Pi On Your Face

Take a look at the Raspberry Pi

Presented by
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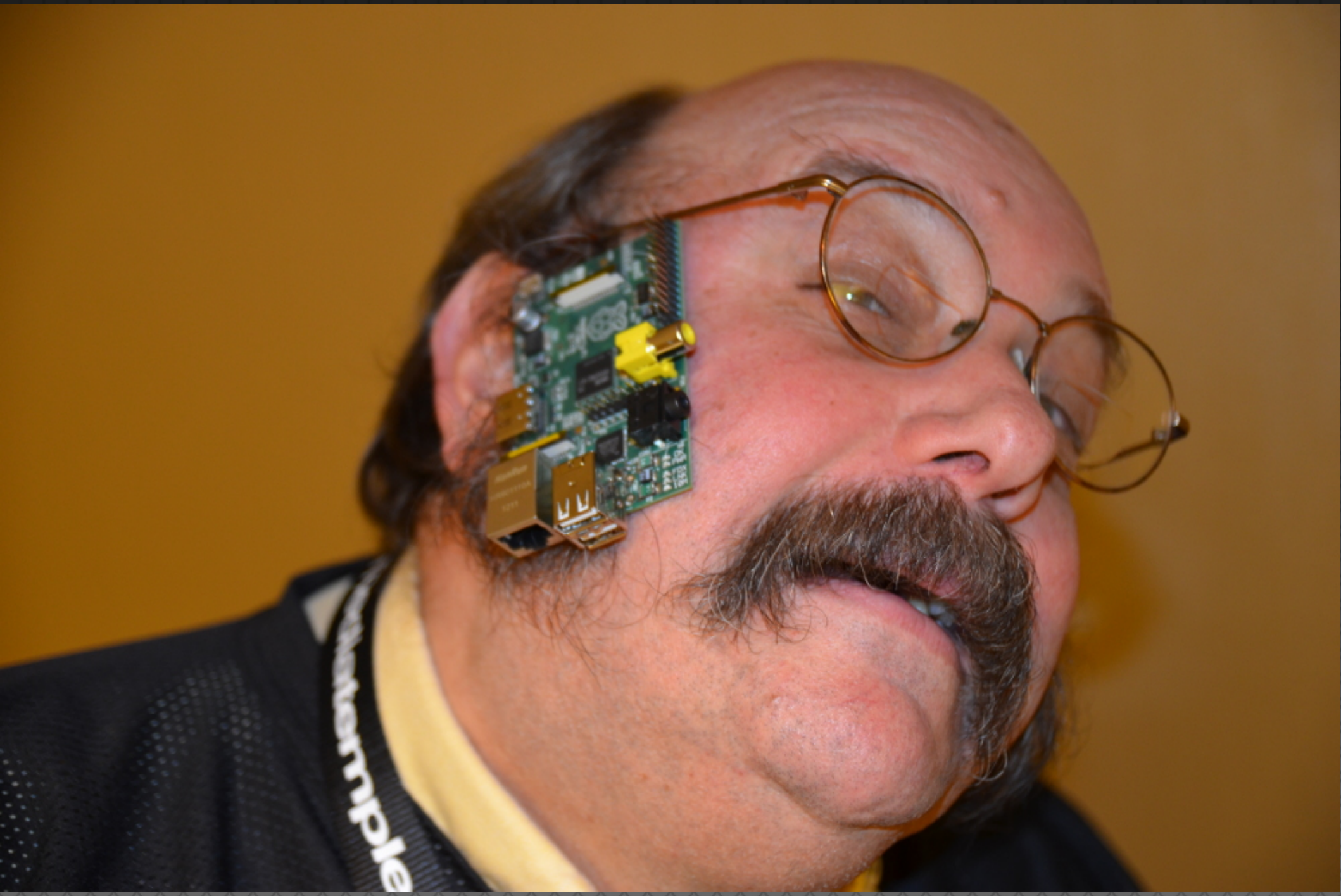
@suehle



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The history of the RasPi

- Early 2006 concept based on Atmel ATmega644
- Designed for educational use
- Intended for Python (but of course is friendly to all)

Pop quiz!

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The BBC Microcomputer Is Here!

A WONDER FOR THE MONEY. Even before its introduction in the U.S., the BBC microcomputer was acclaimed as a "no-nonsense computer" (BYTE magazine); "a remarkably friendly machine" the "will set the standard for home computers for quite some time" (POPULAR COMPUTING); and "the most versatile, small general-purpose computer I've seen . . . a wondor for the money" (COMPUTERS & ELECTRONICS).

EDUCATIONAL USES. The BBC micro was designed as part of a national computer literacy project, one portion of which is "The Computer Programme" TV series being shown in the U.S. on more than 220 PBS stations. BBC micros now account for more than 75% of the computers being ordered by British schools under a government plan to put a computer into every primary and secondary school.

THE SYSTEM. The BBC micro is based on a 2MHz 6502 main microprocessor with a combined RAM/ROM address capability of 64K.

HIGH RESOLUTION GRAPHICS. The system features very high resolution color graphics in modes up to 640 x 256 (163,840 pixels). Text display can be 80, 40 or 20 characters by 32 or 25 lines.

EXPANDABILITY. The computer includes built-in serial and parallel interfaces, a floppy disc interface, a 1MHz expansion bus, analog-digital interfaces, econet interface which allows schools and businesses to link economically up to 254 computers in a low cost local area network, and a unique high-speed data channel called the Tube® for adding a second processor.

SECOND PROCESSORS. An additional 6502 microprocessor provides increased processing speed and an extra 64K of RAM. Alternatively, a Z-80B Second Processor can be joined to add 64K of RAM and allow running of CP/M programs*, which are extensively used for business applications. A third choice is a UNIX based 16032 16-bit processor with 32-bit architecture that provides 256K RAM.

