

Adding Linux to Your Design

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Why Linux?

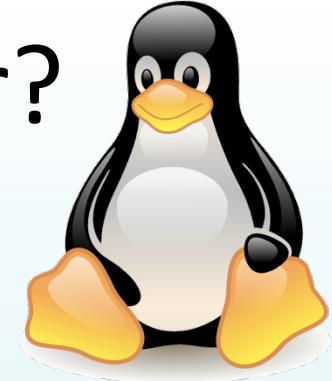
- High-level language support
- Flexible networking stack
- Multitasking
- Hardware abstraction and portability



"NewTux" by Larry Ewing.
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Why Linux in particular?

- Free is good
- Examples/Community
- It runs everywhere



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Why Linux, *really*?

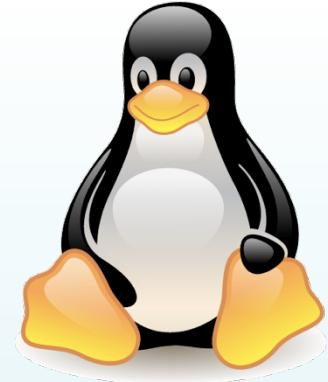


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Why Linux, *really*?



"Jurassic Park" by Universal Pictures. Used without permission.



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Why Linux, *really*?

- Hackability
 - “It’s a Unix system, I know this”
 - Lots of eyes on security vulnerabilities
- When you know it will save you time
 - Prototype fast
 - Something will go wrong



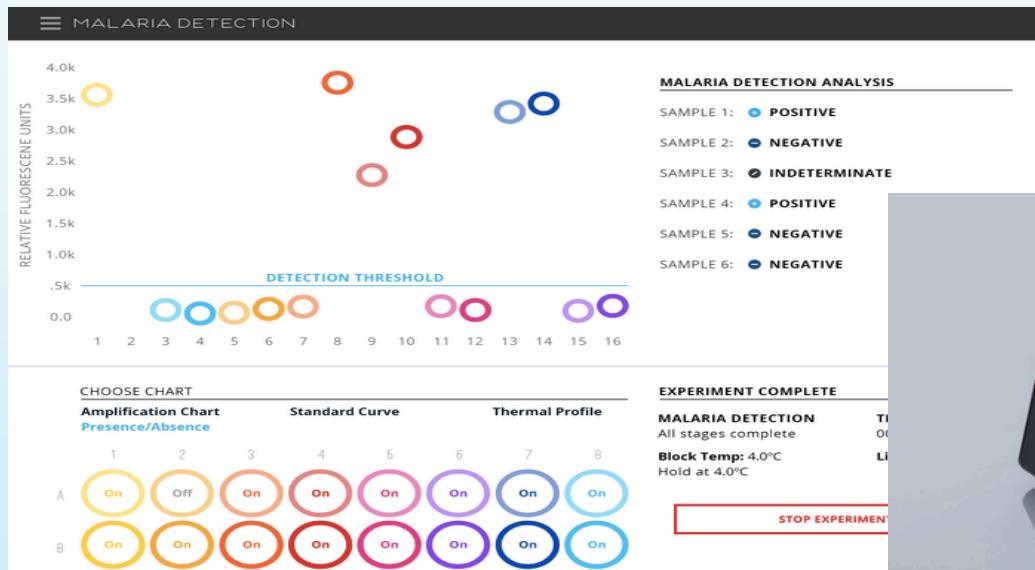
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Examples

- What types of machines get value out of Linux?

