



EVENT

NAME

# Raspberry Pi history, tips and use case

FOSDEM 2019@Ulb solbosch campus brussels belgium

DATE

**FEB 3<sup>RD</sup> IN 2019**

EVENT ORGANIZE

**JAPANESE RASPBERRY PI USERS GROUP**



# MASAFUMI OHTA FOUNDER AND REP. JAPANESE RASPBERRY PI USERS GROUP

Used to be a core contributor for  
OpenSolaris project, now Leading  
Raspberry Pi Community in Japan and  
has been helping Raspberry Pi  
Foundation as one of the volunteer since  
2012  
Often an OpenStacker looking into GPGPU  
use.





## 日本語フォーラムについて

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1 post

by [masafumi\\_ohita](#)[Edit post](#)[Delete post](#)[Report this post](#)[Information](#)[Reply with quote](#)[Permalink](#)

» Fri Dec 14, 2012

2:14 pm

太田といいます。何人かの日本の皆さんはじめまして。日本Raspberry Piユーザグループの代表をしています。

ようやくと悲願でもありました日本語フォーラムを作っていました。まずここまで来たことに日本のコミュニティメンバーの皆さん、また日本でこの機械をお使いいただいている方、これからお使いいただこうと考えている皆さんに御礼申し上げます。

是非今後日本のコミュニティを盛り立てるためにもどうぞこのフォーラムをどしどしお使いくださいませ。普段日常のお仕事もあり、ポスト承認がおくれちゃったらごめんなさい、なのですが、できる限りスムーズに皆様がここでいろいろお話できるよう、頑張ります。

#ちょっとさっきまで他のモデレータにおせえぞ承認とおこられますた 😊

で、スパムや商品売り込みに関しては結構厳しくやってます...他のモデレータも他国のフォーラムであってもキチンと見てます。スパムやあやしい商品売り込みであろうポストは僕以外からも削除されることをあしからず承知くださいませ。(Google翻訳で調べているようですよ、まちで)

基本ルールは通常のこういうOSS系フォーラムと変わりありません。節度と紳士淑女であらんことを。なにか使い方でご不明な点などありましたらどしどし太田までください。

ではでは、太田でした。

----

Masafumi Ohta

<https://groups.google.com/d/forum/japanese-raspberry-pi-users-group>

Forum Moderator



Posts: 251

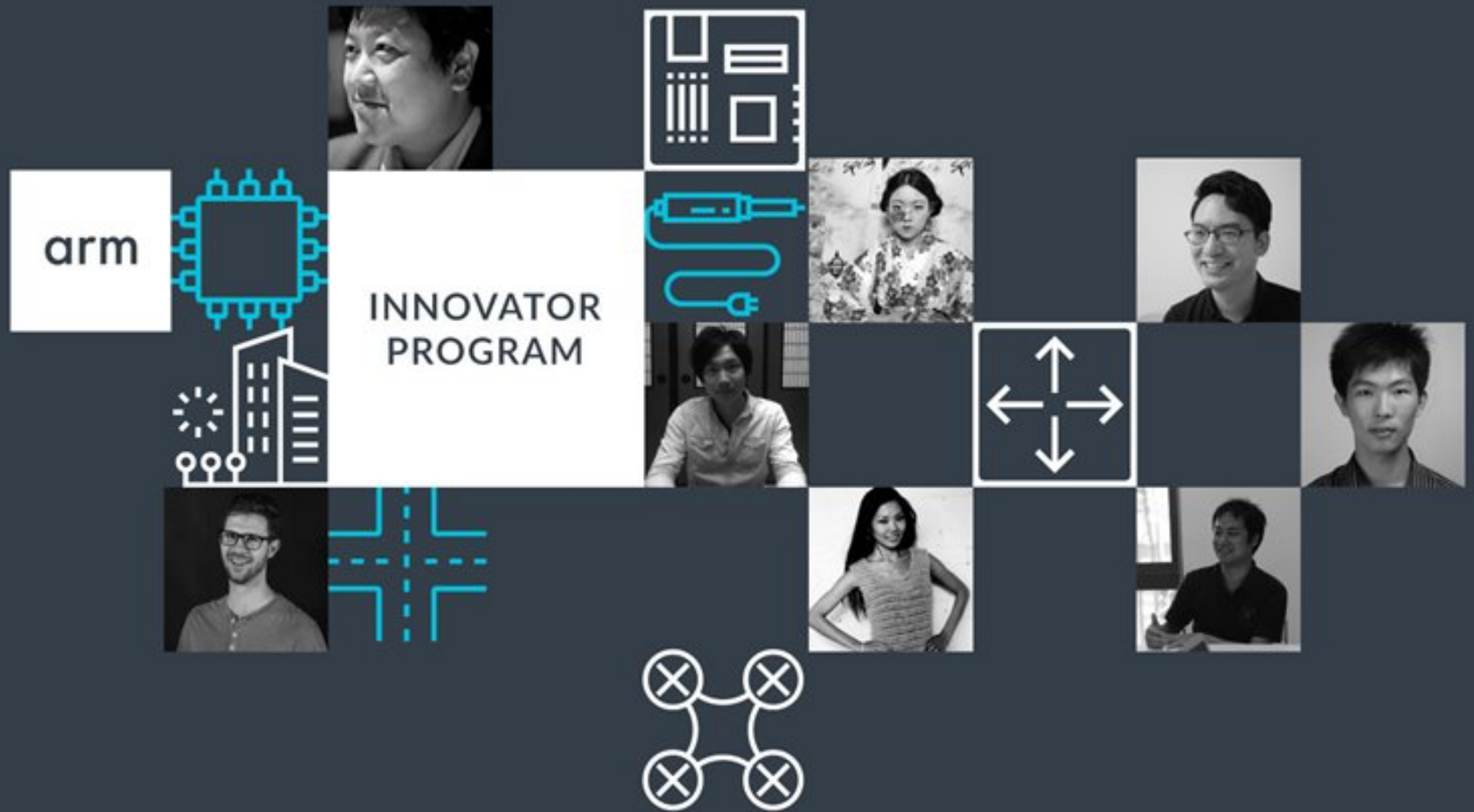
Joined: Sun Sep 09, 2012 10:07 am

Location: Tokyo



I am one of the volunteer for Raspberry Pi Foundation.