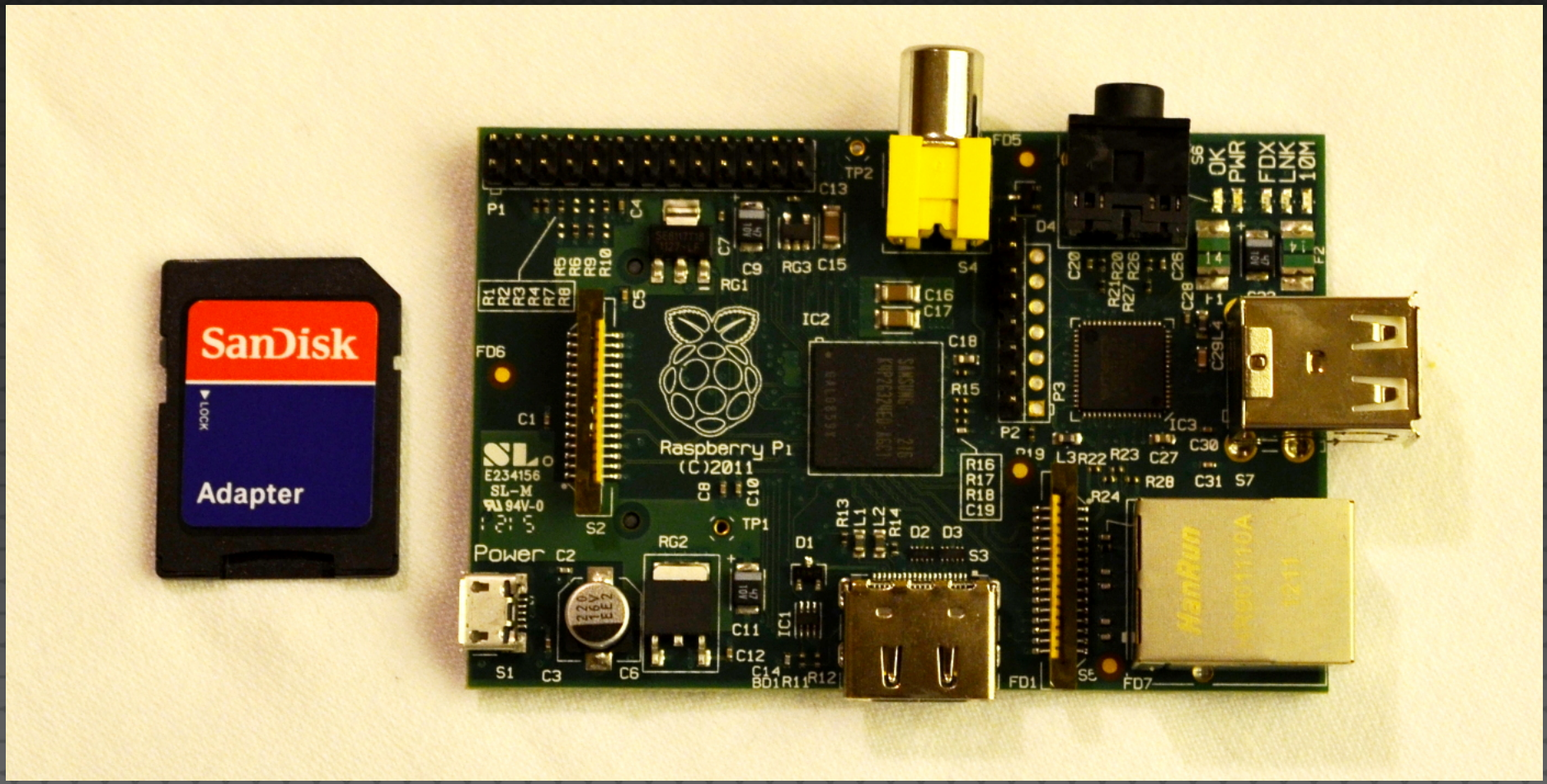
CONTACT
FOURTH DIMENSION SYSTEMS
for details and name of your local dealer.
Dealer inquiries invited.

FOURTH DIMENSION SYSTEMS
1101 South Grand Ave., Suite A
Santa Ana, California 92705
(714) 835-6202

*Registered trademark of Digital Research, Inc.

CIRCLE NO. 30 ON INQUIRY CARD

Mmmm. Pi.



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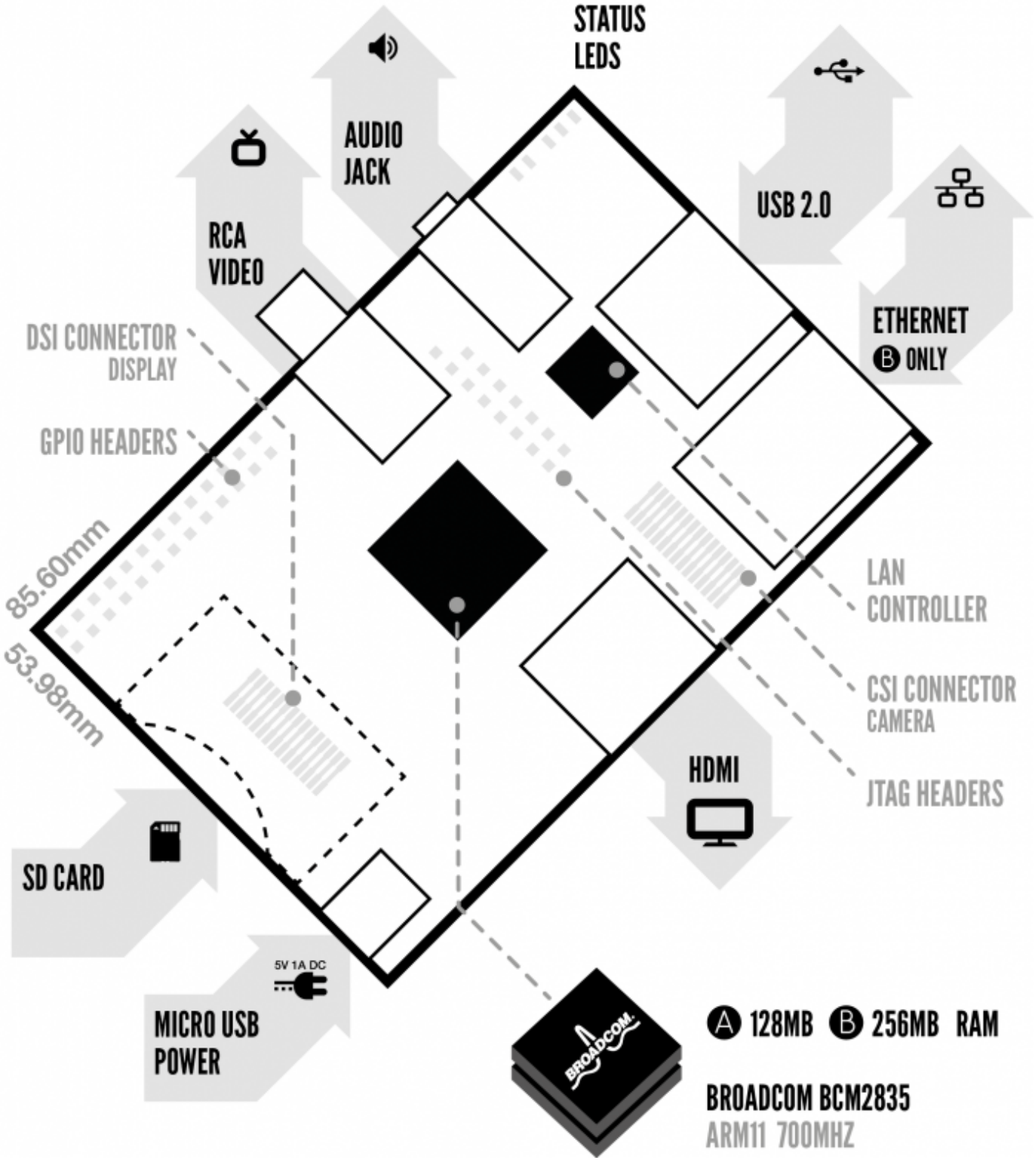
STATUS LEDS
AUDIO JACK
RCA VIDEO
USB 2.0
ETHERNET
B ONLY
DSI CONNECTOR DISPLAY
GPIO HEADERS
85.60mm
53.98mm
LAN CONTROLLER
CSI CONNECTOR CAMERA
JTAG HEADERS
HDMI
SD CARD
5V 1A DC
MICRO USB POWER
A 128MB B 256MB RAM
BROADCOM BCM2835
ARM11 700MHZ
by Paul Beech

