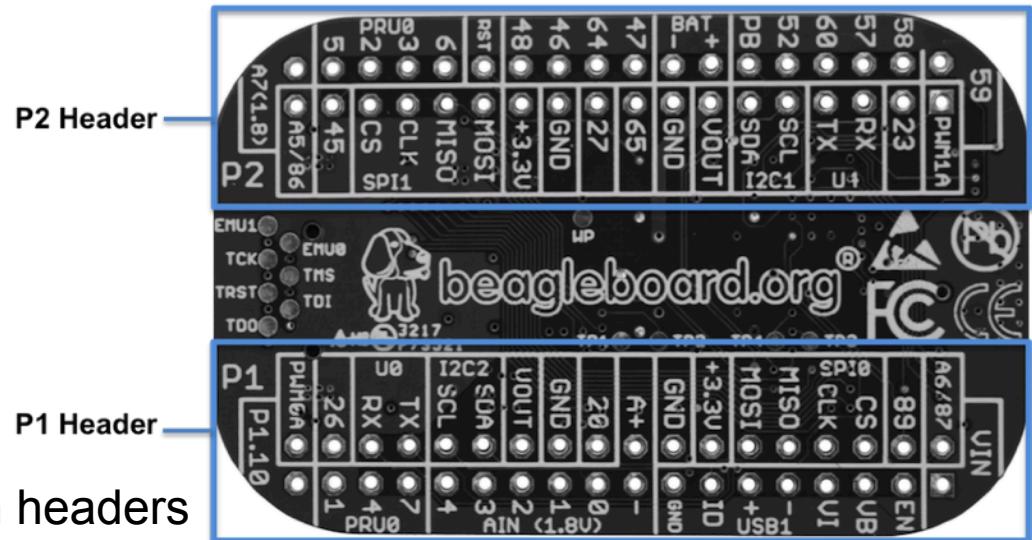


- US-based (Michigan) 501c3 tax-exempt non-profit
 - Will accept donations
- Educational mission - Kindergarten to Kickstarter
 - Design and use of open source hardware and software
 - Foster collaboration within our community

What is PocketBeagle and how is it special?



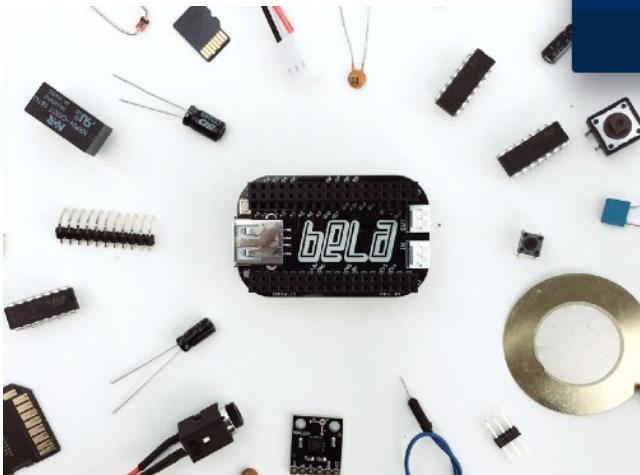
\$25 1GHz tiny Linux computer
USB powered with host/client and on headers
Lots of expansion
Same processor as BeagleBone Black including PRUs



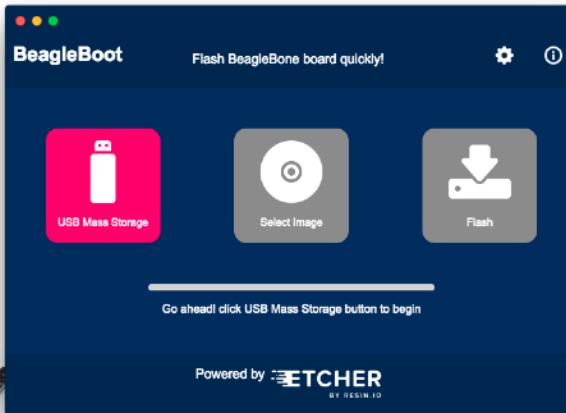
Why use PocketBeagle in STEM education?



Programming is a human endeavor where we learn from history



Unique real-time capabilities



Collaboration, not cut-and-paste

Predictable and low-cost

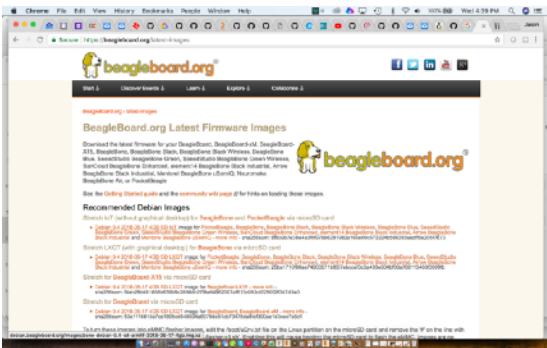


Same tools as the pros

How to start teaching with PocketBeagle



1) Boot the board



bbb.io/pb-start

How to start teaching with PocketBeagle



2) Get to the editor and command line

Getting started with Beagle

102.168.5.2:3000

Step 2: Enable a network connection

If connected via USB, a network adapter should show up on your computer. Your Beagle should be running a DHCP server that will provide your computer with an IP address of either 192.168.7.1 or 192.168.8.1, depending on the type of USB network adapter supported by your computer's operating system. Your Beagle will reserve 192.168.7.2 or 192.168.8.2 for itself.

