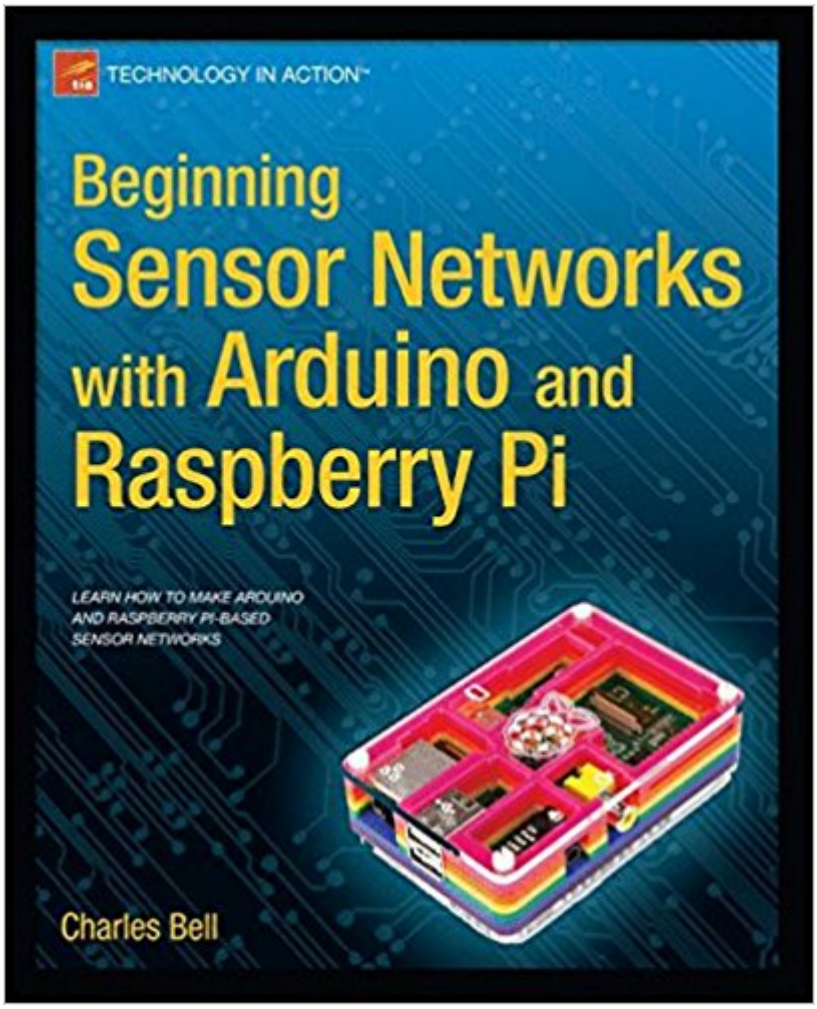
Beginning Sensor Networks With Arduino And Raspberry Pi (Technology In Action)



Synopsis

Beginning Sensor Networks with Arduino and Raspberry Pi teaches you how to build sensor networks with Arduino, Raspberry Pi, and XBee radio modules, and even shows you how to turn your Raspberry Pi into a MySQL database server to store your sensor data! First you'll learn about the different types of sensors and sensor networks, including how to build a simple XBee network. Then you'll walk through building an Arduino-based temperature sensor and data collector, followed by building a Raspberry Pi-based sensor node. Next you'll learn 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 even learn how to connect to and interact with a MySQL database server directly from an Arduino! Finally you'll learn how to put it all together by connecting your Arduino sensor node to your new Raspberry Pi database server. If you want to see how well Arduino and Raspberry Pi can get along, especially to create a sensor network, then Beginning Sensor Networks with Arduino and Raspberry Pi is just the book you need.

Book Information

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Customer Reviews

Charles Bell conducts research in emerging technologies. He is a member of the Oracle MySQL Development team and is the team lead for the MySQL Utilities team. He lives in a small town in rural Virginia with his loving wife. He received his Doctor of Philosophy in Engineering from Virginia Commonwealth University in 2005. Dr. Bell is an expert in the database field and has extensive

knowledge and experience in software development and systems engineering. His research interests include 3D printers, microcontrollers, three-dimensional printing, database systems, software engineering, and sensor networks. He spends his limited free time as a practicing Maker focusing on microcontroller projects and refinement of three-dimensional printers. Dr. Bell maintains a blog on his research projects and many other interests. You can find his blog at http://drcharlesbell.blogspot.com/.