Getting it all together

Raspberry Pi	$35
SD card	$10
Display	$100
Power	$5
Keyboard	$20
Mouse	$10
	$180+

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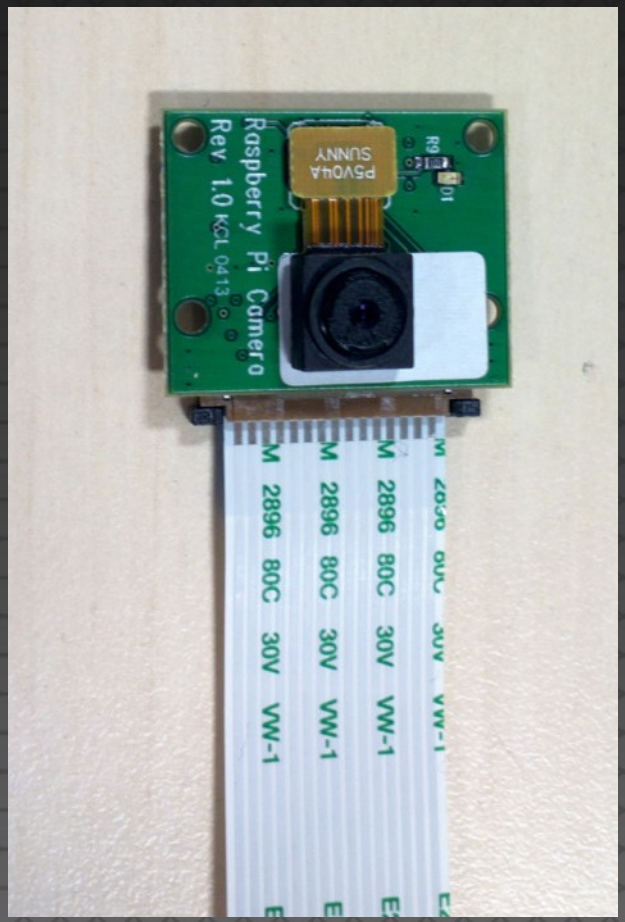
Where's my camera?



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Let's go to the mall!

- Element14 (newark.com)
- Adafruit.com
- MakerShed.com
- Sparkfun.com (for parts)
- Amazon
- And in a pinch... Radio Shack

Getting started

1. Get the right SD card
2. Get the right distro
3. Don't break off C6
4. ???
5. Profit!

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1. Get the right SD card

- Most quality cards are OK
- Micro with adapter?
- elinux.org/RPi_SD_cards

Display options

- HDMI 1.3 and 1.4 supported; audio and video output, does not support HDMI input
- PAL and NTSC supported through RCA with audio through 3.5 mm to red/white RCA connector
- DSI
- No VGA

Touchscreens

- Ooh, look! DSI connector!
- Mimo 720
  - **USB DisplayLink Framebuffer Driver CONFIG_FB_UDL/udlfb.ko**
  - USB DisplayLink Kernel Mode Setting (KMS) driver CONFIG_DRM_UDL/udl.ko
- Won't work with OpenELEC without rebuilding the kernel

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Couture kernel

- rpi-3.2.27
- rpi-3.6.y

```
$ git clone
git://github.com/raspberrypi/linux.git
$ tar xvfz rpi-3.6.y.tar.gz
$ make mrproper
```

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2. Get the right distro

- Fedora (of course)
- Raspbian
  - Moebius
- RaspBMC
- Occidentalis

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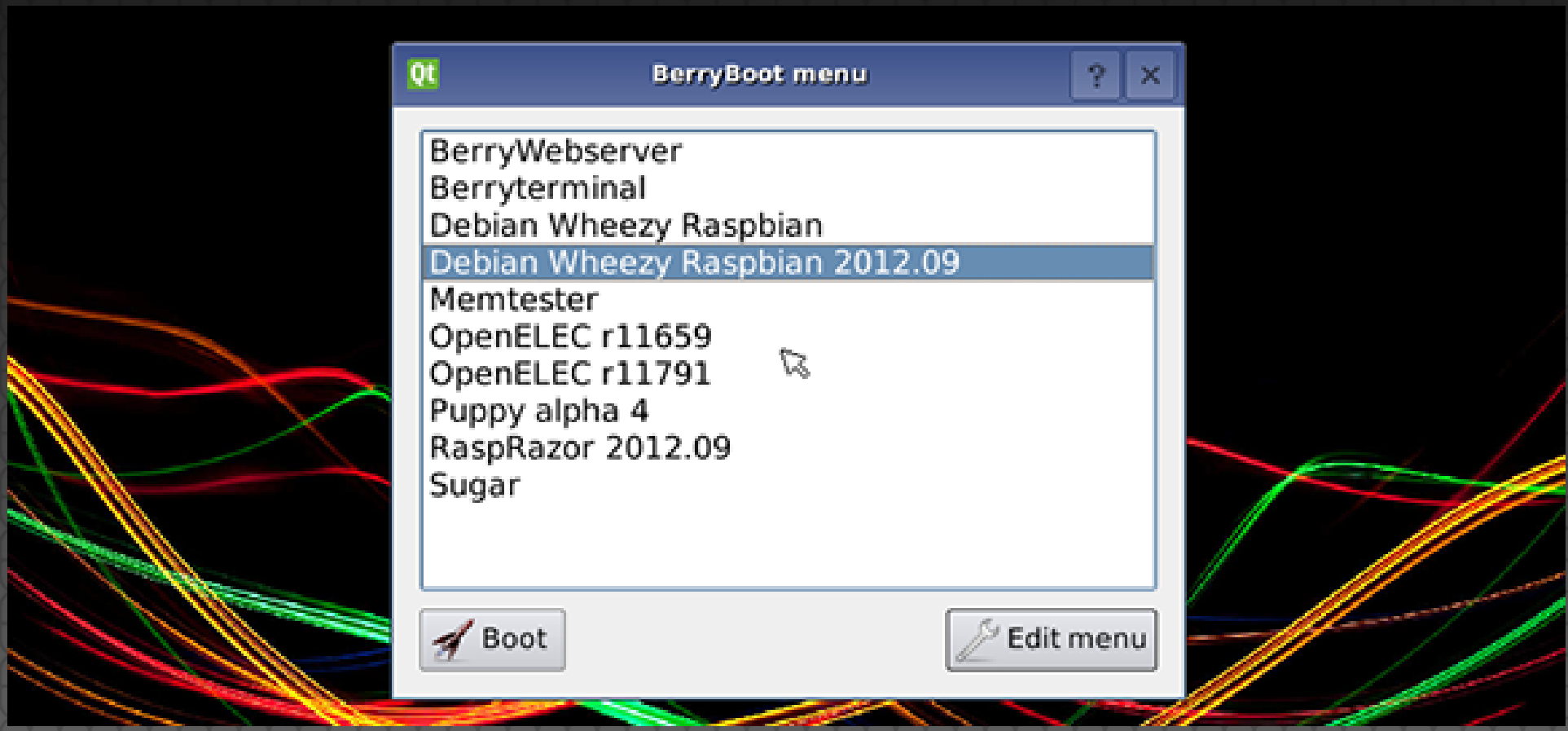
2.14 Or get brave

Android Arch ARM AROS
Chromium OS Debian Squeeze
Firefox OS FreeBSD Gentoo
Haiku IPFire NetBSD PiBang
Plan 9 from Bell Labs QtonPi
RISC Slackware ARM Squeezed
ARM Puppy WebOS

Bootloader! BerryBoot



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Installing it

- Fedora ARM installer
  - fedoraproject.org/wiki/Fedora_ARM_Installer
  - yum install fedora-arm-installer

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Installing it

- Fedora ARM installer
  - fedoraproject.org/wiki/Fedora_ARM_Installer
  - yum install fedora-arm-installer
- On a Mac, Rpi-sd card builder or RasPiWrite
  - Google “Rpi-sd builder”
  - github.com/exaviorn/RasPiWrite
- BerryBoot

1 + 2 – worrying =
Buy pre-loaded

Power

- 5V. 5V. 5V.
- Why you shouldn't use iPhones
- Your laptop's USB port is not the droid you're looking for
- Put a power brick on your shopping list
- Did I mention C6?

