

Raspberry Pi Iot Projects

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[Raspberry Pi: Amazing Projects from Scratch](#) -

Ashwin Pajankar 2016-09-26

Explore the powers of Raspberry Pi and build your very own projects right out of the box About This Book From robotics to gaming, this Learning Path will unlock your creativity! Build your own impressive IoT projects to transform your home Featuring some of Packt's very best

Raspberry Pi content, this Learning Path doesn't just get you to your destination - it opens up a whole horizon of possibilities! Who This Book Is For Want new ideas for your next Raspberry Pi project? Got one lying around gathering dust? This Learning Path gets you straight into the creative dirty work of programming and playing with your pi. Whether your new to Raspberry Pi,

or an experienced maker, we think this Learning Path will inspire you and get your creative juices flowing! What You Will Learn Discover an awesome range of Raspberry Pi projects Bridge the gap between software and hardware through your Pi and find out how to make an operating system interact with cameras and other hardware Find out how to use your Raspberry Pi for gaming Secure your home with this tiny computer! Make science fiction a reality - build a walking robot In Detail Looking for inspiration for your next Raspberry Pi project? Not sure where to begin? This Learning Path is the perfect place to begin, providing you with an accessible yet comprehensive journey through Raspberry Pi. Following three modules, you'll soon be confident and prepared to get creative with your microcomputer. Raspberry Pi by Example is the first module in this Learning Path - and it does exactly what it says. It doesn't just teach, it shows you how to go and build some awesome Raspberry Pi projects immediately.

Build and play your own games with the Pi, build a complete Internet of Things home automation system that controls your house through Twitter... let your imagination run wild! In the next module we'll look in more depth at building a home security system. You'll be using some of the skills you developed through the first module, but apply them to something more intricate and impressive. Using a Linux based operating system as the foundations, you'll gradually build up an entire security infrastructure adding cameras, remote controls, and even intrusion alerts! In the final module, we'll take you into the world of Raspberry Pi robotics. By the end of it, you'll have built a biped robot that can interact with its environment! This Learning Path combines some of the best that Packt has to offer in one complete, curated package. It includes content from the following Packt products: Raspberry Pi By Example by Ashwin Pajankar and Arush Kakkar Building a Home Security System with Raspberry Pi by Matthew

Pole Raspberry Pi Robotics Essentials by Richard Grimmitt Style and approach It's not every day you build a home automation system. It's not every day you build a walking robot. But with this Learning Path you'll do just that. So get started and let this tiny computer expand your imagination.

Beginning Sensor Networks with XBee, Raspberry Pi, and Arduino - Charles Bell

2020-06-25

Build sensor networks with Python and MicroPython using XBee radio modules, Raspberry Pi, and Arduino boards. This revised and updated edition will put all of these together to form a sensor network, and show you how to turn your Raspberry Pi into a MySQL database server to store your sensor data! You'll review the different types of sensors and sensor networks, along with new technology, including how to build a simple XBee network. You'll then walk through building an sensor nodes on the XBee, Raspberry Pi, and Arduino, and also learn

how to collect data from multiple sensor nodes. The book also explores 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'll even learn how to connect to and interact with a MySQL database server directly from an Arduino! Finally you'll see how to put it all together by connecting your sensor nodes to your new Raspberry Pi database server. If you want to see how well XBee, Raspberry Pi, and Arduino can get along, especially to create a sensor network, then Beginning Sensor Networks with XBee, Raspberry Pi, and Arduino is just the book you need. What You'll LearnCode your sensor nodes with Python and MicroPython Work with new XBee 3 modulesHost your data on Raspberry PiGet started with MySQLCreate sophisticated sensor networks Who This Book Is For Those interested in building or experimenting with sensor networks and IoT solutions, including those with little or no

programming experience. A secondary target includes readers interested in using XBee modules with Raspberry Pi and Arduino, those interested in controlling XBee modules with MicroPython.

Raspberry Pi Cookbook - Simon Monk

2016-05-18

With millions of new users and several new models, the Raspberry Pi ecosystem continues to expand—along with a lot of new questions about the Pi’s capabilities. The second edition of this popular cookbook provides more than 240 hands-on recipes for running this tiny low-cost computer with Linux, programming it with Python, and hooking up sensors, motors, and other hardware—including Arduino and the Internet of Things. Prolific hacker and author Simon Monk also teaches basic principles to help you use new technologies with Raspberry Pi as its ecosystem continues to develop. This cookbook is ideal for programmers and hobbyists familiar with the Pi through resources,

including Getting Started with Raspberry Pi (O’Reilly). Python and other code examples from the book are available on GitHub. Set up your Raspberry Pi and connect to a network Work with its Linux-based operating system Program Raspberry Pi with Python Give your Pi "eyes" with computer vision Control hardware through the GPIO connector Use Raspberry Pi to run different types of motors Work with switches, keypads, and other digital inputs Use sensors to measure temperature, light, and distance Connect to IoT devices in various ways Create dynamic projects with Arduino

Raspbian OS Programming with the Raspberry Pi - Agus Kurniawan 2018-11-28

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.