Open qPCR

DNA Diagnostics for Everyone



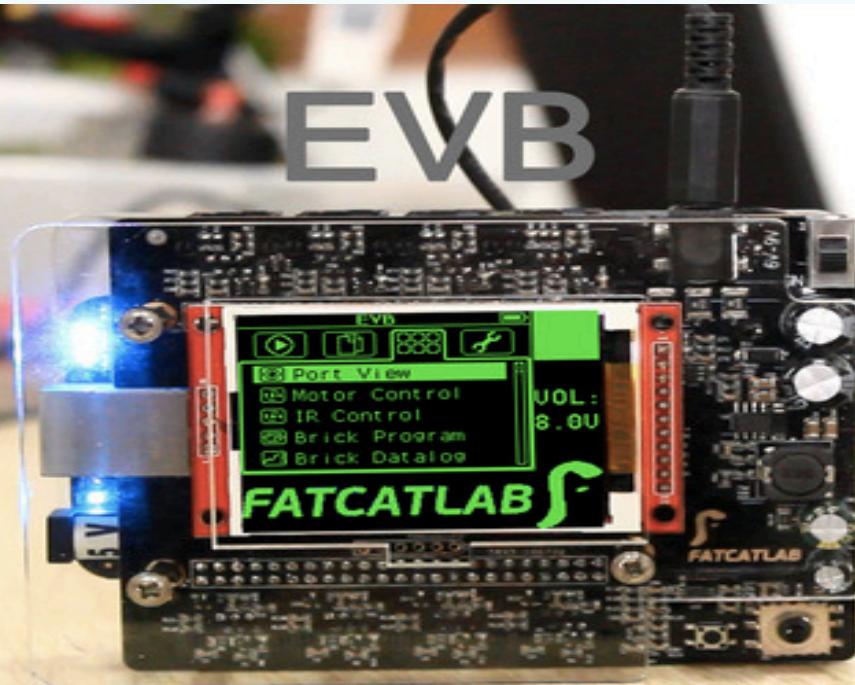
OpenROV

Open source underwater robots for exploration
and education



MakerCon

LEGO EV3 and derivatives



With BBB



EV3

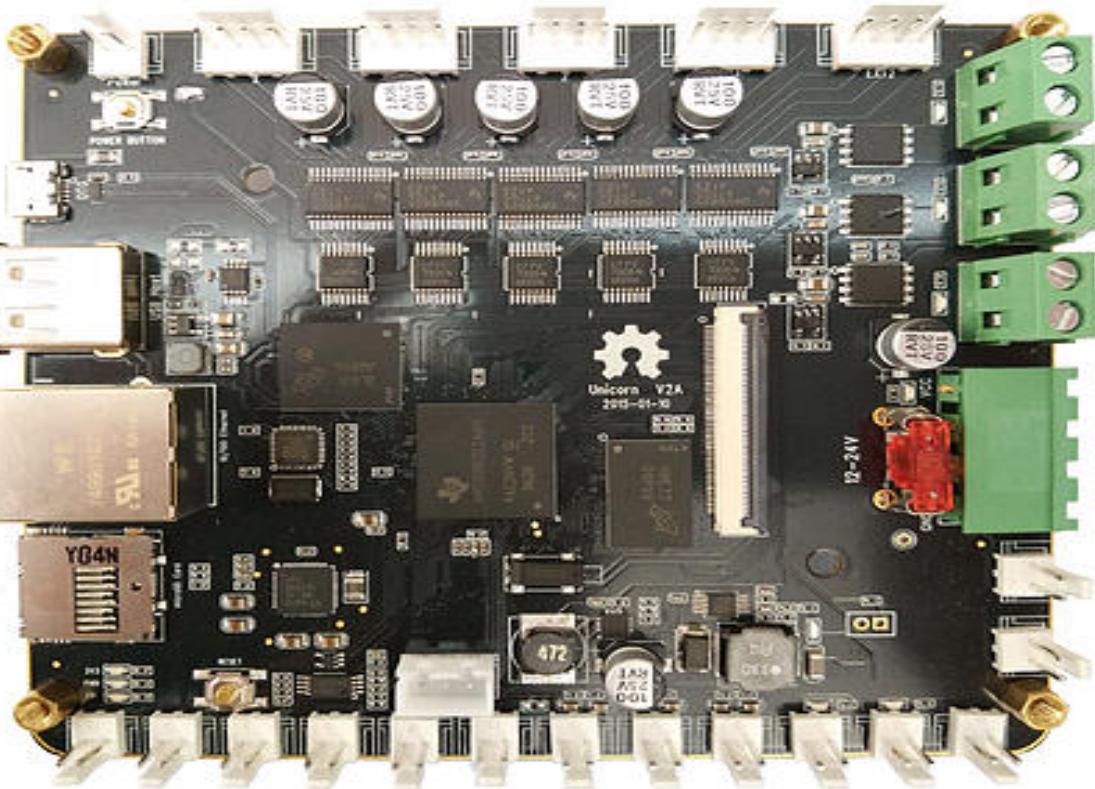
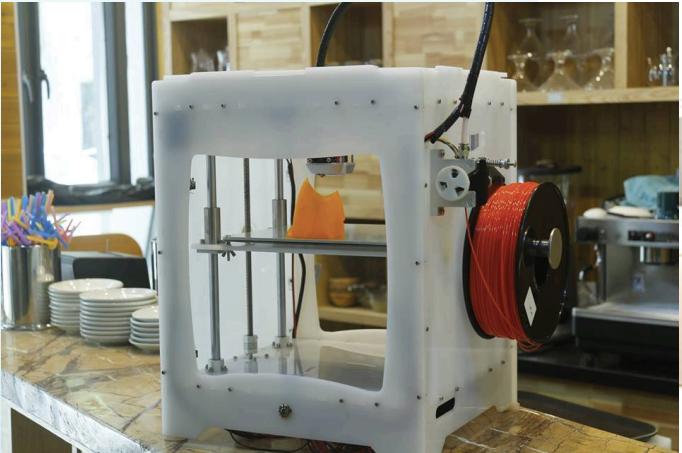


MakerCon

Ninja Sphere



FastbotBBP



MakerCon

BotFactory Squink



POURSTEADY

POURSTEADY

FREE
COFFEE!