Write down these words

220 uF 16v electrolytic capacitor

Decode the LEDs

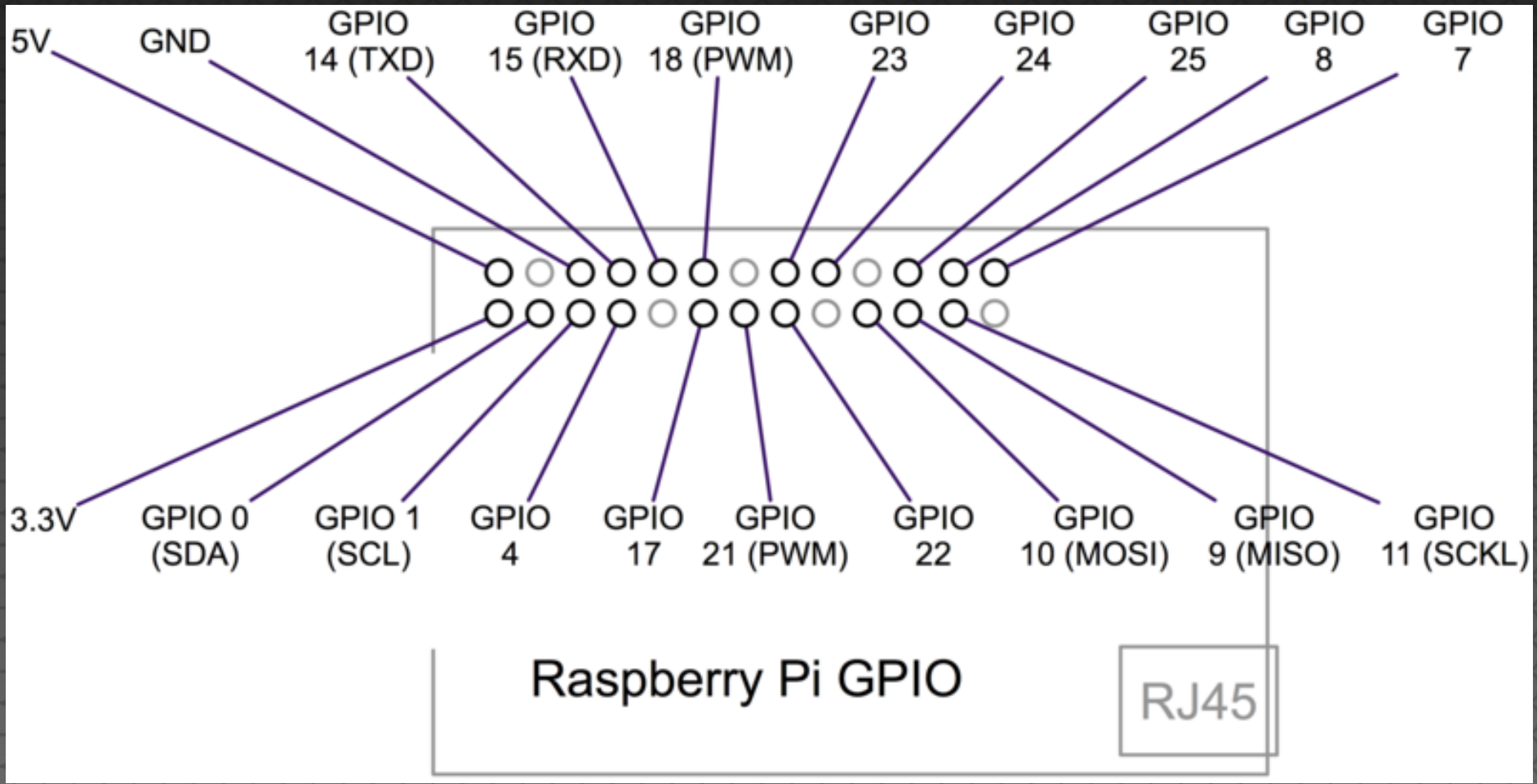
- D5 OK (Rev 1.0) ACT (Rev 2.0) Green SD card access, connected to GPIO 16
- D6 PWR Red 3.3 V Power, connected to 3V3
- D7 FDX Green Full Duplex LAN
- D8 LNK Green Link/Activity LAN
- D9 10M (Rev 1.0) 100 (Rev 2.0) Yellow 10/100Mbit LAN

Why didn't it start?

- Red light off = No power
- Red light on, green light off = The Pi can't read the image on the card. The voltage is below 5V.
- Green light blinks 3 times = start.elf was not found
- Green light blinks 4 times = start.elf did not launch
- Green light blinks 7 times = kernel.img was not found

