projects by unleashing the potential of Raspberry Pi 3 using Java About This Book Explore the small yet powerful mini computer in order to run java applications Leverage Java libraries to build exciting projects on home automation, IoT, and Robotics by leveraging Java libraries Get acquainted with connecting electronic sensors to your Raspberry Pi 3 using Java APIs. Who This Book Is For The book is aimed at Java programmers who are eager to get their hands-on Raspberry Pi and build interesting projects using java. They have a very basic knowledge of Raspberry Pi. What You Will Learn Use presence detection using the integrated bluetooth chip Automatic light switch using presence detection Use a centralized IoT service to publish data using RPC Control a robot by driving motors using PWM Create a small web service capable of performing actions on the Raspberry Pi and supply readings Image capture using Java together with the OpenCV framework In Detail Raspberry Pi is a small, low cost and yet very powerful development platform. It is used to interact with attached electronics by the use of it's GPIO pins for multiple use cases, mainly Home Automation and Robotics. Our book is a project-based guide that will show you how to utilize the Raspberry Pi's GPIO with Java and how you can leverage this utilization with your knowledge of Java. You will start with installing and setting up the necessary hardware to create a seamless development platform. You will then straightaway start by building a project that will utilize light for presence detection. Next, you will program the application, capable of handling real time data using MQTT and utilize RPC to publish data to adafruit.io. Further, you will build a wireless robot on top of the zuma chassis with the Raspberry Pi as the main controller. Lastly, you will end the book with advanced projects that will help you to create a multi-purpose IoT controller along with building a security camera that will perform image capture and recognize faces with the help of notifications. By the end of the book, you will be able to build your own real world usable projects not limited to Home Automation, IoT and/or Robotics utilizing logic, user and web interfaces. Style and approach The book will contain projects that ensure a java programmer gets started with building interesting projects using the small yet powerful Raspberry Pi 3. We will start with brushing up your Raspberry Pi skills followed by building 5-6 projects

Mastering Internet of Things Apress

A valuable guide for new and experienced readers, featuring the complex and massive world of IoT and IoT-based solutions.

Beginning IoT Projects Cambridge University Press

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

Raspberry Pi IoT In C Using Linux Drivers Springer Nature

Leverage Python and Raspberry Pi to create complex IoT applications capable of creating and detecting movement and measuring distance, light, and a host of other environmental conditions Key Features Learn the fundamentals of electronics and how to integrate them with a Raspberry Pi Understand how to build RESTful APIs, WebSocket APIs, and MQTT-based applications Explore alternative approaches to structuring IoT applications with Python Book Description The age of connected devices is here, be it fitness bands or smart homes. It's now more important than ever to understand how hardware components interact with the internet to collect and analyze user data. The Internet of Things (IoT), combined with the popular open source language Python, can be used to build powerful and intelligent IoT systems with intuitive interfaces. This book consists of three parts, with the first focusing on the "Internet" component of IoT. You'll get to grips with end-to-end IoT app development to control an LED over the internet, before learning how to build RESTful APIs, WebSocket APIs, and MQTT services in Python. The second part delves into the fundamentals behind electronics and GPIO interfacing. As you progress to the last part, you'll focus on the "Things" aspect of IoT, where you will learn how to connect and control a range of electronic sensors and actuators using Python. You'll also explore a variety of topics, such as motor control, ultrasonic sensors, and temperature measurement. Finally, you'll get up to speed with advanced IoT programming techniques in Python, integrate with IoT visualization and automation platforms, and build a comprehensive IoT project. By the end of this book, you'll be well-versed with IoT development and have the knowledge you need to build sophisticated IoT systems using Python. What you will learn Understand electronic interfacing with Raspberry Pi from scratch Gain knowledge of building sensor and actuator electronic circuits Structure your code in Python using Async IO, pub/sub models, and more Automate real-world IoT projects using sensor and actuator integration Integrate electronics with ThingSpeak and IFTTT to enable automation Build and use RESTful APIs, WebSockets, and MQTT with sensors and actuators Set up a Raspberry Pi and Python development environment for IoT projects Who this book is for This IoT Python book is for application developers, IoT professionals, or anyone interested in building IoT applications using the Python programming language. It will also be particularly helpful for mid to senior-level software engineers who are experienced in desktop, web, and mobile development, but have little to no experience of electronics, physical computing, and IoT.