[Raspberry Pi 3 Home Automation Projects](#) - Shantanu Bhadoria 2017-11-06

“With futuristic homes on the rise, learn to control and automate the living space with intriguing IoT projects.” About This Book Build exciting (six) end-to-end home automation projects with Raspberry Pi 3, Seamlessly communicate and control your existing devices and build your own home automation system, Automate tasks in your home through projects that are reliable and fun Who This Book Is For This book is for all those who are excited about building home automation systems with Raspberry Pi 3. It's also for electronic hobbyists and developers with some knowledge of electronics and programming. What You Will Learn Integrate different embedded microcontrollers and development boards like Arduino, ESP8266, Particle Photon and Raspberry Pi 3, creating real life solutions for day to day tasks and home automation Create

your own magic mirror that lights up with useful information as you walk up to it Create a system that intelligently decides when to water your garden and then goes ahead and waters it for you Use the Wi-fi enabled Adafruit ESP8266 Huzzah to create your own networked festive display lights Create a simple machine learning application and build a parking automation system using Raspberry Pi Learn how to work with AWS cloud services and connect your home automation to the cloud Learn how to work with Windows IoT in Raspberry Pi 3 and build your own Windows IoT Face Recognition door locking system In Detail Raspberry Pi 3 Home Automation Projects addresses the challenge of applying real-world projects to automate your house using Raspberry Pi 3 and Arduino. You will learn how to customize and program the Raspberry Pi 3 and Arduino-based boards in several home automation projects around your house, in order to develop home devices that will really rejuvenate your home. This book aims to

help you integrate different microcontrollers like Arduino, ESP8266 Wi-Fi module, Particle Photon and Raspberry Pi 3 into the real world, taking the best of these boards to develop some exciting home automation projects. You will be able to use these projects in everyday tasks, thus making life easier and comfortable. We will start with an interesting project creating a Raspberry Pi-Powered smart mirror and move on to Automated Gardening System, which will help you build a simple smart gardening system with plant-sensor devices and Arduino to keep your garden healthy with minimal effort. You will also learn to build projects such as CheerLights into a holiday display, a project to erase parking headaches with OpenCV and Raspberry Pi 3, create Netflix's "The Switch" for the living room and lock down your house like Fort Knox with a Windows IoT face recognition-based door lock system. By the end of the book, you will be able to build and automate the living space with intriguing IoT projects and bring a new degree

of interconnectivity to your world. Style and approach End to end home automation projects with Raspberry Pi 3.

[Java on the Raspberry Pi](#) - Greg Flurry

2021-09-28

Use Java to do whatever you want to do with the Raspberry Pi and the devices you need for your project. In theory, it should be possible, and even easy, to work with on the Pi. Unfortunately, reality is a bit different. This book features an extensive set of techniques that allow you to get close to bringing this theory to fruition. You'll review some limitations on using Java imposed by the Raspberry Pi and Raspberry Pi OS, and even Java itself, and examine which ones might apply to your projects and your devices. You'll also explore solutions to address the limitations and I look at efficient development of Java for the Raspberry Pi. Java on the Raspberry Pi shows how to interact with a range of devices useful in robotics and IOT, overcoming the hurdles in doing so. It also covers off-loading

work from the Raspberry Pi to an Arduino, leveraging its close-to-real time capabilities. What You'll Learn Develop with Java remotely using NetBeans Leverage available libraries to enable device interaction, and what to do if they don't work Implement multi-processing, using an Arduino as a co-processor Build sophisticated projects with multiple threads of execution, multiple processes, and even multiple systems Who This Book Is For Experienced programmers who appreciate the benefits of Java and world class tools for application development and want to build robotics or IOT projects using the low cost, low power, and portability of the Raspberry Pi.

IOT Based Simple and Efficient Projects Using Arduino, Raspberry Pi NAS Server, Node MCU ESP8266 and Cloud Platforms - Anbazhagan K
2019-08-22

This book is specially described about best IOT Projects with the simple explanation .From this book you can get lots of information about the

IOT and How the Projects are developed. You can get an information about the free cloud services and effective way to apply in your projects. you can get how to program and create a proper automation in IOT products, Which is helpful for the starting stage people but they must know about internet of things....You will know how to process the microchip controller and new software for working ...From this you can get lot of new ideas ...why are u waiting for ? and get it my friend we really proud to present this book for u ...Thank u

20 Easy Raspberry Pi Projects - Rui Santos
2018-04-17

Twenty projects using the Raspberry Pi, a tiny and affordable computer, for beginners looking to make cool things right away. Projects are explained with full-color visuals and simple step-by-step instructions. 20 Easy Raspberry Pi Projects is a beginner-friendly collection of electronics projects, perfectly suited for kids, parents, educators, and hobbyists looking to

level up their hardware skills. After a crash course to get you set up with your Raspberry Pi, you'll learn how to build interactive projects like a digital drum set; a WiFi controlled robot; a Pong game; an intruder alarm that sends email notifications; a gas leak detector; a weather forecaster; and IoT gadgets that control electronics around the house. Along the way, you'll work with core components like LCD screens, cameras, sensors, and even learn how to set up your own server. Each project provides step-by-step instructions, full-color photos and circuit diagrams, and the complete code to bring your build to life. If you're ready to hit the ground running and make something interesting, let 20 Easy Raspberry Pi Projects be your guide.