GPIO

- http://elinux.org/RPi_Low-level_peripherals



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Raspberry Leaf

http://www.doctormonk.com/2013/02/raspberry-pi-and-breadboard-raspberry.html

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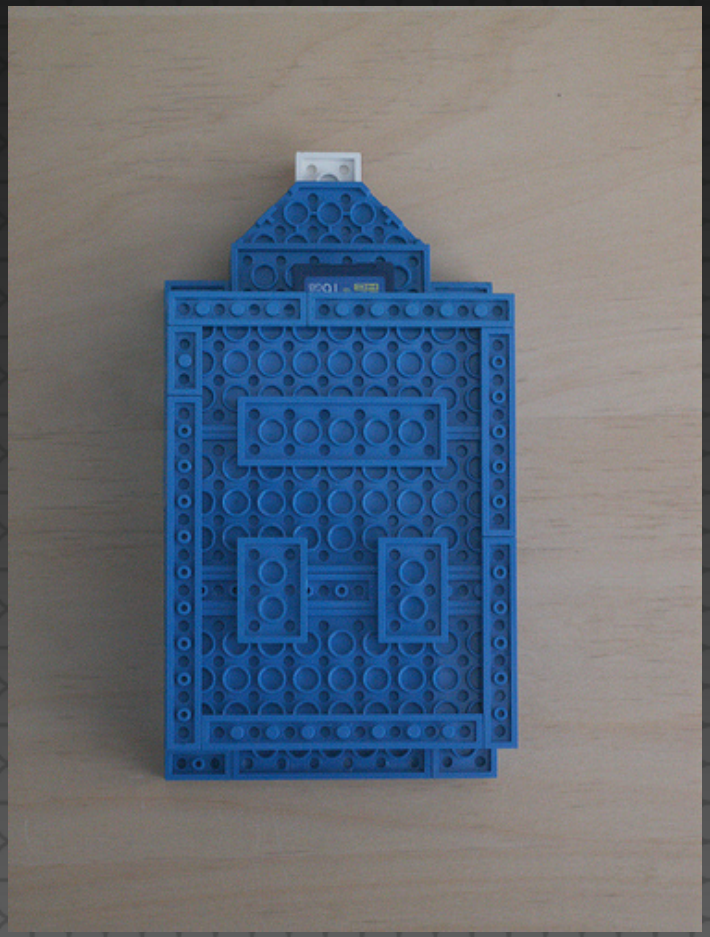
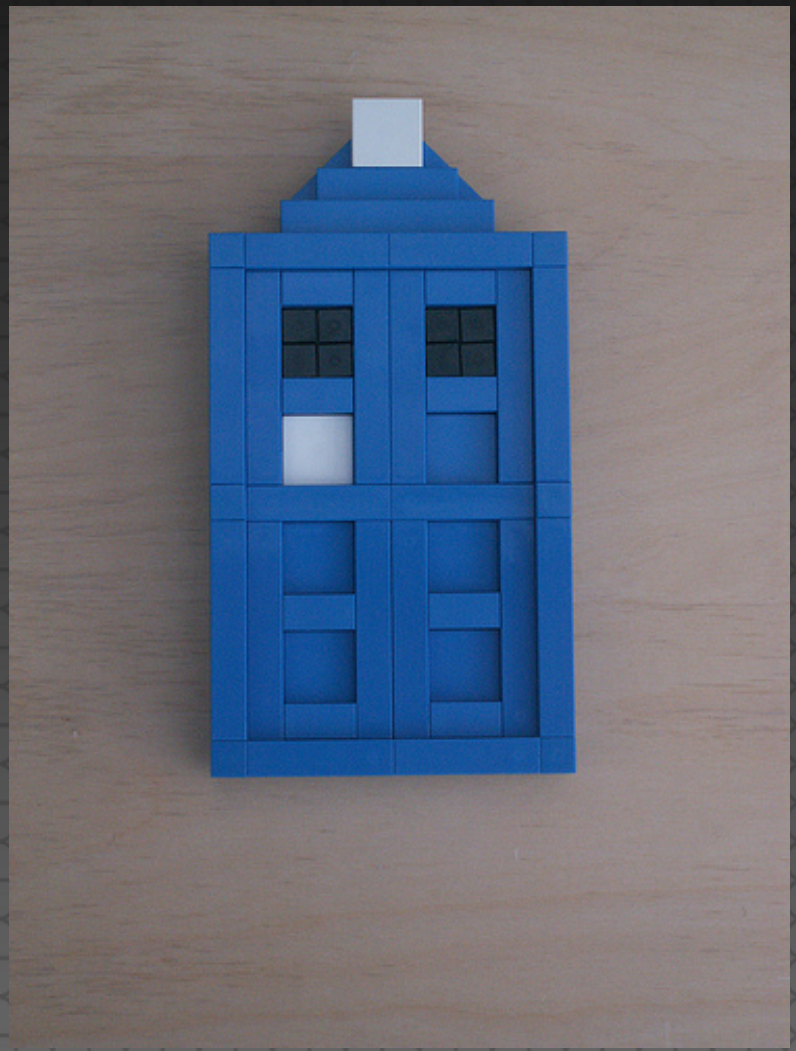
Building a cross-compiler

- You *could* use an existing one... or you could DIY with crosstool-ng (crosstool-ng.org)
- Get kernel source: github.com/raspberrypi/linux

Blah blah blah.
Stop saying words and
show us pretty pictures
of cool things
people made.

Not bigger on the inside.





Flickr: ferret boy

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Case closed.

- Buy one
- 3D print one
- Make one

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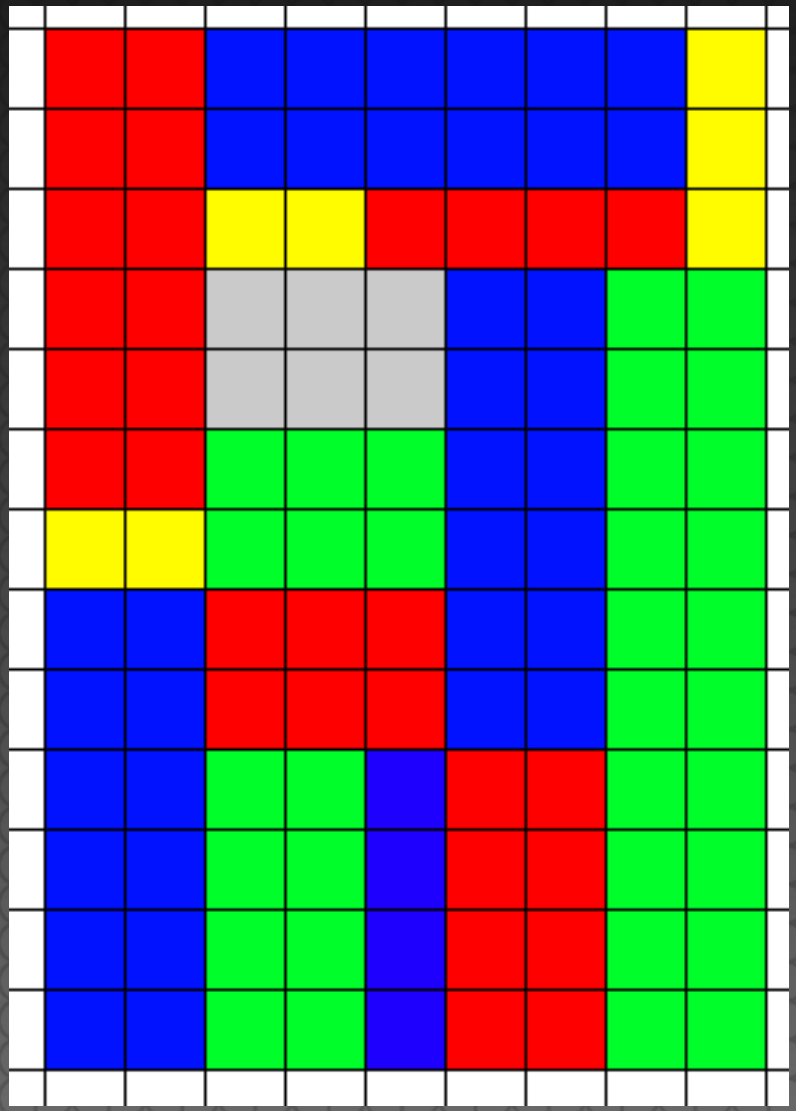
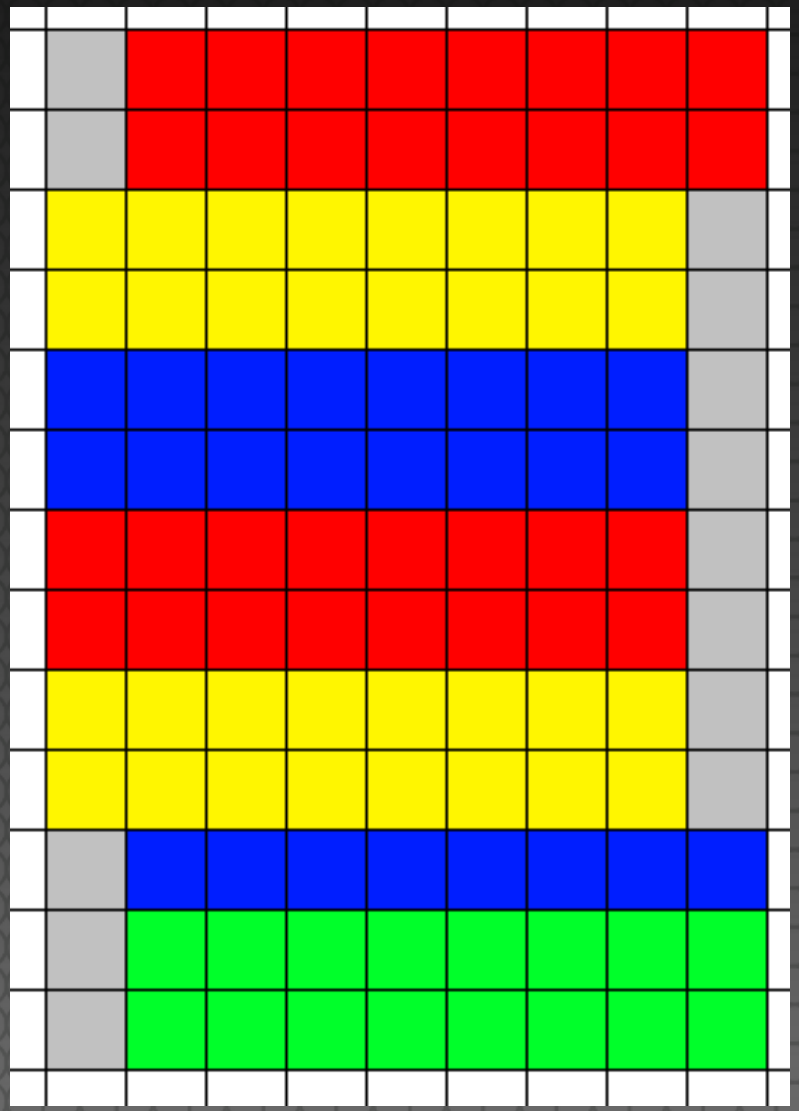
Lego my Pi-go...?