If your Beagle includes WiFi, an access point called "BeagleBone-XXXX" where "XXXX" varies between boards. The access point password defaults to "BeagleBone". Your Beagle should be running a DHCP server that will provide your computer with an IP address in the 192.168.8.x range and reserve 192.168.8.1 for itself.

The below table summarizes the typical addresses and should dynamically update to indicate an active connection. Note that you must load [this page](#) without HTTPS security for the automatic detection to work.

IP Address	Connection Type	Operating System(s)	Status
192.168.7.2	USB	Windows	Inactive
192.168.8.2	USB	Mac OS X, Linux	Active ⚡
192.168.8.1	WiFi	all	Inactive
beaglebone.local	all	mDNS enabled	Active ⚡
beaglebone-2.local	all	mDNS enabled	Inactive

<http://192.168.7.2>

cloud9 - Cloud9

File Edit Find View Go To Run Preview Run

New File New From Template New Plugin Open... Ctrl+E Open Record Save Ctrl+S Save As... Ctrl+Shift+S Save All Ctrl+Shift+Q Save to Saved Ctrl+Shift+Q Save All to Saved Ctrl+Shift+Q

Upload Local Files... Download Project Use Folders Close File Alt-W Close All Files Alt-Shift-W

Cloud9 Welcome

Welcome to Cloud9. Use this welcome screen to tweak the look & feel of the Cloud9 user interface. Choose a Preset.

The Cloud9 Blog

Edit from the Cloud9 Terminal like a Boss!

Since the dark ages when the green on those monitors were the only interface to a machine, the terminal has been a coder's best friend. This has been especially true with the advent of command line driven ecosystems like the Ruby and the Node.js communities.

Does

6:31 PM 12/14/2017

examples LICENSE pumpkinBeaky.py README.md

linuxcommand.org

How to start teaching with PocketBeagle



3) Blink an LED

```
1. var b = require('bonescript');
2. var state = b.LOW;
3. b.pinMode("USR3", b.OUTPUT);
4. setInterval(toggle, 250); // toggle 4 times a second, every 250ms
5. function toggle() {
6.     if(state == b.LOW) state = b.HIGH;
7.     else state = b.LOW;
8.     b.digitalWrite("USR3", state);
9. }
```

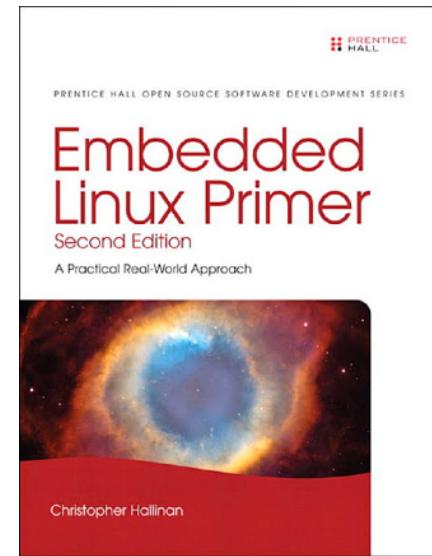
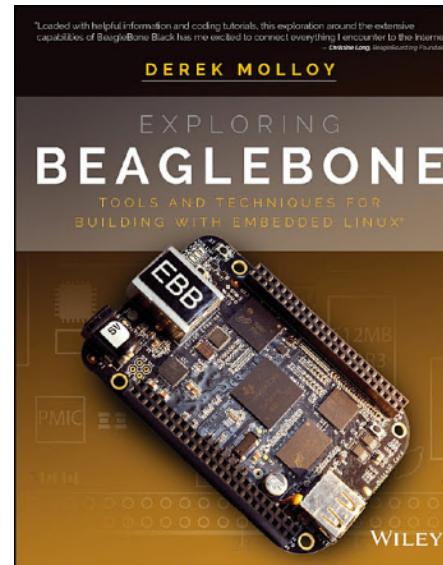
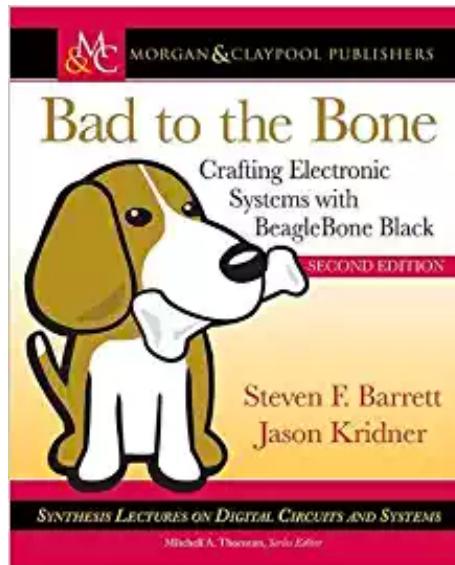
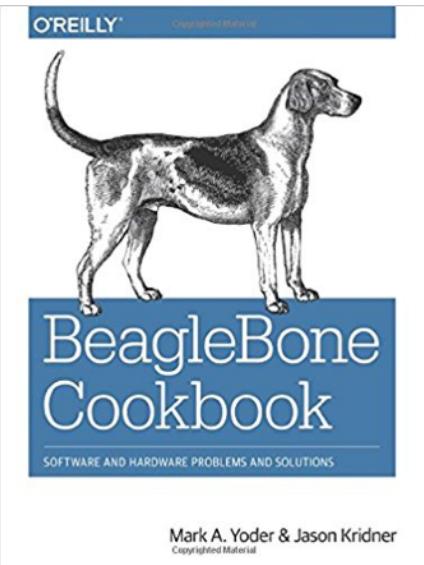
-