Rust for the IoT - Joseph Faisal Nusairat
2020-08-29

Get started programming Rust applications for the Internet of Things (IoT). This book is a programming skills migration book that teaches you the Rust programming techniques most

useful for IoT applications. You'll step through from server to board development in creating a set of IoT applications. In Rust for the IoT, you'll learn how to build a modern server side application using Rust on the backend. Then you'll use docker and Kubernetes to deploy these to a managed cloud. Finally you will use a Raspberry Pi with a SenseHat and Camera to capture the world around you and send that information to the cloud. While you will be able to follow along without any cloud or hardware, to make the most of it we recommend a few cloud pieces and hardware that is designed to integrate with the software in this book. After reading and using this book, you'll see how to apply Rust to the Internet of Things. What You Will Learn Create a modern Rust backend complete with handling eventual consistency and interacting via a GraphQL interface Use the Raspberry PI to serve as a cheap IoT device that one can easily deploy around the house Capture temperature, video, and use the interactive

joystick to interact with the software you've created Use OpenCV to perform facial detection from the PI's camera and save that information to the cloud. Create deployable helm charts for the cloud, and for the device create complete ISOs that allow you to easily deploy the Pi's OS + custom software Who This Book Is For You will need to have a basic understanding of cloud application development at a minimum and the basics of Rust coding. This book is for those interested in or working with the IoT and the Raspberry Pi who want to learn how Rust can work for them.

[Raspberry Pi Home Automation with Arduino - Second Edition](#) - Andrew K. Dennis 2015-02-25

If you are new to the Raspberry Pi, the Arduino, or home automation and wish to develop some amazing projects using these tools, then this book is for you. Any experience in using the Raspberry Pi would be an added advantage.

Intelligent IoT Projects in 7 Days - Agus Kurniawan 2017-09-11

Discover how to build your own Intelligent Internet of Things projects and bring a new degree of interconnectivity to your world. About This Book Build intelligent and unusual IoT projects in just 7 days, Create home automation, smart home, and robotic projects and allow your devices to do smart work Build IoT skills through enticing projects and leverage revolutionary computing hardware through the RPi and Arduino. Who This Book Is For If you're a developer, IoT enthusiast, or just someone curious about Internet of Things, then this book is for you. A basic understanding of electronic hardware, networking, and basic programming skills would do wonders. What You Will Learn Learn how to get started with intelligent IoT projects Explore various pattern recognition and machine learning algorithms to make IoT projects smarter. Make decisions on which devices to use based on the kind of project to build. Create a simple machine learning application and implement decision system

concepts Build a smart parking system using Arduino and Raspberry Pi Learn how to work with Amazon Echo and to build your own smart speaker machine Build multi-robot cooperation using swarm intelligence. In Detail Intelligent IoT Projects in 7 days is about creating smart IoT projects in just 7 days. This book will help you to overcome the challenge of analyzing data from physical devices. This book aims to help you put together some of the most exciting IoT projects in a short span of time. You'll be able to use these in achieving or automating everyday tasks—one project per day. We will start with a simple smart gardening system and move on to a smart parking system, and then we will make our own vending machine, a smart digital advertising dashboard, a smart speaker machine, an autonomous fire fighter robot, and finally look at a multi-robot cooperation using swarm intelligence Style and approach A clear step-by-step instruction guide to completing fully-fledged projects in just 7 days

Camera Projects Book - Dogan Ibrahim 2019

IoT based Projects - Dr. Rajesh Singh 2020-02-13

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
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- 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

Raspberry Pi Zero W Wireless Projects -

Vasilis Tzivaras 2017-08-28

Build DIY wireless projects using the Raspberry Pi Zero W board About This Book Explore the functionalities of the Raspberry Pi Zero W with exciting projects Master the wireless features (and extend the use cases) of this \$10 chip A project-based guide that will teach you to build simple yet exciting projects using the Raspberry Pi Zero W board Who This Book Is For If you are a hobbyist or an enthusiast and want to get your hands on the latest Raspberry Pi Zero W to build exciting wireless projects, then this book is for you. Some prior programming knowledge, with some experience in electronics, would be useful. What You Will Learn Set up a router and connect Raspberry Pi Zero W to the internet Create a

two-wheel mobile robot and control it from your Android device Build an automated home bot assistant device Host your personal website with the help of Raspberry Pi Zero W Connect Raspberry Pi Zero to speakers to play your favorite music Set up a web camera connected to the Raspberry Pi Zero W and add another security layer to your home automation In Detail The Raspberry Pi has always been the go-to, lightweight ARM-based computer. The recent launch of the Pi Zero W has not disappointed its audience with its \$10 release. "W" here stands for Wireless, denoting that the Raspberry Pi is solely focused on the recent trends for wireless tools and the relevant use cases. This is where our book—Raspberry Pi Zero W Wireless Projects—comes into its own. Each chapter will help you design and build a few DIY projects using the Raspberry Pi Zero W board. First, you will learn how to create a wireless decentralized chat service (client-client) using the Raspberry Pi's features?. Then you will make a simple two-

wheel mobile robot and control it via your Android device over your local Wi-Fi network. Further, you will use the board to design a home bot that can be connected to plenty of devices in your home. The next two projects build a simple web streaming security layer using a web camera and portable speakers that will adjust the playlist according to your mood. You will also build a home server to host files and websites using the board. Towards the end, you will create free Alexa voice recognition software and an FPV Pi Camera, which can be used to monitor a system, watch a movie, spy on something, remotely control a drone, and more. By the end of this book, you will have developed the skills required to build exciting and complex projects with Raspberry Pi Zero W. Style and approach A step-by-step guide that will help you design and create simple yet exciting projects using the Raspberry Pi Zero W board.