IoT BASED PROJECTS

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Augment your IoT skills with the help of engaging and enlightening tutorials designed for Raspberry Pi 3 Key Features Design and implement state-of-the-art solutions for the Internet of Things Build complex projects using motions detectors, controllers, sensors, and Raspberry Pi 3 A hands-on guide that provides interoperable solutions for sensors, actuators, and controllers Book Description The Internet of Things (IoT) is the fastest growing technology market. Industries are embracing IoT technologies to improve operational expenses, product life, and people's well-being. Mastering Internet of Things starts by presenting IoT fundamentals and the smart city. You will learn the important technologies and protocols that are used for the Internet of Things, their features, corresponding security implications, and practical examples on how to use them. This book focuses on creating applications and services for the Internet of Things. Further, you will learn to create applications and services for the Internet of Things. You will be discover various interesting projects

and understand how to publish sensor data, control devices, and react to asynchronous events using the XMPP protocol. The book also introduces chat, to interact with your devices. You will learn how to automate your tasks by using Internet of Things Service Platforms as the base for an application. You will understand the subject of privacy, requirements they should be familiar with, and how to avoid violating any of the important new regulations being introduced. At the end of the book, you will have mastered creating open, interoperable and secure networks of things, protecting the privacy and integrity of your users and their information. What you will learn Create your own project, run and debug it Master different communication patterns using the MQTT, HTTP, CoAP, LWM2M and XMPP protocols Build trust-based ad hoc networks for open, secure and interoperable communication Explore the IoT Service Platform Manage the entire product life cycle of devices Understand and set up the security and privacy features required for your system Master interoperability, and how it is solved in the realms of HTTP, CoAP, LWM2M and XMPP Who this book is for If you're a developer or electronic engineer and are curious about the Internet of Things, this is the book for you. With only a rudimentary understanding of electronics and Raspberry Pi 3, and some programming experience using managed code, such as C# or Java, you will be taught to develop state-of-the-art solutions for the Internet of Things.

Introduction to IoT with Machine Learning and Image Processing using Raspberry Pi Apress

This book provides a platform to understand Internet of things with Raspberry Pi and the basic knowledge of the programming and interfacing of the devices and designed systems. It broadly covers introduction to Internet of Things and enabling technologies, interfacing with Raspberry Pi and Arduino and interfacing with Raspberry Pi GPIO. Internet of Things with Raspberry pi and Arduino is aimed at senior undergraduate, graduate students and professionals in electrical engineering, computer engineering including robotics.

