

Building And Running Micropython On The Esp8266 Robotpark

Explore MicroPython through a series of hands-on projects and learn to design and build your own embedded systems using the MicroPython Pyboard, ESP32, the STM32 IoT Discovery kit, and the OpenMV camera module. Key Features Delve into MicroPython Kernel and learn to make modifications that will enhance your embedded applications Design and implement drivers to interact with a variety of sensors and devices Build low-cost projects such as DIY automation and object detection with machine learning Book Description With the increasing complexity of embedded systems seen over the past few years, developers are looking for ways to manage them easily by solving problems without spending a lot of time on finding supported peripherals. MicroPython is an efficient and lean implementation of the Python 3 programming language, which is optimized to run on microcontrollers. MicroPython Projects will guide you in building and managing your embedded systems with ease. This book is a comprehensive project-based guide that will help you build a wide range of projects and give you the confidence to design complex projects spanning new areas of technology such as electronic applications, automation devices, and IoT applications. While building seven engaging projects, you'll learn how to enable devices to communicate with each other, access and control devices over a TCP/IP socket, and store and retrieve data. The complexity will increase progressively as you work on different projects, covering areas such as driver design, sensor interfacing, and MicroPython kernel customization. By the end of this MicroPython book, you'll be able to develop industry-standard embedded systems and keep up with the evolution of the Internet of Things. What you will learn Develop embedded systems using MicroPython Build a custom debugging tool to visualize sensor data in real-time Detect objects using machine learning and MicroPython Discover how to minimize project costs and reduce development time Get to grips with gesture operations and parsing gesture data Learn how to customize and deploy the MicroPython kernel Explore the techniques for scheduling application tasks and activities Who this book is for If you are an embedded developer or hobbyist looking to build interesting projects using MicroPython, this book is for you. A basic understanding of electronics and Python is required while some MicroPython experience will be helpful.

In een van de onbetwiste hoogtepunten uit de wereldliteratuur voert de bezeten kapitein Achab een mythische strijd met Moby Dick, een witte walvis. Vanwege dat beest is hij ooit zijn been verloren en nu is de kapitein uit op wraak. Achab offert willens en wetens het welzijn van zijn schip en bemanning op aan zijn persoonlijke haat tegen Moby Dick, die voor hem het kwaad, de erfzonde en het demonische vertegenwoordigt. Hij is vastbesloten het beest te vinden en hij laat zich door niets of niemand tegenhouden om dat doel te behalen. De Amerikaanse Herman Melville (1819-1891) schreef in 1851 MOBY DICK, naar een ongewoon grote en agressieve witte potvis die zoveel rampen zou hebben veroorzaakt voor de walvisvaarders dat het was uitgegroeid tot een mythe. De roman werd in die tijd niet goed ontvangen. Het verkreeg pas na zijn dood bekendheid en is inmiddels uitgegroeid tot een van de belangrijkste meesterwerken uit de Amerikaanse literatuur.

Thanks to the decreasing cost of prototyping, it's more feasible for professional makers and first-time entrepreneurs to launch a hardware startup. But exactly how do you go about it? This book provides the roadmap and best practices you need for turning a product idea into a full-fledged business. Written by three experts from the field, *The Hardware Startup* takes you from idea validation to launch, complete with practical strategies for funding, market research, branding, prototyping, manufacturing, and distribution. Two dozen case studies of real-world startups illustrate possible successes and failures at every stage of the process. Validate your idea by learning the needs of potential users Develop branding, marketing, and sales strategies early on Form relationships with the right investment partners Prototype early and often to ensure you're on the right path Understand processes and pitfalls of manufacturing at scale Jumpstart your business with the help of an accelerator Learn strategies for pricing, marketing, and distribution Be aware of the legal issues your new company may face 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 Learn Code your sensor nodes with Python and MicroPython Work with new XBee 3 modules Host your data on Raspberry Pi Get started with MySQL Create 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.