Internet of Things with Raspberry Pi 3 -
Maneesh Rao 2018-04-30

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.

Python All-in-One For Dummies - John C. Shovic 2021-03-29

The one-stop resource for all your Python queries
Powerful and flexible, Python is one of the most popular programming languages in the world. It's got all the right stuff for the software driving the cutting-edge of the development world—machine learning, robotics, artificial intelligence, data science, etc. The good news is that it's also pretty straightforward to learn, with a simplified syntax, natural-language flow, and an amazingly supportive user community. The latest edition of Python All-in-One For Dummies gives you an inside look at the exciting possibilities offered in the Python world and provides a springboard to launch yourself into

wherever you want your coding career to take you. These 7 straightforward and friendly mini-books assume the reader is a beginning programmer, and cover everything from the basic elements of Python code to introductions to the specific applications where you'll use it. Intended as a hands-on reference, the focus is on practice over theory, providing you with examples to follow as well as code for you to copy and start modifying in the "real world"—helping you get up and running in your area of interest almost right away. This means you'll be finishing off your first app or building and remote-controlling your own robot much faster than you can believe. Get a thorough grounding in the language basics Learn how the syntax is applied in high-profile industries Apply Python to projects in enterprise Find out how Python can get you into hot careers in AI, big data, and more Whether you're a newbie coder or just want to add Python to your magic box of tricks, this is the perfect, practical

introduction—and one you'll return to as you grow your career.

JavaScript Robotics - Backstop Media
2015-04-13

JavaScript Robotics is on the rise. Rick Waldron, the lead author of this book and creator of the Johnny-Five platform, is at the forefront of this movement. Johnny-Five is an open source JavaScript Arduino programming framework for robotics. This book brings together fifteen innovative programmers, each creating a unique Johnny-Five robot step-by-step, and offering tips and tricks along the way. Experience with JavaScript is a prerequisite.

Getting Started with Python for the Internet of Things - Tim Cox 2019-02-25

Getting Started with Python for the Internet of Things - Tim Cox 2019-02-26

Build clever, collaborative, and powerful automation systems with the Raspberry Pi and Python. Key Features Create your own Pi-Rover

Downloaded from wyoelks.org on by
guest

or Pi-Hexipod robots Develop practical applications in Python using Raspberry Pi Build your own Jarvis, a highly advanced computerized AI Book Description This Learning Path takes you on a journey in the world of robotics and teaches you all that you can achieve with Raspberry Pi and Python. It teaches you to harness the power of Python with the Raspberry Pi 3 and the Raspberry Pi zero to build superlative automation systems that can transform your business. You will learn to create text classifiers, predict sentiment in words, and develop applications with the Tkinter library. Things will get more interesting when you build a human face detection and recognition system and a home automation system in Python, where different appliances are controlled using the Raspberry Pi. With such diverse robotics projects, you'll grasp the basics of robotics and its functions, and understand the integration of robotics with the IoT environment. By the end of this Learning Path, you will have covered

everything from configuring a robotic controller, to creating a self-driven robotic vehicle using Python. Raspberry Pi 3 Cookbook for Python Programmers - Third Edition by Tim Cox, Dr. Steven Lawrence Fernandes Python Programming with Raspberry Pi by Sai Yamanoor, Srihari Yamanoor Python Robotics Projects by Prof. Diwakar Vaish What you will learn Build text classifiers and predict sentiment in words with the Tkinter library Develop human face detection and recognition systems Create a neural network module for optical character recognition Build a mobile robot using the Raspberry Pi as a controller Understand how to interface sensors, actuators, and LED displays work Apply machine learning techniques to your models Interface your robots with Bluetooth Who this book is for This Learning Path is specially designed for Python developers who want to take their skills to the next level by creating robots that can enhance people's lives. Familiarity with Python and electronics will aid

understanding the concepts in this Learning Path.

Practical Python Programming for IoT - Gary Smart 2020-11-12

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. 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.

Beginning IoT Projects - Charles Bell

2021-10-16

Experiment with building IoT projects without the demanding time or patience required to learn about electronics. This book thoroughly introduces readers of all ages to the world of IoT devices and electronics without getting bogged down by the overly technical aspects or being tied to a specific platform. You'll learn IoT, Arduino, Raspberry Pi from the ground up using the Qwiic and Grove components systems. The book begins with a brief overview of IoT followed by primers for the two most popular platforms; Arduino and Raspberry Pi. There is also a short tutorial on programming each host; Arduino C-like sketches and Python scripts respectfully. Thus, the book also helps you get started with your choice of platform. Next, you'll learn the basics for the Qwiic and Grove component systems. The rest of the book presents a number of projects organized into easy-to-follow chapters that details the goal for the project, the components used, a walk-

through of the code, and a challenge section that provides suggestions on how to improve or augment the project. Projects are presented for both the Arduino and Raspberry Pi where possible making each project as versatile as possible. What You'll Learn Write Arduino sketches Create Python scripts for the Raspberry Pi Build IoT projects with Arduino and Raspberry Pi Use the Qwiic and Grove component systems Join the electronics and IoT hobby world with almost no experience Host projects data in the cloud using ThingSpeak Who This Book Is For Those interested in building or experimenting with IoT solutions but have little or no experience working with electronics. This includes those with little or no programming experience. A secondary target would include readers interested in teaching the basics of working with Arduino and Raspberry Pi to others.