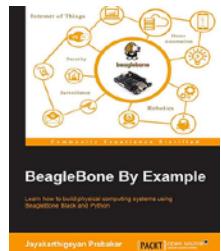
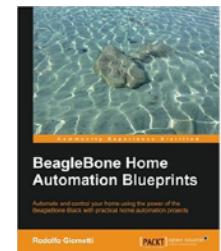
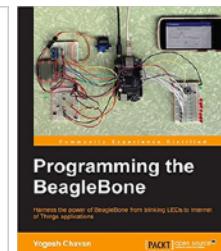
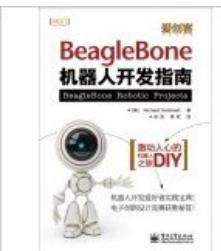
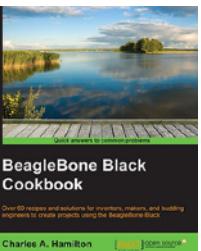
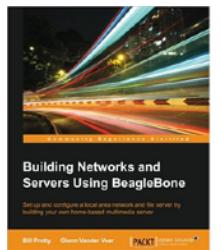
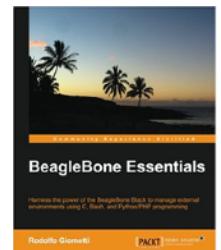
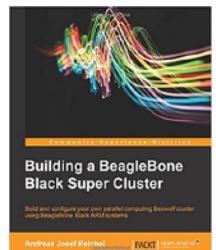
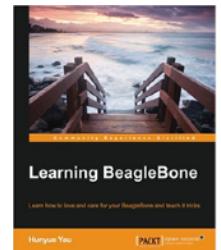
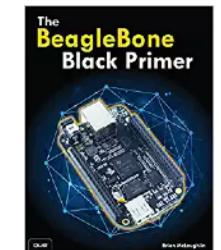
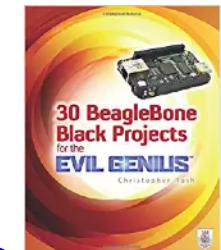
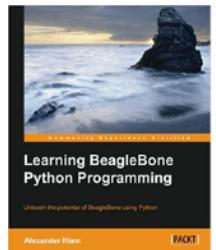
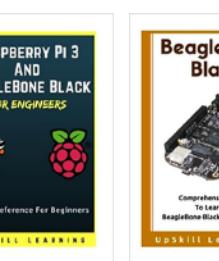
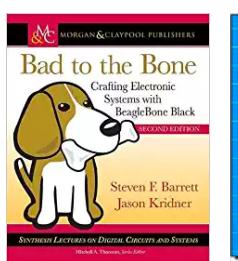
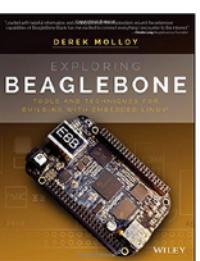
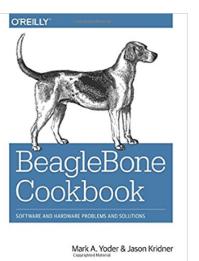
How to start teaching with PocketBeagle