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Or just buy it.

http://www.thedailybrick.co.uk/lego-sets/custom/lego-custom-raspberry-pi-case.html

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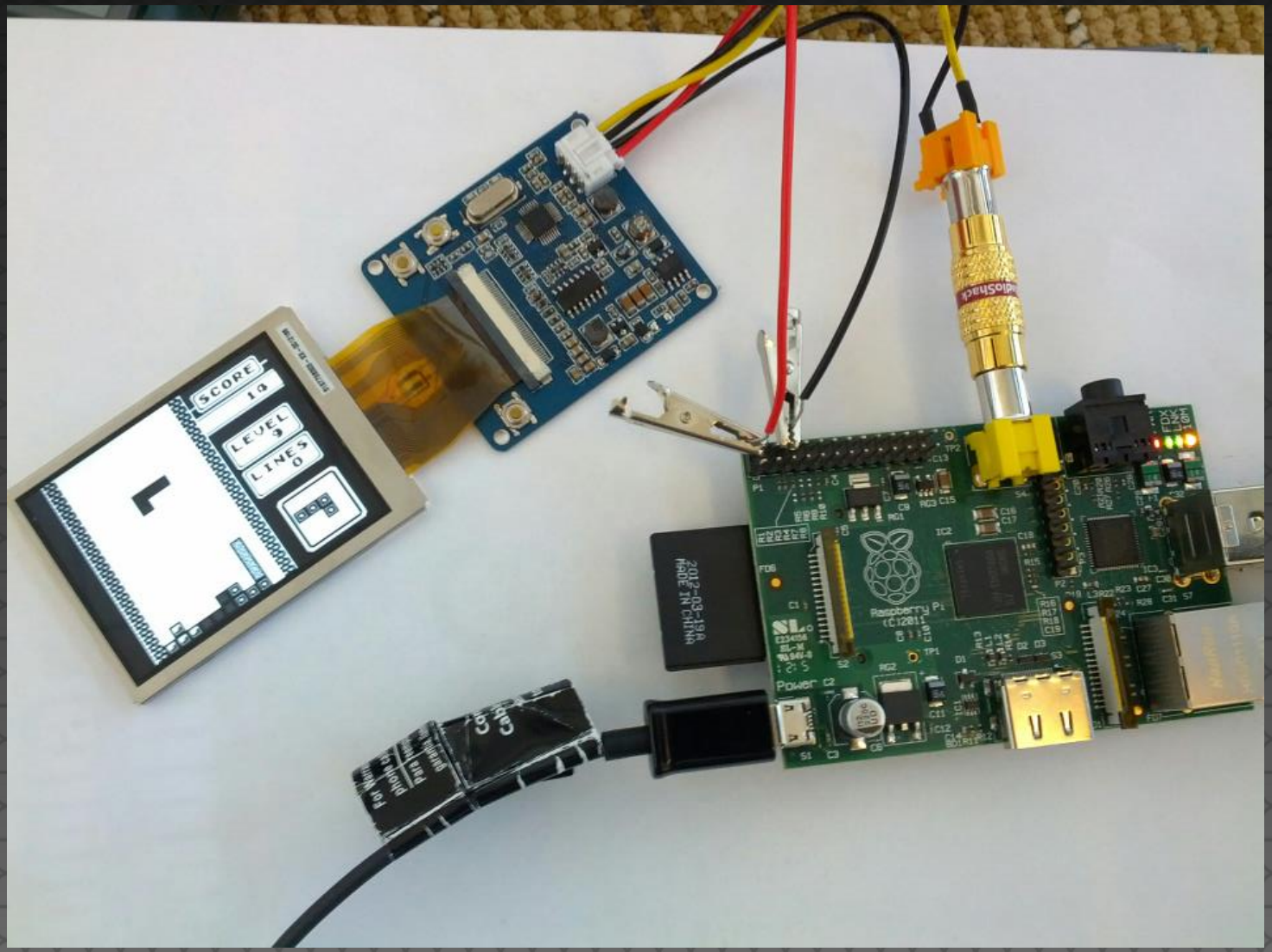
PiBoy



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PIP-Boy 3000

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RIP Pi-PIP-Boy

http://thegrieve.co.uk/blog/2012/11/the-raspberry-pipboy/

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Emulating your childhood

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STAGE 4

SUPER SCRATCH PROGRAMMING ADVENTURE!
©2012, THE LEAD PROJECT

HACK ATTACK 4

STAGE

Chapter Focus

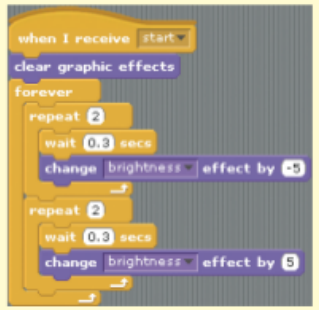
Learn to control sprites with the mouse, program objects to bounce back, and start a game by pressing the spacebar.