Practical Internet of Things with JavaScript -
Arvind Ravulavaru 2017-12-22

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 Recognition & 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.

Raspberry Pi with Java: Programming the Internet of Things (IoT) (Oracle Press) - Stephen Chin 2015-10-23

Use Raspberry Pi with Java to create innovative devices that power the internet of things!

Raspberry Pi with Java: Programming the Internet of Things (IoT) fills an important gap in knowledge between seasoned Java developers and embedded-hardware gurus, taking a project-based approach to skills development from which both hobbyists and professionals can learn. By starting with simple projects based on open-source libraries such as Pi4J, hobbyists can get immediate results without a significant investment in time or hardware. Later projects target simplified industrial use cases where professionals can start to apply their skills to practical problems in the fields of home automation, healthcare, and robotics. This progression prepares you to be an active participant in the IoT revolution that is reshaping our lives. For the hobbyist: Hardware used in projects is affordable and easily accessible Follows a project-based learning approach with a gradual learning curve Projects are based on open-source code repositories with commercial friendly licenses For the

professional computer engineer: Uses an industry-standard platform that allows for high performance, secure, production-ready applications Introduces Java SE Embedded for large devices and Java ME Embedded for small devices Code is portable to a wide variety of ARM and MIPS based platforms Provides practical skill development with advanced projects in the fields of home automation, healthcare, and robotics

Commercial and Industrial Internet of Things Applications with the Raspberry Pi -

Ioana Culic 2020-04-25

Use the Raspberry Pi and modern computing techniques to build industrial Internet of Things systems. Principles and theoretical aspects of IoT technologies combine with hands-on projects leading to detailed descriptions of several industrial IoT applications. This book presents real-life IoT applications based on the Raspberry Pi, beyond the relatively simplistic demos built for educational purposes or hobbyists. You'll

make the transition from tinkering with a couple of sensors and simple devices to building fully developed products for commercial use and industrial systems. You'll also work with sensors and actuators, web technologies used for communications in IoT networks, and the large-scale deployment of IoT software solutions. And see how to design these systems as well as maintain them long term. See the Raspberry Pi in a new light that highlights the true industrial potential of the device. Move beyond connecting an LED to the Raspberry Pi and making it blink to actually managing a network of IoT devices. What You'll Learn Design industrial and large scale professional Internet of Things systems Extend your basic IoT knowledge by building advanced products Learn how large scale IoT systems are deployed and maintained Who This Book Is For Advanced hobbyists who want to stretch their abilities into the professional sector. Also professional industrial engineers looking for low-cost solutions to basic IoT needs.

[Android Things Projects](#) - Francesco Azzola
2017-06-30

Develop smart Internet of things projects using Android Things. About This Book Learn to build promising IoT projects with Android Things Make the most out of hardware peripherals using standard Android APIs Build enticing projects on IoT, home automation, and robotics by leveraging Raspberry Pi 3 and Intel Edison Who This Book Is For This book is for Android enthusiasts, hobbyists, IoT experts, and Android developers who want to gain a deeper knowledge of Android Things. The main focus is on implementing IoT projects using Android Things. What You Will Learn Understand IoT ecosystem and the Android Things role See the Android Things framework: installation, environment, SDK, and APIs See how to effectively use sensors (GPIO and I2C Bus) Integrate Android Things with IoT cloud platforms Create practical IoT projects using Android Things Integrate Android Things with

other systems using standard IoT protocols Use Android Things in IoT projects In Detail Android Things makes developing connected embedded devices easy by providing the same Android development tools, best-in-class Android framework, and Google APIs that make developers successful on mobile. With this book, you will be able to take advantage of the new Android framework APIs to securely build projects using low-level components such as sensors, resistors, capacitors, and display controllers. This book will teach you all you need to know about working with Android Things through practical projects based on home automation, robotics, IoT, and so on. We'll teach you to make the most of the Android Things and build enticing projects such as a smart greenhouse that controls the climate and environment automatically. You'll also create an alarm system, integrate Android Things with IoT cloud platforms, and more. By the end of this book, you will know everything about Android

Things, and you'll have built some very cool projects using the latest technology that is driving the adoption of IoT. You will also have primed your mindset so that you can use your knowledge for profitable, practical projects. Style and approach This book is packed with fun-filled, end-to-end projects that you will be encouraged to experiment on the Android Things OS.