SIGN UP

FOLLOW US ON
INSTAGRAM & YOUTUBE



TIPS

STAY TUNED
FOR COFFEE
MAKERS
COMING SOON



Picking a solution

Picking a solution



open source
hardware

Picking a solution

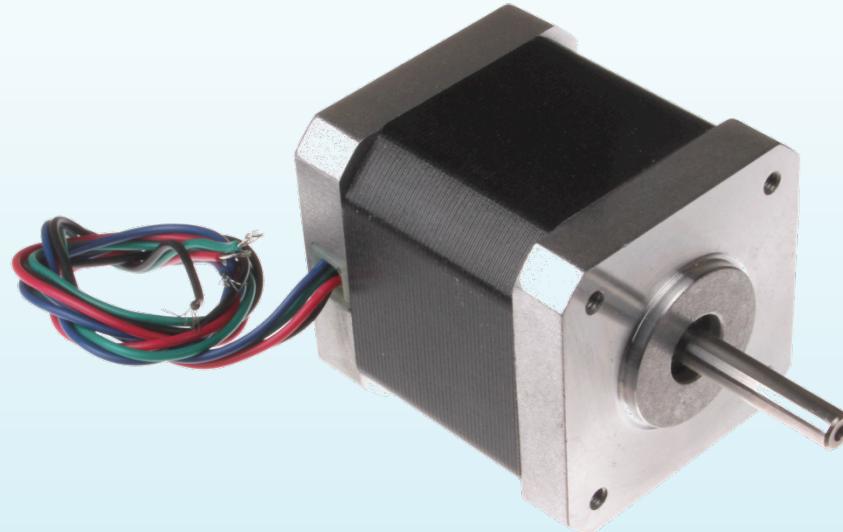
- Open hardware
 - Helps manage supply chain
 - Avoids hidden issues
 - Enables customization
- Mainline support
 - Vendor and community active

But what about... ?

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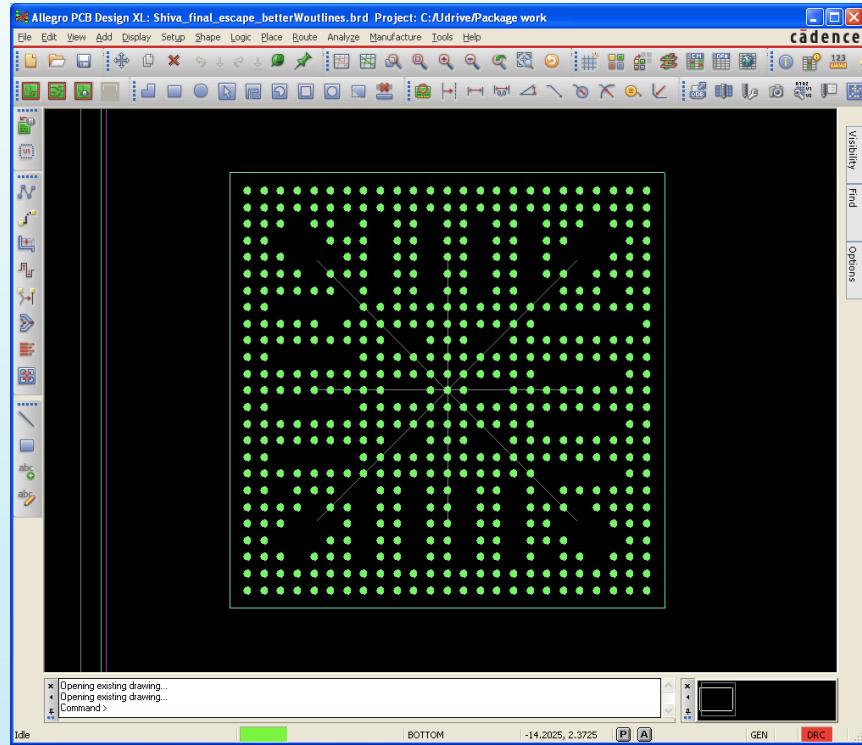
<http://www.machinekit.io/>