Exploring the low cost WiFi module About This Book Leverage the ESP8266's on-board processing and storage capability Get hand- on experience of working on the ESP8266 Arduino Core and its various libraries A practical and enticing recipe-based book that will teach you how to make your environment smart using the ESP8266 Who This Book Is For This book is targeted at IOT enthusiasts who are well versed with electronics concepts and have a very basic familiarity with the ESP8266. Some experience with programming will be an advantage. What You Will Learn Measure data from a digital temperature and humidity sensor using the ESP8266 Explore advanced ESP8266 functionalities Control devices from anywhere in the world using MicroPython Troubleshoot issues with cloud data monitoring Tweet data from the Arduino board Build a cloud-connected power-switch with the ESP8266 Create an ESP8266 robot controlled from the cloud In Detail The ESP8266 Wi-Fi Module is a self contained System on Chip (SOC) with an integrated TCP/IP protocol stack and can give any microcontroller access to your Wi-Fi network. It is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor. This book contains practical recipes that will help you master all ESP8266 functionalities. You will start by configuring and customizing the chip in line with your requirements. Then you will focus on core topics such as on-board processing, sensors, GPIOs, programming, networking, integration with external components, and so on. We will also teach you how to leverage Arduino using the ESP8266 and you'll learn about its libraries, file system, OTA updates, and so on. The book also provide recipes on web servers, testing, connecting with the cloud, and troubleshooting techniques. Programming aspects include MicroPython and how to leverage it to get started with the ESP8266. Towards the end, we will use these concepts and create an interesting project (IOT). By the end of the book, readers will be proficient enough to use the ESP8266 board efficiently. Style and approach This recipe-based book will teach you to build projects using the ESP8266.

Develop an extendable smart robot capable of performing a complex series of actions with Python and Raspberry Pi Key Features Get up to speed with the fundamentals of robotic programming and build intelligent robots Learn how to program a voice agent to control and interact with your robot's behavior Enable your robot to see its environment and avoid barriers using sensors Book Description We live in an age where the most complex or repetitive tasks are automated. Smart robots have the potential to revolutionize how we perform all kinds of tasks with high accuracy and efficiency. With this second edition of *Learn Robotics Programming*, you'll see how a combination of the Raspberry Pi

and Python can be a great starting point for robot programming. The book starts by introducing you to the basic structure of a robot and shows you how to design, build, and program it. As you make your way through the book, you'll add different outputs and sensors, learn robot building skills, and write code to add autonomous behavior using sensors and a camera. You'll also be able to upgrade your robot with Wi-Fi connectivity to control it using a smartphone. Finally, you'll understand how you can apply the skills that you've learned to visualize, lay out, build, and code your future robot building projects. By the end of this book, you'll have built an interesting robot that can perform basic artificial intelligence operations and be well versed in programming robots and creating complex robotics projects using what you've learned. What you will learn Leverage the features of the Raspberry Pi OS Discover how to configure a Raspberry Pi to build an AI-enabled robot Interface motors and sensors with a Raspberry Pi Code your robot to develop engaging and intelligent robot behavior Explore AI behavior such as speech recognition and visual processing Find out how you can control AI robots with a mobile phone over Wi-Fi Understand how to choose the right parts and assemble your robot Who this book is for This second edition of Learn Robotics Programming is for programmers, developers, and robotics enthusiasts who want to develop a fully functional robot and leverage AI to build interactive robots. Basic knowledge of the Python programming language will help you understand the concepts covered in this robot programming book more effectively. The go-to guide to getting started with the BBC micro:bit and exploring all of its amazing capabilities. The BBC micro:bit is a pocket-sized electronic development platform built with education in mind. It was developed by the BBC in partnership with major tech companies, communities, and educational organizations to provide kids with a fun, easy, inexpensive way to develop their digital skills. With it, kids (and grownups) can learn basic programming and coding while having fun making virtual pets, developing games, and a whole lot more. Written by internationally bestselling tech author Gareth Halfacree and endorsed by the Micro:bit Foundation, The Official BBC micro:bit User Guide contains what you need to know to get up and running fast with the BBC micro:bit. Learn everything from taking your first steps with the BBC micro:bit to writing your own programs. You'll also learn how to expand its capabilities with add-ons through easy-to-follow, step-by-step instructions. Set up your BBC micro:bit and develop your digital skills Write code in JavaScript Blocks, JavaScript, and Python Discover the BBC micro:bit's built-in sensors Connect the BBC micro:bit to a Raspberry Pi to extend its capabilities Build your own circuits and create hardware The Official BBC micro:bit User Guide is your go-to source for learning all the secrets of the BBC micro:bit. Whether you're just beginning or have some experience, this book allows you to dive right in and experience everything the BBC micro:bit has to offer.