[Raspberry Pi Projects For Dummies](#) - Mike Cook
2015-07-13

Join the Raspberry revolution with these fun and easy Pi projects The Raspberry Pi has opened up a whole new world of innovation for everyone from hardware hackers and programmers to students, hobbyists, engineers, and beyond. Featuring a variety of hands-on projects, this easy-to-understand guide walks you through every step of the design process and will have you creating like a Raspberry Pi pro in no time. You'll learn how to prepare your workspace, assemble the necessary tools, work with test

equipment, and find your way around the Raspberry Pi before moving on to a series of fun, lively projects that brings some power to your plain ol' Pi. Introduces Raspberry Pi basics and gives you a solid understanding of all the essentials you'll need to take on your first project Includes an array of fun and useful projects that show you how to do everything from creating a magic light wand to enhancing your designs with Lego sensors, installing and writing games for the RISC OS, building a transistor tester, and more Provides an easy, hands-on approach to learning more about electronics, programming, and interaction design for Makers and innovators of all ages Bring the power of Pi to your next cool creation with Raspberry Pi Projects For Dummies! [Mastering Internet of Things](#) - Peter Waher 2018-03-28

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.

Learning AWS IoT - Agus Kurniawan 2018-01-29

Learn to use AWS IoT services to build your connected applications with the help of this comprehensive guide. Key Features

- Gets you started with AWS IoT and its functionalities
- Learn different modules of AWS IoT with practical use cases.
- Learn to secure your IoT communication

Book Description

The Internet of Things market increased a lot in the past few years and IoT development and its adoption have showed an upward trend. Analysis and predictions say that Enterprise IoT platforms are

the future of IoT. AWS IoT is currently leading the market with its wide range of device support SDKs and versatile management console. This book initially introduces you to the IoT platforms, and how it makes our IoT development easy. It then covers the complete AWS IoT Suite and how it can be used to develop secure communication between internet-connected things such as sensors, actuators, embedded devices, smart applications, and so on. The book also covers the various modules of AWS: AWS Greengrass, AWS device SDKs, AWS IoT Platform, AWS Button, AWS Management consoles, AWS-related CLI, and API references, all with practical use cases. Near the end, the book supplies security-related best practices to make bi-directional communication more secure. When you've finished this book, you'll be up-and-running with the AWS IoT Suite, and building IoT projects. What you will learn Implement AWS IoT on IoT projects Learn the technical capabilities of AWS IoT and IoT devices Create

IoT-based AWS IoT projects Choose IoT devices and AWS IoT platforms to use based on the kind of project you need to build Deploy AWS Greengrass and AWS Lambda Develop program for AWS IoT Button Visualize IoT AWS data Build predictive analytics using AWS IoT and AWS Machine Learning Who this book is for This book is for anyone who wants to get started with the AWS IoT Suite and implement it with practical use cases. This book acts as an extensive guide, on completion of which you will be in a position to start building IoT projects using AWS IoT platform and using cloud services for your projects.

Learning IoT with Python and Raspberry Pi - Elizabeth Horvath 2019-08-12

The Internet of Things: Do-It-Yourself at Home Projects for Arduino, Raspberry Pi and BeagleBone Black - Donald Norris 2015-01-30

Build and program projects that tap into the

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Internet of Things (IoT) using Arduino, Raspberry Pi, and BeagleBone Black! This innovative guide gets you started right away working with the most popular processing platforms, wireless communication technologies, the Cloud, and a variety of sensors. You'll learn how to take advantage of the utility and versatility of the IoT and connect devices and systems to the Internet using sensors. Each project features a list of the tools and components, how-to explanations with photos and illustrations, and complete programming code. All projects can be modified and expanded, so you can build on your skills. The Internet of Things: DIY Projects with Arduino, Raspberry Pi, and BeagleBone Black Covers the basics of Java, C#, Python, JavaScript, and other programming languages used in the projects Shows you how to use IBM's Net Beans IDE and the Eclipse IDE Explains how to set up small-scale networks to connect the projects to the Internet Includes essential tips for setting up and using a MySQL

database. The fun, DIY projects in the book include: Raspberry Pi home temperature measurements Raspberry Pi surveillance webcams Raspberry Pi home weather station Arduino garage door controller Arduino irrigation controller Arduino outdoor lighting controller Beaglebone message panel Beaglebone remote control SDR Machine-to-machine demonstration project

Raspberry Pi IoT Projects - John C. Shovic
2021

Build your own Internet of Things (IoT) projects for prototyping and proof-of-concept purposes. Updated for the Raspberry Pi 4 and other recent boards, this book contains the tools needed to build a prototype of your design, sense the environment, communicate with the Internet (over the Internet and Machine to Machine communications) and display the results. Raspberry Pi IoT Projects, 2nd Edition provides several IoT projects and designs shown from the start to the finish including an IoT

Heartbeat Monitor, an IoT Swarm, IoT Solar Powered Weather Station, an IoT iBeacon Application and a RFID (Radio Frequency Identification) IoT Inventory Tracking System. The software is presented as reusable libraries, primarily in Python and C with full source code available, making this version a valuable learning resource for classrooms and learning labs. You will: Create IOT projects with the Raspberry Pi Talk to sensors with the Raspberry Pi Use iBeacons with the IOT Raspberry Pi Communicate your IOT data to the Internet Build security into your IOT device.

[Beginning MicroPython with the Raspberry Pi Pico](#) - Charles Bell 2022-07-24

Program the Raspberry Pi Pico, the latest microcontroller board from raspberrypi.org, with MicroPython. This book will take you on a tour of the Raspberry Pi Pico, including how to get started using the microcontroller, seeing which alternative microcontrollers are available, and how to connect and run simple code examples.