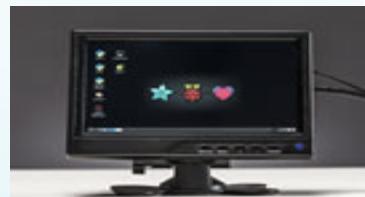
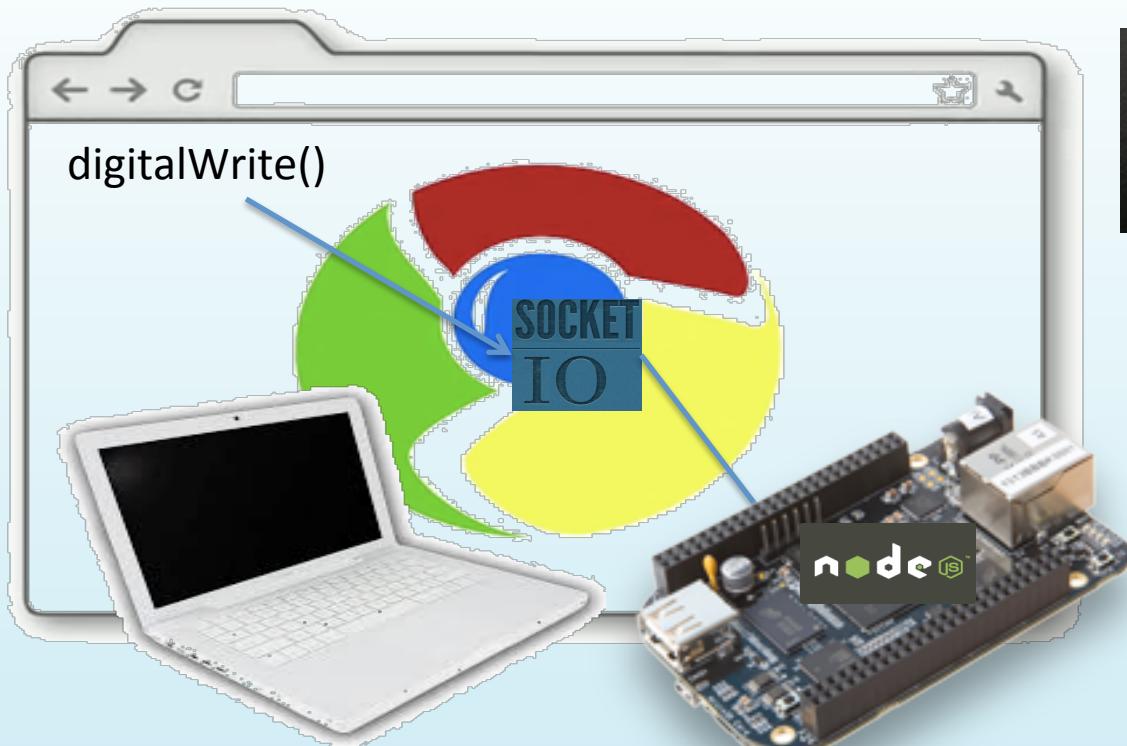
"Nema 17 Stepper Motor" by oomlout - STMO-17.
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But what about... ?

- Real-time
- Manufacturability



Want to learn Linux?



Cloud9 IDE included



The screenshot shows the Cloud9 IDE interface running in a web browser. The left sidebar displays a file tree with various project folders like 'cloud9', 'examples', and 'Support'. The main workspace shows a code editor with a file named 'decodeOctoscroll.js' containing the following JavaScript code:

```
1 var b = require('bonescript');
2
3 var leds = ["USR0", "USR1", "USR2", "USR3", "P9_14"];
4
5 for(var i in leds) {
6     b.pinMode(leds[i], b.OUTPUT);
7 }
8
9 var state = b.LOW;
10 for(var i in leds) {
11     b.digitalWrite(leds[i], state);
12 }
13
14 setInterval(toggle, 1000);
15
16 function toggle() {
17     if(state == b.LOW) state = b.HIGH;
18     else state = b.LOW;
19     for(var i in leds) {
20         b.digitalWrite(leds[i], state);
21     }
22 }
```

The bottom panel includes an 'Immediate' tab, a terminal window showing command-line history, and a status bar indicating the current runner is 'Node.js'.

Thanks!

Join <http://beagleboard.org/chat> and
<http://beagleboard.org/discuss> to chat about
Linux in making

Contact me at jkridner@beagleboard.org