De volgende Bill Gates zal geen besturingssysteem ontwerpen, en de nieuwe Mark Zuckerberg geen tweede Facebook. Het kopiëren van succesvolle modellen uit Silicon Valley heeft weinig zin. We kunnen wél leren van het vermogen om iets geheel nieuws te creëren in plaats van iets toe te voegen aan wat al bestaat. Peter Thiel is medeoprichter van PayPal en investeerder in vele techbedrijven, zoals Facebook, LinkedIn en Spotify. Dankzij zijn unieke ervaring en strategische inzichten heeft hij met Zero to one dé bijbel van een nieuwe generatie ondernemers geschreven. Zijn inzichten over onder andere strategie, teambuilding, concurrentie, verkoop en pitchen zijn breed toepasbaar. Een must read voor iedere ondernemer!

This book is designed for anyone who learns how to get started with MicroPython development for Raspberry Pi Pico. The book covers Raspberry Pi Pico with Python. The following is a list of highlight topics: * Preparing Development Environment * Setting Up MicroPython * GPIO Programming * PWM and Analog Input * Working with I2C * Working with UART * Working with SPI * Working with Temperature and humidity (DHT Module) * Building IoT Application over WiFi * Reading Sensors on Raspberry Pi Pico from Android over Bluetooth * Working with OLED I2C Display * Working with File System * Working with GPS U-blox Module

Build a strong foundation in designing and implementing real-time systems with the help of practical examples Key Features Get up and running with the fundamentals of RTOS and apply them on STM32 Enhance your programming skills to design and build real-world embedded systems Get to grips with advanced techniques for implementing embedded systems Book Description A real-time operating system (RTOS) is used to develop systems that respond to events within strict timelines. Real-time embedded systems have applications in various industries, from automotive and aerospace through to laboratory test equipment and consumer electronics. These systems provide consistent and reliable timing and are designed to run without intervention for years. This microcontrollers book starts by introducing you to the concept of RTOS and compares some other alternative methods for achieving real-time performance. Once you've understood the fundamentals, such as tasks, queues, mutexes, and semaphores, you'll learn what to look for when selecting a microcontroller and development environment. By working through examples that use an STM32F7 Nucleo board, the STM32CubeIDE, and SEGGER debug tools, including SEGGER J-Link, Ozone, and SystemView, you'll gain an understanding of preemptive scheduling policies and task communication. The book will then help you develop highly efficient low-level drivers and analyze their real-time performance and CPU utilization. Finally, you'll cover tips for troubleshooting and be able to take your new-found skills to the next level. By the end of this book, you'll have built on your embedded system skills and will be able to create real-time systems using microcontrollers and FreeRTOS. What you will learn Understand when to use an RTOS for a project Explore RTOS concepts such as tasks, mutexes, semaphores, and queues Discover different microcontroller units (MCUs) and choose the best one for your project Evaluate and select the best IDE and middleware stack for your project Use professional-grade tools for analyzing and debugging your application Get FreeRTOS-based applications up and running on an STM32 board Who this book is for This book is for embedded engineers, students, or anyone interested in learning the complete RTOS feature set with embedded devices. A basic understanding of the C programming language and embedded systems or microcontrollers will be helpful.

Kick-start your development journey with this end-to-end guide that covers Python programming fundamentals along with application