You'll program example projects in MicroPython using Python on your PC as a learning platform. Then build your hardware skillset working with electronics and breadboard circuits. You'll implement example projects with all steps explained, including hardware connections and executing the project. Then apply them to real-world, approachable projects using the accessible Raspberry Pi Pico! The book shows how the cloud is used for IoT data and find out what popular cloud systems currently exist for IoT. Finally, you'll use ThingSpeak for hosting IoT data including connecting your Pico to the Internet. Beginning MicroPython with the Raspberry Pi Pico allows you to build up your skills to more advanced IoT projects and Cloud systems! What You Will Learn Build valuable programming skills with MicroPython Explore the Raspberry Pi Pico and similar boards Develop your own electronics and IOT projects Incorporate the Grove component system with the Raspberry Pi Pico Who This Book Is For

Beginners interested in learning to work with the Raspberry Pi Pico using MicroPython on microcontrollers with little to no experience in programming, hardware, or electronics. The book should also appeal to those who want to gain experience with building electronic solutions with microcontrollers.

Internet of Things Programming Projects -

Colin Dow 2018-10-31

A practical project-based guide to help you build and control your IoT projects

Key Features
Leverage the full potential of IoT with the combination of Raspberry Pi 3 and Python
Build complex Python-based applications with IoT
Work on various IoT projects and understand the basics of electronics

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.

Sensor Projects with Raspberry Pi -

Guillermo Guillen 2019-12-17

Start solving world issues by beginning small with simple Rasperry Pi projects. Using a free IoT server; tackle fundamental topics and concepts behind the Internet of Things. Image

processing and sensor topics aren't only applicable to the Raspberry Pi. The skills learned in this book can go own to other applications in mobile development and electrical engineering. Start by creating a system to detect movement through the use of a PIR motion sensor and a Raspberry Pi board. Then further your sensor systems by detecting more than simple motion. Use the MQ2 gas sensor and a Raspberry Pi board as a gas leak alarm system to detect dangerous explosive and fire hazards. Train your system to send the captured data to the remote server ThingSpeak. When a gas increase is detected beyond a limit, then a message is sent to your Twitter account. Having started with ThingSpeak, we'll go on to develop a weather station with your Raspberry Pi. Using the DHT11 (humidity and temperature sensor) and BMP085 (barometric pressure and temperature sensor) in conjunction with ThingSpeak and Twitter, you can receive realtime weather alerts from your own meterological system! Finally, expand your

skills into the popular machine learning world of digital image processing using OpenCV and a Pi. Make your own object classifiers and finally manipulate an object by means of an image in movement. This skillset has many applications, ranging from recognizing people or objects, to creating your own video surveillance system. With the skills developed in this book, you will have everything you need to work in IoT projects for the Pi. You can then expand your skills out further to develop mobile projects and delve into interactive systems such as those found in machine learning. What You'll Learn Work with ThingSpeak to receive Twitter alerts from your systems Cultivate skills in processing sensor inputs that are applicable to mobile and machine learning projects as well Incorporate sensors into projects to make devices that interact with more than just code Who This Book Is For Hobbyists and makers working robotics and Internet of Things areas will find this book a great resource for quick but expandable

projects. Electronics engineers and programmers who would like to expand their familiarity with basic sensor projects will also find this book helpful.

IoT Machine Learning Applications in Telecom, Energy, and Agriculture - Puneet Mathur 2020-05-09

Apply machine learning using the Internet of Things (IoT) in the agriculture, telecom, and energy domains with case studies. This book begins by covering how to set up the software and hardware components including the various sensors to implement the case studies in Python. The case study section starts with an examination of call drop with IoT in the telecoms industry, followed by a case study on energy audit and predictive maintenance for an industrial machine, and finally covers techniques to predict cash crop failure in agribusiness. The last section covers pitfalls to avoid while implementing machine learning and IoT in these domains. After reading this book, you will know

how IoT and machine learning are used in the example domains and have practical case studies to use and extend. You will be able to create enterprise-scale applications using Raspberry Pi 3 B+ and Arduino Mega 2560 with Python. What You Will Learn Implement machine learning with IoT and solve problems in the telecom, agriculture, and energy sectors with Python Set up and use industrial-grade IoT products, such as Modbus RS485 protocol devices, in practical scenarios Develop solutions for commercial-grade IoT or IIoT projects Implement case studies in machine learning with IoT from scratch Who This Book Is For Raspberry Pi and Arduino enthusiasts and data science and machine learning professionals.

Raspberry Pi 3 Projects for Java Programmers - Pradeeka Seneviratne 2017-05-31

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

[IoT System Design](#) - Alice James 2021-09-25

This book presents a step by step design approach to develop and implement an IoT system starting from sensor, interfacing to embedded processor, wireless communication, uploading measured data to cloud including data visualization along with machine learnings and artificial intelligence. The book will be extremely useful towards a hands-on approach of designing and fabricating an IoT system especially for upper undergraduate, master and PhD students, researchers, engineers and practitioners.