Internet of Things Programming Projects I/O Press

Unleash the power of the Raspberry Pi 3 board to create interesting IoT projects Key Features Learn how to interface various sensors and actuators with the Raspberry Pi 3 and send this data to the cloud. Explore the possibilities offered by the IoT by using the Raspberry Pi to upload measurements to Google Docs. A practical guide that will help you create a Raspberry Pi robot using IoT modules. Book Description This book is designed to introduce you to IoT and Raspberry Pi 3. It will help you create interesting projects, such as setting up a weather station and measuring temperature and humidity using sensors; it will also show you how to send sensor data to cloud for visualization in real-time. Then we shift our focus to leveraging IoT for accomplishing complex tasks, such as facial recognition using the Raspberry Pi camera module, AWS Rekognition, and the AWS S3 service. Furthermore, you will master security aspects by building a security surveillance system to protect your premises from intruders using Raspberry Pi, a camera, motion sensors, and AWS Cloud. We'll also create a real-world project by building a Wi-Fi – controlled robot car with Raspberry Pi using a motor driver circuit, DC motor, and a web application. This book is a must-have as it provides a practical overview of IoT's existing architectures, communication protocols, and security threats at the software and hardware levels—security being the most important aspect of IoT. What you will learn Understand the concept of IoT and get familiar with the features of Raspberry Pi Learn to integrate sensors and actuators with the Raspberry Pi Communicate with cloud and Raspberry using communication protocols such as HTTP and MQTT Build DIY projects using Raspberry Pi, JavaScript/node.js and cloud (AWS) Explore the best practices to ensure the security of your connected devices Who this book is for If you're a developer or electronics engineer and are curious about the Internet of Things, then this is the book for you. With only a rudimentary understanding of electronics, the Raspberry Pi, or similar credit-card sized computers, and some programming experience, you will be taught to develop state-of-the-art solutions for the Internet of Things in an instant.

Defending IoT Infrastructures with the Raspberry Pi Packt Publishing Ltd

Leverage your Arduino skills in the Raspberry Pi world and see how to cross the two platforms into sophisticated programs. The Arduino and Raspberry Pi communities overlap more than you might think. Arduinos can be expanded to have network capabilities with a variety of “shields,” all of which increase the cost and complexity of the system. By contrast, Raspberry Pis all run Linux, which is a very network-competent platform. The newest Pi, the Raspberry Pi Zero W, is WiFi and Bluetooth capable, and costs around \$10 U.S. For network enabled gadgets, it makes far more sense to cross to the Raspberry Pi platform, if only someone would make it easy to do. That's what this book is about. You'll learn some survival level Linux system administration, so you know how to set the machine up and how to establish at least minimal security for your gadget. You'll set up and learn the Geany IDE on your Pi, which is fairly similar to the Arduino IDE. Where the two platforms overlap the most is the GPIO system. You'll see that several projects use and explain the WiringPi system. This is is deliberately similar to the Arduino's 'Wiring' functionality, which is how sketches interact with GPIO pins. You'll learn the differences between the GPIO pins of the two devices, and how the Pi has some limitations on those pins that the Arduino does not. As a final project, in an effort to escape some of those limitations, you'll attach an AtMEGA 328P to the Raspberry Pi and configure it as a real, 8MHz Arduino with the Arduino IDE running on the Pi, and learn how to have the two platforms communicate, giving you the best of both worlds. What You'll Learn Establish security with Linux system administration Set up the Apache webserver Write CGI programs so other computers

can connect to your Pi and pull data in from it. Use C/C++ from Arduino sketches to write programs for the Pi Who This Book Is For The Arduino user who's been through all the tutorials and is comfortable writing sketches and connecting hardware to their Arduino.

Raspberry Pi and Visual Basic Packt Publishing Ltd

Use your Raspberry Pi to get smart about computing fundamentals In the 1980s, the tech revolution was kickstarted by a flood of relatively inexpensive, highly programmable computers like the Commodore. Now, a second revolution in computing is beginning with the Raspberry Pi. Learning Computer Architecture with the Raspberry Pi is the premier guide to understanding the components of the most exciting tech product available. Thanks to this book, every Raspberry Pi owner can understand how the computer works and how to access all of its hardware and software capabilities. Now, students, hackers, and casual users alike can discover how computers work with Learning Computer Architecture with the Raspberry Pi. This book explains what each and every hardware component does, how they relate to one another, and how they correspond to the components of other computing systems. You'll also learn how programming works and how the operating system relates to the Raspberry Pi's physical components. Co-authored by Eben Upton, one of the creators of the Raspberry Pi, this is a companion volume to the Raspberry Pi User Guide An affordable solution for learning about computer system design considerations and experimenting with low-level programming Understandable descriptions of the functions of memory storage, Ethernet, cameras, processors, and more Gain knowledge of computer design and operation in general by exploring the basic structure of the Raspberry Pi The Raspberry Pi was created to bring forth a new generation of computer scientists, developers, and architects who understand the inner workings of the computers that have become essential to our daily lives. Learning Computer Architecture with the Raspberry Pi is your gateway to the world of computer system design.

