Learning BeagleBone

Learn how to love and care for your BeagleBone and teach it tricks

Hunyue Yau

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PUBLISHING

Learning Beaglebone Yau Hunyue

Charles Hamilton,Rodolfo Giometti,Richard Grimmett

Learning Beaglebone Yau Hunyue:

Learning BeagleBone Hunyue Yau,2014-12-24 This book is for new BeagleBone owners who are looking to quickly get their microboard up and running It would be helpful to have an understanding of embedded concepts or Linux but neither is essential **Programming the BeagleBone** Yogesh Chavan,2016-01-28 Master BeagleBone programming by doing simple electronics and Internet of Things projects About This Book Quickly develop electronics projects that interact with Internet applications using JavaScript and Python Learn about electronics components such as sensors and motors and how to communicate with them by writing programs A step by step guide to explore the exciting world of BeagleBone from connecting BeagleBone to doing electronics projects and creating IoT applications Who This Book Is For If you want to learn programming on embedded systems with BeagleBone by doing simple electronics projects this book is for you This book is also helpful to BeagleBone owners who want to quickly implement small scale home automation solutions It is assumed that you have familiarity with C and Python programming Some familiarity with electronics is helpful but not essential What You Will Learn Connect your BeagleBone to a computer in different ways and get the Cloud9 IDE running to quick start programming on the BeagleBone Get to know about BeagleBone extension pins such as GPIO and how to connect various electronics components with BeagleBone Read and write to various electronics components such as LED Push button sensors and motors Grasp in depth theory on Analog PWM and BUS programming and the electronics components used in programs Handle data to and from various BUS supporting modules such as UART I2C and SPI using the Adafruit BBIO Python library Write real life IoT applications in JavaScript and Python such as shooting an e mail on overheat and controlling a servo motor remotely Make use of online free cloud services to store and analyze sensor data collected on the BeagleBone Discover what else can be done using the BeagleBone Get to grips with embedded system BUS communication In Detail The whole world is moving from desktop computers to smartphones and embedded systems We are moving towards utilizing Internet of Things IoT An exponential rise in the demand for embedded systems and programming in the last few years is driving programmers to use embedded development boards such as Beaglebone BeagleBone is an ultra small cost effective computer that comes with a powerful hardware It runs a full fledged Debian Linux OS and provides numerous electronics solutions BeagleBone is open source and comes with an Ethernet port which allows you to deploy IoT projects without any additions to the board It provides plenty of GPIO Anlaog pins and UART I2C SPI pins which makes it the right choice to perform electronics projects This gives you all the benefits of Linux kernel such as multitasking multiusers and extensive device driver support This allows you to do programming in many languages including high level languages such as JavaScript and Python This book aims to exploit the hardware and software capabilities of BeagleBone to create real life electronics and IoT applications quickly It is divided into two parts The first part covers JavaScript programs The second part provides electronics projects and IoT applications in Python First you will learn to use BeagleBone as tool to write useful applications on embedded systems

Starting with the basics needed to set up BeagleBone and the Cloud9 IDE this book covers interfacing with various electronics components via simple programs The electronics theory related to these components is then explained in depth before you use them in a program Finally the book helps you create some real life IoT applications Style and approach An easy to follow guide full of real world electronics programs and quick troubleshooting tips using BeagleBone All the required electronics concepts are explained in detail before using them in a program and all programs are explained in depth Most of the theory is covered in the first part while the second part gives you some quick programs **Bad to the Bone** Steven Barrett,Jason Kridner,2022-06-01 BeagleBone Black is a low cost open hardware computer uniquely suited to interact with sensors and actuators directly and over the Web Introduced in April 2013 by BeagleBoard org a community of developers first established in early 2008 BeagleBone Black is used frequently to build vision enabled robots home automation systems artistic lighting systems and countless other do it yourself and professional projects BeagleBone variants include the original BeagleBone and the newer BeagleBone Black both hosting a powerful 32 bit super scalar ARM Cortex A8 processor capable of running numerous mobile and desktop capable operating systems typically variants of Linux including Debian Android and Ubuntu Yet BeagleBone is small enough to fit in a small mint tin box The Bone may be used in a wide variety of projects from middle school science fair projects to senior design projects to first prototypes of very complex systems Novice users may access the power of the Bone throughthe user friendly BoneScript software experienced through a Web browser in most major operating systems including Microsoft Windows Apple Mac OS X or the Linux operating systems Seasoned users may take full advantage of the Bone s power using the underlying Linux based operating system a host of feature extension boards Capes and a wide variety of Linux community open source libraries This book provides an introduction to this powerful computer and has been designed for a wide variety of users including the first time novice through the seasoned embedded system design professional The book contains background theory on system operation coupled with many well documented illustrative examples Examples for novice users are centered on motivational fun robot projects while advanced projects follow the theme of assistive technology and image processing applications **Using Yocto Project with BeagleBone Black** H M Irfan Sadiq,2015-06-30 The Yocto Project produces tools and processes that enable the creation of Linux distributions for embedded software independent of the architecture BeagleBone Black is a platform that allows users to perform installation and customizations to their liking quickly and easily Starting with a basic introduction to Yocto Project s build system this book will take you through the setup and deployment steps for Yocto Project You will develop an understanding of BitBake learn how to create a basic recipe and explore the different types of Yocto Project recipe elements Moving on you will be able to customize existing recipes in layers and create a home surveillance solution using your webcam as well as creating other advanced projects using BeagleBone Black and Yocto Project By the end of the book you will have all the necessary skills exposure and experience to complete projects based on Yocto Project and BeagleBone Black

