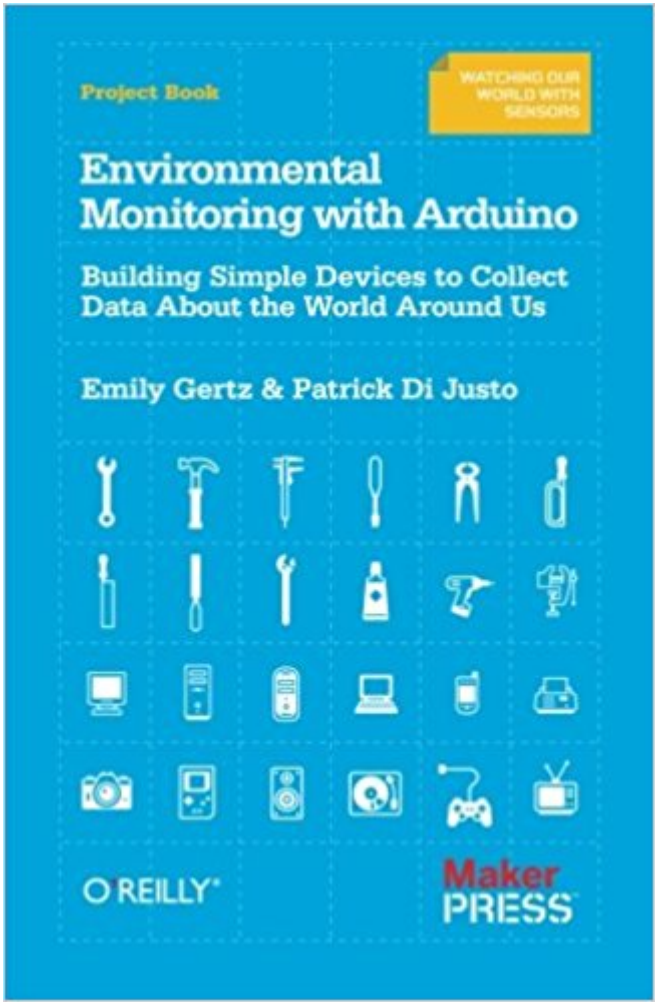
Environmental Monitoring With Arduino: Building Simple Devices To Collect Data About The World Around Us



Synopsis

After the devastating tsunami in 2011, DYIers in Japan built their own devices to detect radiation levels, then posted their finding on the Internet. Right now, thousands of people worldwide are tracking environmental conditions with monitoring devices theyÃ¢â ¬â„¢ve built themselves. You can do it too!This inspiring guide shows you how to use Arduino to create gadgets for measuring noise, weather, electromagnetic interference (EMI), water purity, and more. YouÃ¢â ¬â„¢ll also learn how to collect and share your own data, and you can experiment by creating your own variations of the gadgets covered in the book. If youÃ¢â ¬â„¢re new to DIY electronics, the first chapter offers a primer on electronic circuits and Arduino programming.Use a special microphone and amplifier to build a reliable noise monitorCreate a gadget to detect energy vampires: devices that use electricity when theyÃ¢â ¬â„¢re Ã¢â ¬Å“offÃ¢â ¬Â•Examine water purity with a water conductivity deviceMeasure weather basics such as temperature, humidity, and dew pointBuild your own Geiger counter to gauge background radiationExtend Arduino with an Ethernet shieldÃ¢â ¬â •and put your data on the InternetShare your weather and radiation data online through Pachube

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Customer Reviews

Building Simple Devices to Collect Data About the World Around Us

Emily Gertz is a correspondent for OnEarth Magazine. She has been covering DIY environmental

monitoring since 2004, when she interviewed engineer-artist Natalie Jeremijenko for Worldchanging.com. Her latest, on citizen radiation monitoring in Japan, was published by OnEarth Magazine in April 2011. She has been hands-on with internet technologies since 1994 as a web producer, community host, and content strategist. Her articles have appeared in Grist, Dwell, Scientific American, Popular Mechanics, and more.Patrick Di Justo is a contributing editor at Wired magazine, where he writes the magazine's monthly What's Inside column, and the author of The Science of Battlestar Galactica (Wiley, October 2010). His work has appeared in Dwell, Scientific American, Popular Science, The New York Times, and more. He has worked as a robot programmer for the Federal Reserve, and knows C, C++, Java, and Processing. He bought his first Arduino in 2007.

So far I have only done chapter 4, but I am already concerned about the scientific credibility of the book. (I am evaluating it for a possible science camp next summer for teenagers.) This chapter tells how to build an LED sensitivity tester. The tester is to be used for measuring and recording the peak wavelength response of LEDs for use as detectors in a photometer in the following chapters.The tester uses a tricolor RGB LED to shine light of various mixed intensities of red, green, and blue. These RGB values can indeed create a full spectrum of perceived colors for the human eye. However, they CANNOT create the wavelengths of the intermediate colors; they are useless for direct spectral analysis of LED detectors. Besides being bad science,this bogus testing method invalidates the results of all the following chapters. Those chapters may be suitable for demonstrating how you would use a calibrated photometer to make atmospheric measurements, but the actual readings will be inaccurate.After I try the gas detectors, I will update this review.

I have been using Arduino (Mega 2560) for a few months now. I have several books on programming, but this book is the antithesis of programming. That's what makes it so great! This is a book of IDEAS. Practical projects that leave the typical "blink an LED" ideas in the dust.If you are looking for practical, useful, down to earth projects to do with your Arduino, this book is your destination.One caveat, though. Figure 1-4 on page 8 shows an LED connected to pin 13 and ground, with no resistor. You should ALWAYS use a resistor between an LED and ground. Your LED's and your Arduino will both thank you, and both will enjoy a longer life.

This is a short, reasonably priced book packed with information. It describes two instruments which can be made with an Arduino: a tropospheric gas detector and a photometer. Arduino code is

included in the book and can also be downloaded from a web site. The book begins with "The World’s Shortest Electronics Primer" and ends with an interesting chapter on the scientific method. There are several books on Arduino projects, and this is a friendly one.

May be good for some, but I have not found this book series (i have two from it) to be useful or informative. If you know nothing about electronics, don’t have expectations of being able to do much, or just want a coffeetable book this is ok. Very short and didn’t offer much.

It’s a decent project book if you prefer physical books over reading online however there’s really nothing in this book that you can’t find within an hour of searching on the internet. Forest Mims gets plenty of credit for doing most of the work for them and this is pretty much a rehash of some of his homegrown experiments.

I am a novice Arduino "engineer". I enjoyed the simple but, not over simple explanations and how to. At the end of each chapter, after a project they have a little piece on taking the project to the next level. I would have liked maybe a little idea on how the "next step" should be begin. it was kind of like throwing a dog a bone and then teasing with a chunk of meat. Maybe that could be another book?

Interesting, but pretty basic.

Does a great job of bringing together projects if you are interested in atmospheric monitoring. it is straight-forward and personalized enough to inspire interest in the subject. I recommend it.

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