The Game

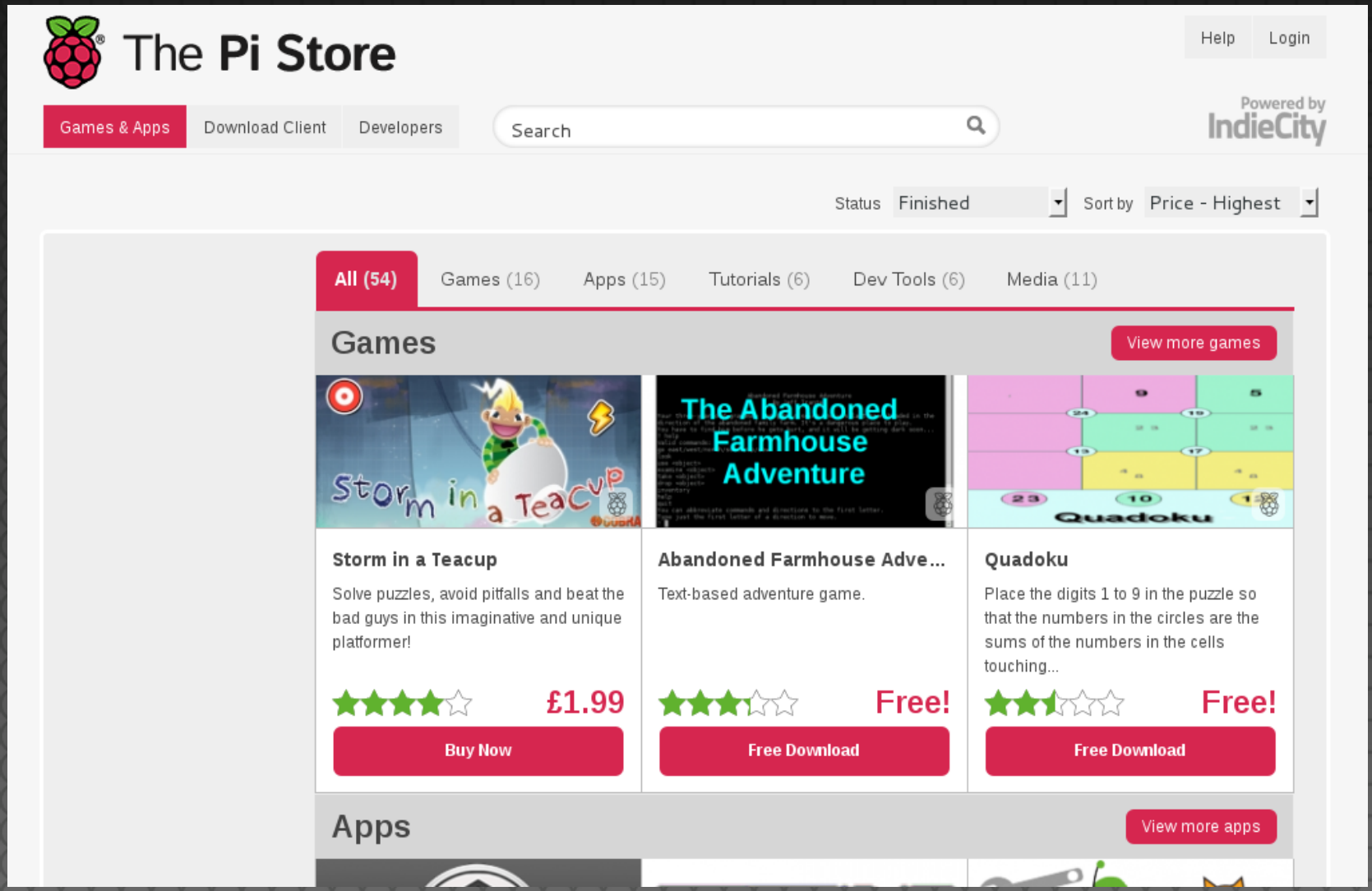
Help Scratchy attack flying viruses and stop them from touching the server at the bottom of the screen. If you successfully block 30 viruses, you win the game!

First, go to the **Stage** and import a sparkly nighttime picture of Hong Kong!

Did you know you can add programs to the Stage, too? We can add this program to make our city glow!



store.raspberrypi.com



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Pi, meet ET. ET, meet Pi.

- SETI@home
  - Not the screensaver of your (my) college years
  - Berkeley Open Infrastructure for Network Computing (BOINC)

```
$ su -c 'yum install boinc-manager boinc-client'
$ systemctl enable boinc-client.service
```

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PiGate

stargateproject.wordpress.com

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PiFM

- Go to bit.ly/TMgytl from the Pi (and download to home folder)
- `sudo python`

```
>> import PiFM
>> PiFm.play_sound("sound.wav")
```

- Tune a nearby radio to 103.3

PiFM

- System Clock = 500Mhz
- Divider Register = 5.000
- FM radio clock frequency = 500/5 = 100Mhz

Tux Photobooth

http://fedoraproject.org/wiki/Raspberry_Pi_photobooth

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Tux Photobooth

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Aren't you a little small for an HTPC?

- RaspBMC/XBMC
  - 1080p
  - Share over NFS, SMB, FTP, HTTP, USB, XYZ, and other acronyms
  - Install to SD, USB, or run off NFS Embedded Samba TVHeadend FTP SSH

Can you do it?

Anton Hvornum · 5 months ago

Within 3 minutes, i've:

* Opened a package containing a Raspberry Pi
* Found a SD card in a drawer
* Googled "Raspberry pi xbmc"
* Installed Raspbmc onto the SD card
* Booted it and it works...

I havn't even figured out who's behind raspbmc or anything, but whoever you are... i love you!

72 · Reply · Share ›

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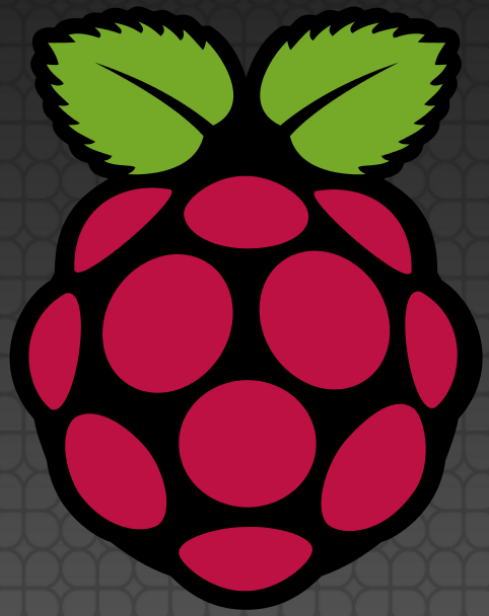
Android on your Pi