beagleboard.org®

4) Explore some books



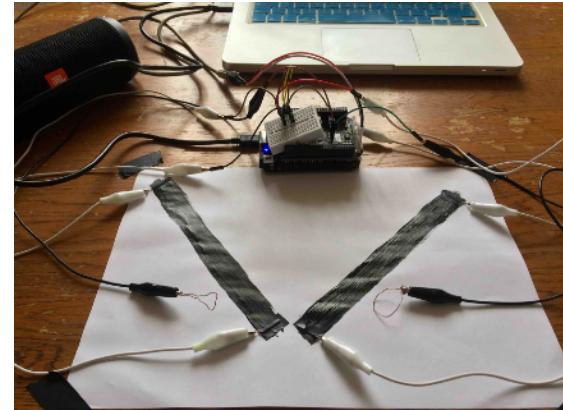
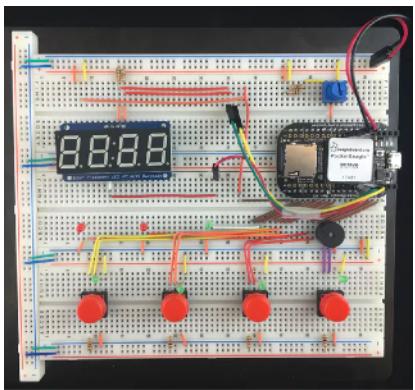
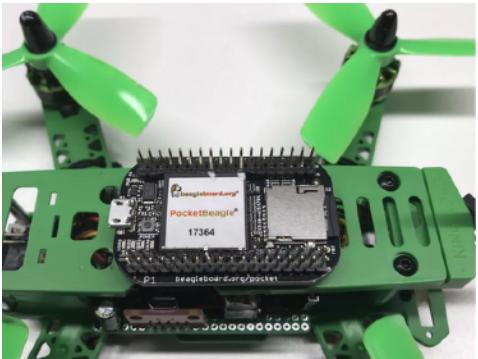


How to start teaching with PocketBeagle



5) Build a project

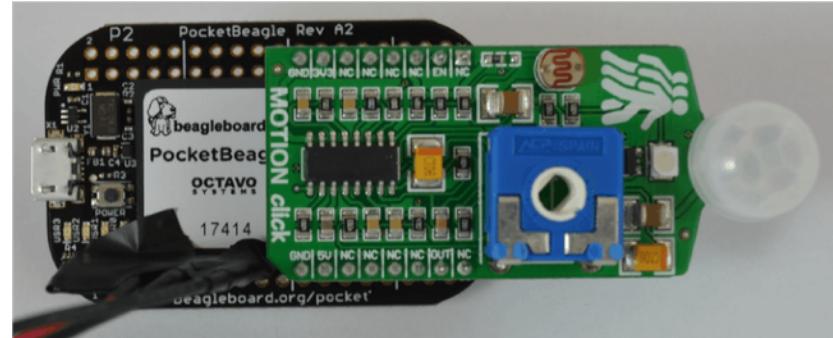
bbb.io/p-pocket



How to introduce Physical Computing



- Breadboarding an LED or a button can build a good intuition
- mikroElectronica Click Boards™ boards can connect directly to PocketBeagle and provide hundreds of sensors and actuators
- Getting to more interesting sensors quickly builds motivation
- Linux drivers provide a better opportunity to learn the “right” way to do things from the community
- Abstractions make the software easy



bbb.io/click

Example Lesson Plans



https://elinux.org/ECE497_Instructor%27s_Guide

Embedded Electronics

General purpose I/O
Analog sensors (V = IR, series/parallel)
Pulse width modulation
Standard busses (I2C, SPI, USB)

Software Applications

Languages (Python, JavaScript, C)
Revision control (git)
Debugging (gdb)
Project development (make)
Graphical Interfaces (qt, electron)

Signal Processing

Audio (alsa, bela.io, gstreamer)
Video (opencv, v4l2, frame buffer)
Threads

Networking

Configuration
Sockets
Transports and services

Device Drivers

Device abstraction
Kernel configuration
Subsystem APIs

System Integration

Boot sequence and boot-loaders
Package management

Apply for up to 30 PocketBeagle boards
for your classroom or makerspace by contributing a project

- Must submit a repeatable project for your students on beagleboard.org/p
- Document your procedures, learning outcomes & advice on how to integrate into a bigger classroom/course experience
- Projects must be well-documented, open source and available for reuse by the BeagleBoard.org Foundation
- Projects evaluated on:
 - Documentation quality in both appearance and understanding
 - Personal and educational value of lessons learned by students
 - Applicability across broad age range and skill levels
- Planned evaluation dates: Nov 29, 2018 & Feb 28, 2019



Get started today! Contact us at bbb.io/classroom

bbb.io/prucookbook

PRU Cookbook

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Questions from the Webinar Chat.

Other Resources



www.beagleboard.org



www.element14.com/beagleboard