development Key Features Gain a solid understanding of Python programming with coverage of data structures and Object-Oriented Programming (OOP) Design graphical user interfaces for desktops with libraries such as Kivy and Tkinter Write elegant, reusable, and efficient code Book Description Python is a cross-platform language used by organizations such as Google and NASA. It lets you work quickly and efficiently, allowing you to concentrate on your work rather than the language. Based on his personal experiences when learning to program, Learn Programming in Python with Cody Jackson provides a hands-on introduction to computer programming utilizing one of the most readable programming languages—Python. It aims to educate readers regarding software development as well as help experienced developers become familiar with the Python language, utilizing real-world lessons to help readers understand programming concepts quickly and easily. The book starts with the basics of programming, and describes Python syntax while developing the skills to make complete programs. In the first part of the book, readers will be going through all the concepts with short and easy-to-understand code samples that will prepare them for the comprehensive application built in parts 2 and 3. The second part of the book will explore topics such as application requirements, building the application, testing, and documentation. It is here that you will get a solid understanding of building an end-to-end application in Python. The next part will show you how to complete your applications by converting text-based simulation into an interactive, graphical user interface, using a desktop GUI framework. After reading the book, you will be confident in developing a complete application in Python, from program design to documentation to deployment. What you will learn Use the interactive shell for prototyping and code execution, including variable assignment Deal with program errors by learning when to manually throw exceptions Employ exceptions for code management Enhance code by utilizing Python's built-in shortcuts to improve efficiency and make coding easier Interact with files and package Python data for network transfer or storage Understand how tests drive code writing, and vice versa Explore the different frameworks that are available for GUI development Who this book is for Learn Programming in Python with Cody Jackson is for beginners or novice programmers who have no programming background and wish to take their first step in software development. This book will also be beneficial for intermediate programmers and will provide deeper insights into effective coding practices in Python.

This book gathers the refereed proceedings of the Intelligent Algorithms in Software Engineering Section of the 9th Computer Science On-line Conference 2020 (CSOC 2020), held on-line in April 2020. Software engineering research and its applications to intelligent algorithms have now assumed an essential role in computer science research. In this book, modern research methods, together with applications of machine and statistical learning in software engineering research, are presented.

Edge analytics brings intelligence to the sensory side of IoT applications. This is a comprehensive introduction for those who are new to edge analytics, that will have you up-to-speed in no time. You will learn to design modern edge analytics applications that take advantage of the processing power of single board computers and microcontrollers.

Program Your Own MicroPython projects with ease—no prior programming experience necessary! This DIY guide provides a practical introduction to microcontroller programming with MicroPython. Written by an experienced electronics hobbyist, Python for Microcontrollers: Getting Started with MicroPython features eight start-to-finish projects that clearly demonstrate each technique. You will learn how to use sensors, store data, control motors and other devices, and work with expansion boards. From there, you'll discover how to design, build, and program all kinds of entertaining and practical projects of your own. • Learn MicroPython and object-oriented programming basics • Explore the powerful features of the Pyboard, ESP8266, and WiPy • Interface with a PC and load files, programs, and modules • Work with the LEDs, timers, and converters • Control external devices using serial interfaces and PWM • Build and program a ball detector using the 3-axis accelerometer • Install and program LCD and touchsensor expansion boards • Record and play sounds using the AMP audio board Quickly learn to program for microcontrollers and IoT devices without a lot of study and expense. MicroPython and controllers that support it eliminate the need for programming in a C-like language, making the creation of IoT applications and devices easier and more accessible than ever. MicroPython for the Internet of Things is ideal for readers new to electronics and the world of IoT. Specific examples are provided covering a range of supported devices, sensors, and MicroPython boards such as Pycom's WiPy modules and MicroPython's pyboard. Never has programming for microcontrollers been easier. The book takes a practical and hands-on approach without a lot of detours into the depths of theory. The book: Shows a faster and easier way to program microcontrollers and IoT devices Teaches MicroPython, a variant of one of the most widely used scripting languages Is friendly and accessible to those new to electronics, with fun example projects What You'll Learn Program in MicroPython Understand sensors and basic electronics Develop your own IoT projects Build applications for popular boards such as WiPy and pyboard Load MicroPython on the ESP8266 and similar boards Interface with hardware breakout boards Connect hardware to software through MicroPython Explore the easy-to-use Adafruit IO connecting your microcontroller to the cloud Who This Book Is For Anyone interested in building IoT solutions without the heavy burden of programming in C++ or C. The book also appeals to those wanting an easier way to work with hardware than is provided by the Arduino and the Raspberry Pi platforms.

Het verschijnen van Wilde zwanen markeerde een van de grootste uitgeefsuccessen van de afgelopen decennia. Na een wat langzame start bracht de liefdesverklaring van Rudy Kousbroek in NRC Handelsblad daar verandering in, en sindsdien is het boek tientallen malen herdrukt. Wilde zwanen verscheen in 1992 in het Nederlands en wereldwijd werden er meer dan 10 miljoen exemplaren van verkocht. Het is daarmee het best verkochte boek dat ooit over China verscheen. Het geeft een panoramische visie van drie vrouwen op een complexe samenleving in de vorm van prachtige memoires, intieme portretten en een meeslepende kroniek van het twintigste-eeuwse China. Ondanks de haast onvoorstelbare gruwelen die Jung Chang en haar familie zijn overkomen, is Wilde zwanen een indrukwekkende getuigenis van optimistisch geloof in een rechtvaardige samenleving met gelijke rechten en kansen voor iedereen.