+



http://androidpi.wikia.com/wiki/Android_Pi_Wiki

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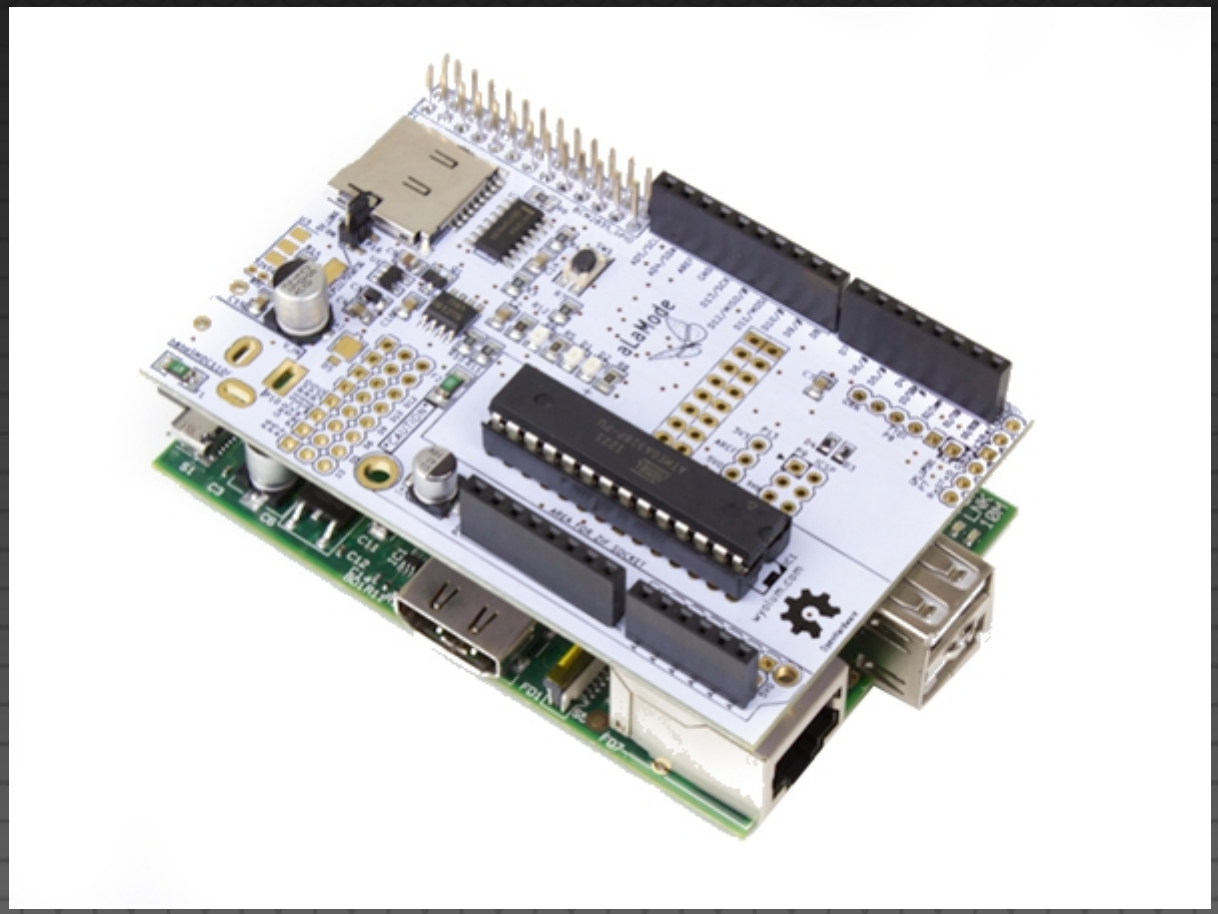
Ice cream with your Pi



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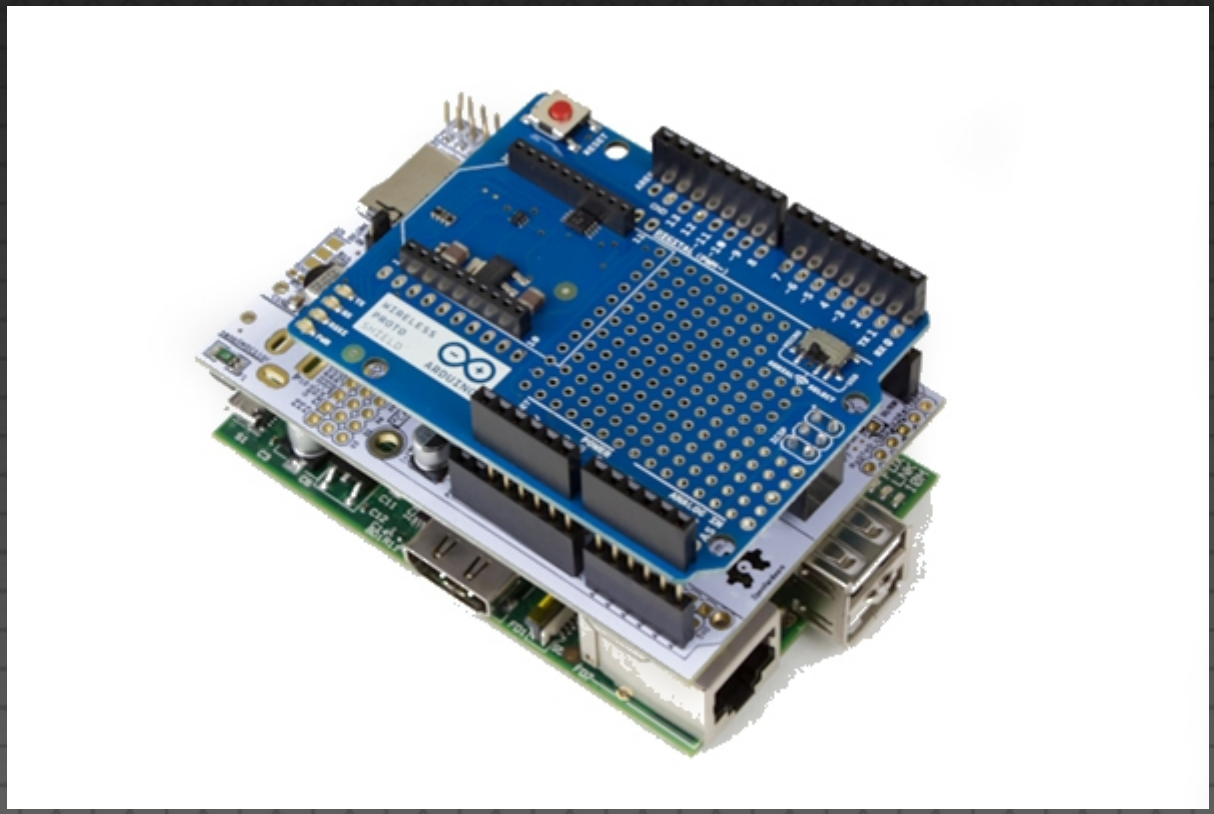
Ice cream with your Pi



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Best Valentine EVER

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SpritesMods.com

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FishPi.org

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www.instructables.com/id/Coffee-Table-Pi

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Resources

- learn.adafruit.com
- elinux.org
- instructables.com
- *Beginner's Guide to Raspberry Pi*
- *Raspberry Pi Hacks*
- Contact:
  - @suehle | ruth@redhat.com
  - @spotrh | spot@fedoraproject.org

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