This book covers using the Raspberry Pi as the coordinator and/or data aggregation node in a sensor network, something that the excellent "Building Wireless Sensor Networks" by Faludi doesn't go into. It has many interesting projects and examples, and gives you the basics you need to build progressively more complex sensor networks. As others have noted, the scope of the book is limited, but this isn't surprising as to cover the broad area of wireless sensor network applications in general would be a difficult prospect for any single book. My issue with this book is the fairly large number of errata and the lack of an active discussion area on the book at the Apress web site. As of today (11/17/2015), Apress says that no errata for the book have been submitted. I find this very hard to believe, as this is a popular text and anyone who actually does the example projects would find the same issues I did. Example: on p. 178, in the Arduino sketch, the formula for the code line for calculating the temperature in Celsius is copied from the XBee example on p. 93. However, because the XBee can only read voltages to 1200 mV on its analog input pin, and the Arduino reads 5000 mV on its analog input pin, the scaling factor is wrong and you get the wrong temperature readings. There are many errors like this in the book. Additionally, because (unlike the Faludi book) there is no discussion area, as things change with the Raspi firmware and Raspian distribution (e.g. recent firmware change causes problems with I2C configuration that result in the book examples not working), there is no place for users to go to get help. My suggestion is to get both this book and the better-supported Faludi book, and work carefully through the examples. I'm going to submit the errata I've found to Apress, but cannot guarantee they will be published on the book's web page. Good luck with your sensor networks!

The book begins with the usual, "Getting Started" topics including background info and detailed examples. This is all pretty straightforward and about what you'd find in many other microcontroller/sensor tutorials.The big surprise was the second half of the book which introduces the mySQL database server and the different ways a sensor network can be configured with mySQL as the data repository. One such configuration is a bunch of sensors connected to

Arduino’s, which are, in turn, connected to mySQL running on a Raspberry Pi.This is way cooler than writing text records to an SD card. I’ve got enough new project ideas to keep me busy for years!

Like most things I bought this for one of my nephews who is 9 but loves everything to do with programming and computers. We went through a couple of the starter ideas and he was hooked. Great book would buy again.

An excellent book that builds on others basic howtos to make distributed systems of use. If you will this is the next step after you have learned from some of the good basic books how to make the arduino and local sensors work into making it really useful across a bigger area as a network. Out of maybe 10~15 arduino books I have looked at this is one of the four I have kept as well worth it in fact its the best. IMHO most books on arduinos out there are I think rubbish so choose carefully. NB the other three I found very good were all basic howtos and one of them alone would have been enough plus this one and in fact their info can all be got on line easily as tutorials, but not this book’s contents. The only downside is it seems to be aging a little as newer micro communications that are a lot cheaper than X-bees come out but its the backend that matters and it is still 100% sound. The only other book needed for a beginner to go with this would be one of the following, Exploring Arduino - Jeremy Blum, Arduino for Dummies, Arduino programming in 24hours.

Very good detailed content. I am a novice Raspberry Pi and Arduino Yun user, and I was able to quickly stand up both Raspberry and Arduino sensor servers. I also added the Raspberry Pi MySQL server to my network according to the book instructions and all worked exactly as indicated. I found the content to be exactly as intended for the title of the book, even though I thought some of it was a review of things I thought I already had been up to date on, it enhanced my experience.Recommended to anyone with basic experience on Raspberry Pi or Arduino Yun who needs a "quick start" to stand up a wireless (XBee) sensor network, ingest to a DB, and finally expose that to internet access.

This book was a great help to me, and now to the other folks I have recommended it to as well.

The only resource for learning how to get your Arduino to talk to MySQL without php, python or other serial intermediary. This is the gold! If you can only afford one book on working with Arduino’s

and sensors, this should be the one!

Very informative and full of valuable information, especially for guys like me. I'm new-ish to building with micro-controllers and micro-computers.

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