IoT Projects with Bluetooth Low Energy -

Madhur Bhargava 2017-08-31

Use the power of BLE to create exciting IoT

applications About This Book Build hands-on IoT projects using Bluetooth Low Energy and learn about Bluetooth 5 and its features. Build a health tracking system, and indoor navigation and warehouse weather monitoring projects using smart devices. Build on a theoretical foundation and create a practice-based understanding of Bluetooth Low Energy. Who This Book Is For If you're an application developer, a hardware enthusiast, or just curious about the Internet of Things and how to convert it into hands-on projects, then this book is for you. Having some knowledge of writing mobile applications will be advantageous. What You Will Learn Learn about the architecture and IoT uses of BLE, and in which domains it is being used the most Set up and learn about various development platforms (Android, iOS, Firebase, Raspberry Pi, Beacons, and GitHub) Create an Explorer App (Android/iOS) to diagnose a Fitness Tracker Design a Beacon with the Raspberry Pi and write an app to detect the

Beacon Write a mobile app to periodically poll the BLE tracking sensor Compose an app to read data periodically from temperature and humidity sensors Explore more applications of BLE with IoT Design projects for both Android and iOS mobile platforms In Detail Bluetooth Low Energy, or Bluetooth Smart, is Wireless Personal Area networking aimed at smart devices and IoT applications. BLE has been increasingly adopted by application developers and IoT enthusiasts to establish connections between smart devices. This book initially covers all the required aspects of BLE, before you start working on IoT projects. In the initial stages of the book, you will learn about the basic aspects of Bluetooth Low Energy—such as discovering devices, services, and characteristics—that will be helpful for advanced-level projects. This book will guide you through building hands-on projects using BLE and IoT. These projects include tracking health data, using a mobile App, and making this data available for health practitioners; Indoor

navigation; creating beacons using the Raspberry Pi; and warehouse weather Monitoring. This book also covers aspects of Bluetooth 5 (the latest release) and its effect on each of these projects. By the end of this book, you will have hands-on experience of using Bluetooth Low Energy to integrate with smart devices and IoT projects. Style and Approach A practical guide that will help you promote yourself into an expert by building and exploring practical applications of Bluetooth Low Energy.

Raspberry Pi Android Projects - Gokhan Kurt
2015-09-25

Create exciting projects by connecting the Raspberry Pi to your Android phone About This Book Manage most of the fundamental functions of Raspberry Pi from your Android phone Use the projects created in this book to develop even more exciting projects in the future A project-based learning experience to help you discover amazing ways to combine the power of Android and Raspberry Pi Who This Book Is For The

target audience for this book includes Raspberry Pi enthusiasts, hobbyists, and anyone who wants to create engaging projects with Android OS. Some knowledge of Android programming would be helpful. What You Will Learn Install the tools required on your Pi and Android to manage and administer the Pi from Android Share your files between different Android devices using the Pi as a server Set up the Pi to live-stream the camera in surveillance mode and customize Android to receive this content Turn your Pi into a media center and control it from your Android See your Android display on a large screen using Raspberry Pi Connect your car's dashboard to your Android device using Raspberry Pi In Detail Raspberry Pi is the credit card-sized, general purpose computer which has revolutionized portable technology. Android is an operating system that widely used in mobile phones today both on the high and low ends of the mobile phone market. However, there is little information about how to connect the two in

spite of how popular both of them are. Raspberry Pi Android Projects starts with simple projects that help you access the command prompt and the desktop environment of Raspberry Pi from the comfort of your Android phone or tablet. Then, you will be introduced to more complex projects that combine the strengths of the Pi and Android in amazing ways. These projects will teach you how to manage services on the Pi from Android, share files between Android devices using the Pi as a server, administer and view the Pi's camera from Android in surveillance mode, and connect your car to the Pi and make data more accessible using Android. The introductory projects covered will be useful each time you need to access or administer your Pi for other purposes, and the more advanced projects will continue to be valuable even after you become an expert on Pi. By the end of this book, you will be able to create engaging and useful projects that will help you combine the powers of both Android

and Raspberry Pi. Style and approach A quick and easy-to-follow guide that will show how you can add up the power of Pi and Android by combining them.

Raspberry Pi IoT Projects - John C. Shovic
2016-08-12

Build your own Internet of Things (IoT) projects for prototyping and proof-of-concept purposes. This book contains the tools needed to build a prototype of your design, sense the environment, communicate with the Internet (over the Internet and Machine to Machine communications) and display the results. Raspberry Pi IoT Projects provides several IoT projects and designs are shown from the start to the finish including an IoT Heartbeat Monitor, an IoT Swarm, IoT Solar Powered Weather Station, an IoT iBeacon Application and a RFID (Radio Frequency Identification) IoT Inventory Tracking System. The software is presented as reusable libraries, primarily in Python and C with full source code available. Raspberry Pi IoT

Projects: Prototyping Experiments for Makers is also a valuable learning resource for classrooms and learning labs. What You'll Learn build IOT projects with the Raspberry Pi Talk to sensors with the Raspberry Pi Use iBeacons with the IOT Raspberry Pi Communicate your IOT data to the

Internet Build security into your IOT device Who This Book Is For Primary audience are those with some technical background, but not necessarily engineers. It will also appeal to technical people wanting to learn about the Raspberry Pi in a project-oriented method.