Raspberry Pi and MQTT Essentials Packt Publishing Ltd

Apply a methodology and practical solutions for monitoring the behavior of the Internet of Things (IoT), industrial control systems (ICS), and other critical network devices with the inexpensive Raspberry Pi. With this book, you will master passive monitoring and detection of aberrant behavior, and learn how to generate early indications and warning of attacks targeting IoT, ICS, and other critical network resources. Defending IoT Infrastructures with the Raspberry Pi provides techniques and scripts for the discovery of dangerous data leakage events emanating from IoT devices. Using Raspbian Linux and specialized Python scripts, the book walks through the steps necessary to monitor, detect, and respond to attacks targeting IoT devices. There are several books that cover IoT, IoT security, Raspberry Pi, and Python separately, but this book is the first of its kind to put them all together. It takes a practical approach, providing an entry point and level playing field for a wide range of individuals, small companies, researchers, academics, students, and hobbyists to participate. What You'll Learn Create a secure, operational Raspberry Pi IoT sensor Configure and train the sensor using “normal” IoT behavior Establish analytics for detecting aberrant activities Generate real-time alerts to preempt attacks Identify and report data-leakage events originating from IoT devices Develop custom Python applications for cybersecurity Who This Book Is For Cybersecurity specialists, professors teaching in undergraduate and graduate programs in cybersecurity, students in cybersecurity and computer science programs, software developers and engineers developing new cybersecurity defenses, incident response teams, software developers and engineers in general, and hobbyists wanting to expand the application of Raspberry Pi into both IoT and cybersecurity

INTERNET OF THINGS WITH RASPBERRY PI AND ARDUINO

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Create your own IoT projects DESCRIPTION The book has been written in such a way that the concepts are explained in detail. It is entirely based on the practical experience of the authors while undergoing projects with students and industries, giving adequate emphasis on circuits and code examples. To make the topics more comprehensive, circuit diagrams, photographs and code samples are furnished extensively throughout the book. The book is conceptualized and written in such a way that the beginner readers will find it very easy to understand and implement the circuits and programs. The objective of this book is to discuss the various projects based on the Internet of Things (IoT). KEY FEATURES Comprehensive coverage of various aspects of IoT concepts Covers various Arduino boards and shields Simple language, crystal clear approach and straight forward comprehensible presentation Adopting user-friendly style for the explanation of circuits and examples Includes basics of Raspberry Pi and related projects WHAT WILL YOU LEARN Internet of Things, IoT-Based Smart Camera, IoT-Based Dust Sampler Learn to create ESP8266-Based Wireless Web Server and Air Pollution Meter Using Raspberry Pi, Smart Garage Door, Baggage Tracker, Smart Trash Collector, Car parking system, Home Automation Windows 10 on Raspberry and know to create Wireless Video Surveillance Robot Using Raspberry Pi WHO THIS BOOK IS FOR Students pursuing BE/BSc/ME/MSc/BTech/MTech in Computer Science, Electronics, Electrical. TABLE OF CONTENTS 1. ESP8266-Based Wireless Web Server 2. Air Pollution Meter Using Raspberry Pi 3. Smart Garage Door 4. Baggage Tracker 5. Smart Trash Collector 6. Car parking system 7. Home Automation 8. Environmental Parameter Monitoring 9. Intelligent System for the Blind 10. Sign to Speech Using the IoTs 11. Windows 10 on Raspberry 12. Wireless Video Surveillance Robot Using Raspberry Pi 13. IoT-Based Smart Camera 14. IoT-Based Dust Sampler and Air Quality Monitoring System

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