Explore a concise and practical introduction to implementation methods and the theory of digital control systems on microcontrollers Embedded Digital Control: Implementation on ARM Cortex-M Microcontrollers delivers expert instruction in digital control system implementation techniques on the widely used ARM Cortex-M microcontroller. The accomplished authors present the included information in three phases. First, they describe how to implement prototype digital control systems via the Python programming language in order to help the reader better understand theoretical digital control concepts. Second, the book offers readers direction on using the C programming language to implement digital control systems on actual microcontrollers. This will allow readers to solve real-life problems involving digital control, robotics, and mechatronics. Finally, readers will learn how to merge the theoretical and practical issues discussed in the book by implementing digital control systems in real-life applications. Throughout the book, the application of digital control systems using the Python programming language ensures the reader can apply the theory contained within. Readers will also benefit from the inclusion of: A thorough introduction to the hardware used in the book, including STM32 Nucleo Development Boards and motor drive expansion boards An exploration of the software used in the book, including MicroPython, Keil uVision, and Mbed Practical discussions of digital control basics, including discrete-time signals, discrete-time systems, linear and time-invariant systems, and constant coefficient difference equations An examination of

how to represent a continuous-time system in digital form, including analog-to-digital conversion and digital-to-analog conversion Perfect for undergraduate students in electrical engineering, Embedded Digital Control: Implementation on ARM Cortex-M Microcontrollers will also earn a place in the libraries of professional engineers and hobbyists working on digital control and robotics systems seeking a one-stop reference for digital control systems on microcontrollers. It's an exciting time to get involved with MicroPython, the re-implementation of Python 3 for microcontrollers and embedded systems. This practical guide delivers the knowledge you need to roll up your sleeves and create exceptional embedded projects with this lean and efficient programming language. If you're familiar with Python as a programmer, educator, or maker, you're ready to learn—and have fun along the way. Author Nicholas Tollervey takes you on a journey from first steps to advanced projects. You'll explore the types of devices that run MicroPython, and examine how the language uses and interacts with hardware to process input, connect to the outside world, communicate wirelessly, make sounds and music, and drive robotics projects. Work with MicroPython on four typical devices: PyBoard, the micro:bit, Adafruit's Circuit Playground Express, and ESP8266/ESP32 boards Explore a framework that helps you generate, evaluate, and evolve embedded projects that solve real problems Dive into practical MicroPython examples: visual feedback, input and sensing, GPIO, networking, sound and music, and robotics Learn how idiomatic MicroPython helps you express a lot with the minimum of resources Take the next step by getting involved with the Python community Programming with MicroPython Embedded Programming with Microcontrollers and Python "O'Reilly Media, Inc." In its 27th edition the conference on Air Pollution continues to produce valuable research on issues related to the modelling, monitoring and management of air pollution. The papers included in this book continue a wide ranging collection of high quality research works that develop the fundamental science of air pollution.

Build your own secret laboratory with 30 coding and electronic projects! The BBC micro:bit is a tiny, cheap, yet surprisingly powerful computer that you can use to build cool things and experiment with code. The 30 simple projects and experiments in this book will show you how to use the micro:bit to build a secret science lab complete with robots, door alarms, lie detectors, and more--as you learn basic coding and electronics skills. Here are just some of the projects you'll build: • A "light guitar" you can play just by moving your fingers • A working lie detector • A self-watering plant care system • A two-wheeled robot • A talking robotic head with moving eyes • A door alarm made with magnets Learn to code like a Mad Scientist!

This book helps readers to get started with WiPy 3.0 board development using Python programming language. WiPy 3.0 board runs MicroPython. The following is a list of highlight topics in this book. * Preparing Development Environment * Setting Up Pycom WiPy 3.0 * GPIO Programming * PWM and Analog I/O * Working with I2C * Working with UART * Working with SPI * Working with SD Card * Working with Bluetooth * Working with DHT Module * Building IoT Application

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.

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