BeagleBone Essentials Rodolfo Giometti,2015-05-28 If you are a developer with some hardware or electrical engineering experience who wants to learn how to use embedded machine learning capabilities and get access to a GNU Linux device driver to collect data from a peripheral or to control a device this is the book for you *BeagleBone: Creative Projects for Hobbyists* Charles Hamilton,Rodolfo Giometti,Richard Grimmett,2017-07-20 Learn to build amazing robotic projects using the powerful BeagleBone Black About This Book Push your creativity to the limit through complex diverse and fascinating projects Develop applications with the BeagleBone Black and open source Linux software Sharpen your expertise in making sophisticated electronic devices Who This Book Is For This Learning Path is aimed at hobbyists who want to do creative projects that make their life easier and also push the boundaries of what can be done with the BeagleBone Black This Learning Path s projects are for the aspiring maker casual programmer and budding engineer or tinkerer You ll need some programming knowledge and experience of working with mechanical systems to get the complete experience from this Learning Path What You Will Learn Set up and run the BeagleBone Black for the first time Get to know the basics of microcomputing and Linux using the command line and easy kernel mods Develop a simple web interface with a LAMP platform Prepare complex web interfaces in JavaScript and get to know how to stream video data from a webcam Find out how to use a GPS to determine where your sailboat is and then get the bearing and distance to a new waypoint Use a wind sensor to sail your boat effectively both with and against the wind Build an underwater ROV to explore the underwater world See how to build an autonomous Quadcopter In Detail BeagleBone is a microboard PC that runs Linux It can connect to the Internet and run OSes such as Android and Ubuntu You can transform this tiny device into a brain for an embedded application or an endless variety of electronic inventions and prototypes This Learning Path starts off by teaching you how to program the BeagleBone You will create introductory projects to get yourselves acquainted with all the nitty gritty Then we ll focus on a series of projects that are aimed at hobbyists like you and encompass the areas of home automation and robotics With each project we ll teach you how to connect several sensors and an actuator to the BeagleBone Black We ll also create robots for land sea and water Yes really The books used in this Learning Path are BeagleBone Black Cookbook BeagleBone Home Automation Blueprints Mastering BeagleBone Robotics Style and approach This practical guide transforms complex and confusing pieces of technology to become accessible with easy to succeed instructions Through clear concise examples you will quickly get to grips with the core concepts needed to develop home automation applications with the BeagleBone Black *BeagleBone For Dummies* Rui Santos,Luís Miguel Costa Perestrelo,2015-01-26 The definitive easy to use guide to the popular BeagleBone board BeagleBone For Dummies is the definitive beginner s guide to using the popular BeagleBone board to learn electronics and programming Unlike other books that require previous knowledge of electronics Linux and Python this one assumes you know nothing at all and guides you step by step throughout the process of getting acquainted with your BeagleBone Original or BeagleBone Black You ll learn how to get set up use the software build the hardware and

code your projects with plenty of examples to walk you through the process You ll move carefully through your first BeagleBone project then get ideas for branching out from there to create even better more advanced programs The BeagleBone is a tiny computer board about the size of a credit card that has all the capability of a desktop Its affordability and ease of use has made it popular among hobbyists hardware enthusiasts and programmers alike and it s time for you to join their ranks as you officially dive into the world of microcomputers This book removes the guesswork from using the popular BeagleBone board and shows you how to get up and running in no time Download the operating system and connect your BeagleBone Learn to navigate the desktop environment Start programming with Python and Bonescript Build your first project and find plans for many more To learn BeagleBone you could spend hours on the Internet and still never find the information you need or you can get everything you need here This book appeals to all new and inexperienced hobbyists tinkerers electronics gurus hackers budding programmers engineers and hardware geeks who want to learn how to get the most out of their powerful BeagleBone   Beaglebone Black UpSkill Learning,Createspace Independent Pub,2016-10-17 Learn BeagleBone Black in 24 Hours This guide book will ensure you are equipped with the complete know how of BeagleBone Black programming the BeagleBone Black with Python Get started with learning BeagleBone Black right away What You ll Learn From This Book Chapter 1 Introduction to Beaglebone Black Chapter 2 Products and Variants Chapter 3 Features of Beaglebone Black Chapter 4 Debian Chapter 5 Ways of interacting with Beaglebone Chapter 6 Connecting and controlling GPIO Chapter 7 Python Programming for BeagleBone Black Chapter 8 Project using BeagleBone Black Use this book to get ahead in the world of Internet Of Things Elevate your skill levels in using and programming the BeagleBone Black   *BeagleBone: Creative Projects for Hobbyists* Charles Hamilton,2017

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