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BeagleBone Robotic Projects

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Community Experience Distilled

Create complex and exciting robotic projects with the BeagleBone Black

Richard Grimmett

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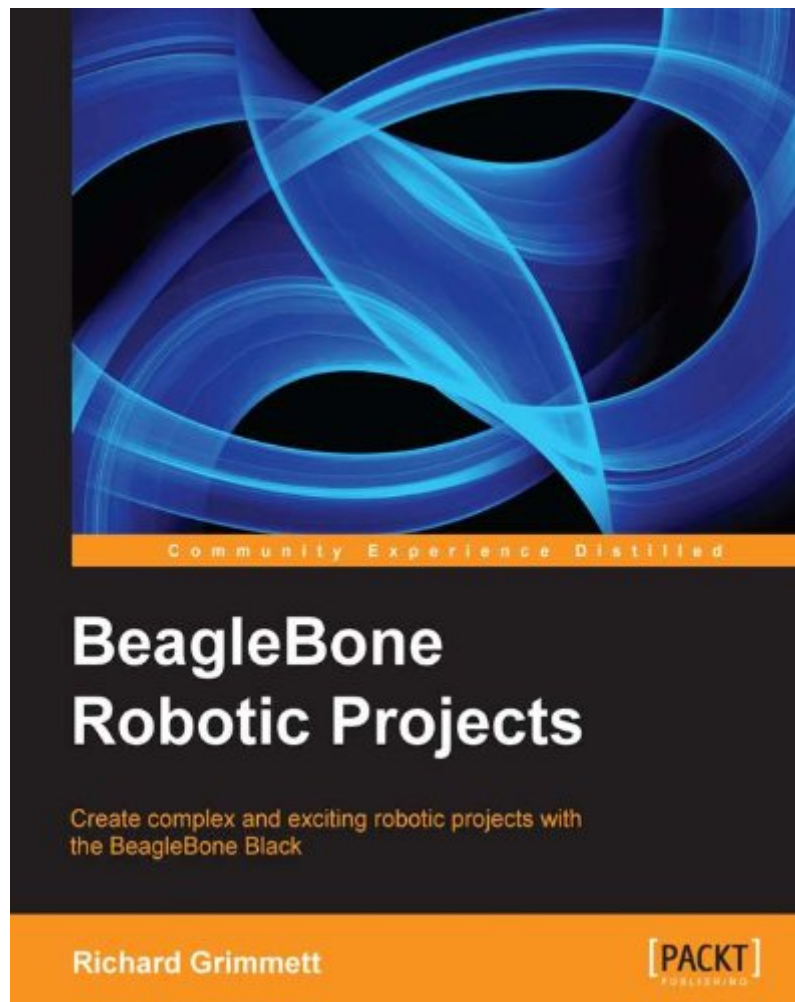
Synopsis

In DetailThanks to new, inexpensive microcontrollers, robotics has become far more accessible than it was in the past. These microcontrollers provide a whole new set of capabilities to allow even the most inexperienced users to make amazingly complicated projects. Beaglebone is effectively a small, light, cheap computer in a similar vein to Raspberry Pi and Arduino. It has all of the extensibility of today's desktop machines, but without the bulk, expense, or noise.This project guide provides step-by-step instructions to allow anyone to use this new, low cost platform in some fascinating robotics projects. By the time you are finished, your projects will be able to see, speak, listen, detect their surroundings, and move in a variety of amazing ways.The book begins with unpacking and powering up the components.This will include guidance on what to purchase and how to connect it all successfullyâ "and a primer on programming the BeagleBone Black. Chapter by chapter, we will add additional software functionality available from the open source community, including how to make the system see using a webcam, how to hear using a microphone, and how to speak using a speaker. We then add hardware to make your robots moveâ "including wheeled and legged examplesâ "as well as covering how to add sonar sensors to avoid or find objects, plus wireless control to make your robot truly autonomous. Adding GPS allows the robot to find itself. Finally the book covers how to integrate all of this functionality so that it can all work together, before developing the most impressive robotics projects: those that can sail, fly, and explore underwater.ApproachDevelop practical example projects with detailed explanations; combine the projects in a vast number of ways to create different robot designs, or work through them in sequence to discover the full capability of the BeagleBone Black.Who this book is forThis book is for anyone who is curious about using new, low-cost hardware to create robotic projects that have previously been the domain of research labs, major universities or Defence departments. Some programming experience would be useful, but if you know how to use a personal computer, you can use this book to construct far more complex systems than you would have thought possible.

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Customer Reviews

"This book is designed for the informed beginner." is a quote from the author. I think it pretty accurately describes where I am with the Beaglebone Black. Actually, it is not too far from where I am with Linux as well.The book title suggests that it is for those who have an interest in robotics. I didn't have any interest in robotics when I started, but I do now. I just ordered a Sparkfun 2 wheeled robot platform and a couple of Pololu motor controllers with the intend of building a few of the projects that i didn't have the parts for.The Beaglebone Black can be frustrating - an Arduino clone it is not. But, it is a complete Linux 1Ghz computer with a lot of I/O. The default Angstrom distribution is not as close to being as stable as the Debian Wheezy distruibution supplied with the Raspberry Pi. (As of the time of this review the BBB is likely to get a default Debian distribution very soon.) Mr. Grimmett overcomes this by having you load an Ubuntu distribution on a sd card and boot from it instead. I used a 16GB card and have room to spare after reading the instructions on how to reclaim the unused space on page 89.I liked this book. It was almost a perfect fit for me. I knew the BBB could do lots of things but never really had any luck with some of the online tutorials that I tried. Because of the book I got my USB camera to work, showing video via OpenCV. With one of those cheapie USB sound cards and a Logitech headset I was able to record and play sounds via the ALSA library. I even tried a little speech recognition. This book is very good at showcasing the BBB's built in capabilities and actually getting them to work. If you are really interested, Mr.

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