I am volunteering for them as one of the forum moderator on Raspberry Pi official forum site.



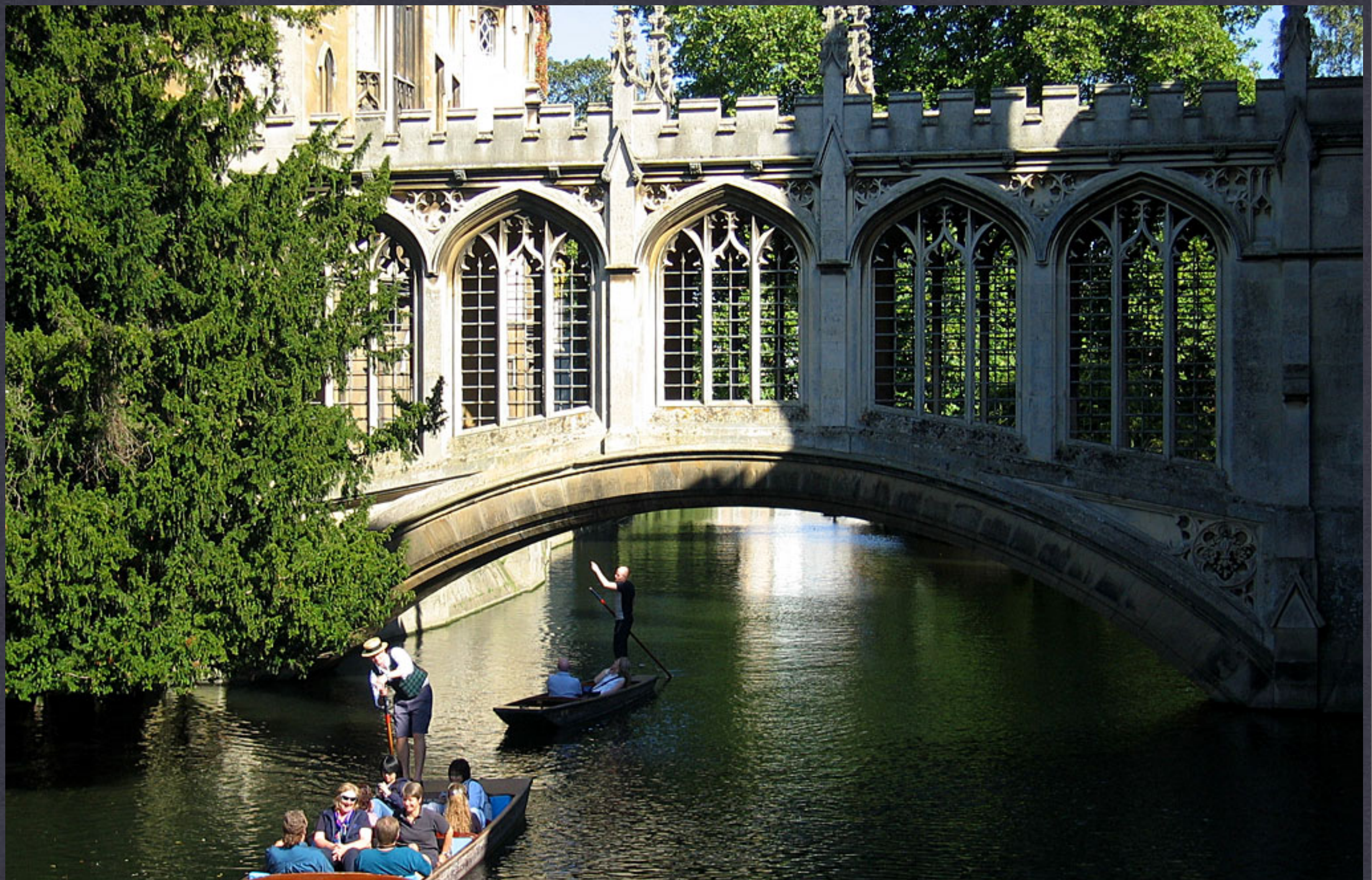
**I am selected ARM INNOVATOR, leading ARM-based things community**

Thanks selecting me to ARM +hackster.io (an AVNET community) choosing me



# Raspberry Pi history..





## Looking back history: Getting back 2012 in Cambridge

What happens on the programming education?



# What's happens at that time

- **Declining applicant numbers to major Computer Science**
  - > 600 applicants in 1999
  - < 250 applicants in 2008
- **Declining technical skills**
  - In 1995 most students could program when they arrived, but ten years later many had only designed simple HTML web pages.
  - Remedial teaching required...



# Diagnosing the problem

- **Home computers in 1980s**
  - **Children learned to program**
  - **This was our source of applicants**
- **Replaced by appliances**
  - **e.g. games consoles, tablets**
  - **'PC is difficult to use, tablets are easy to handle'**
- **It is getting hard to hack 'core' system in computer.**
  - **Computer is the tool for email, web surfing and Office**





**This is my friend's old PC - x68000 by SHARP**

Played with not only games but also programing





**Bye Bye PC, Tablet and SmartPhone is too enough for IT every-day life**  
PC is complex and has sometimes unexpected error so Some doesn't have any PCs, has only Tablets/SmartPhone



# Concepts for the goal

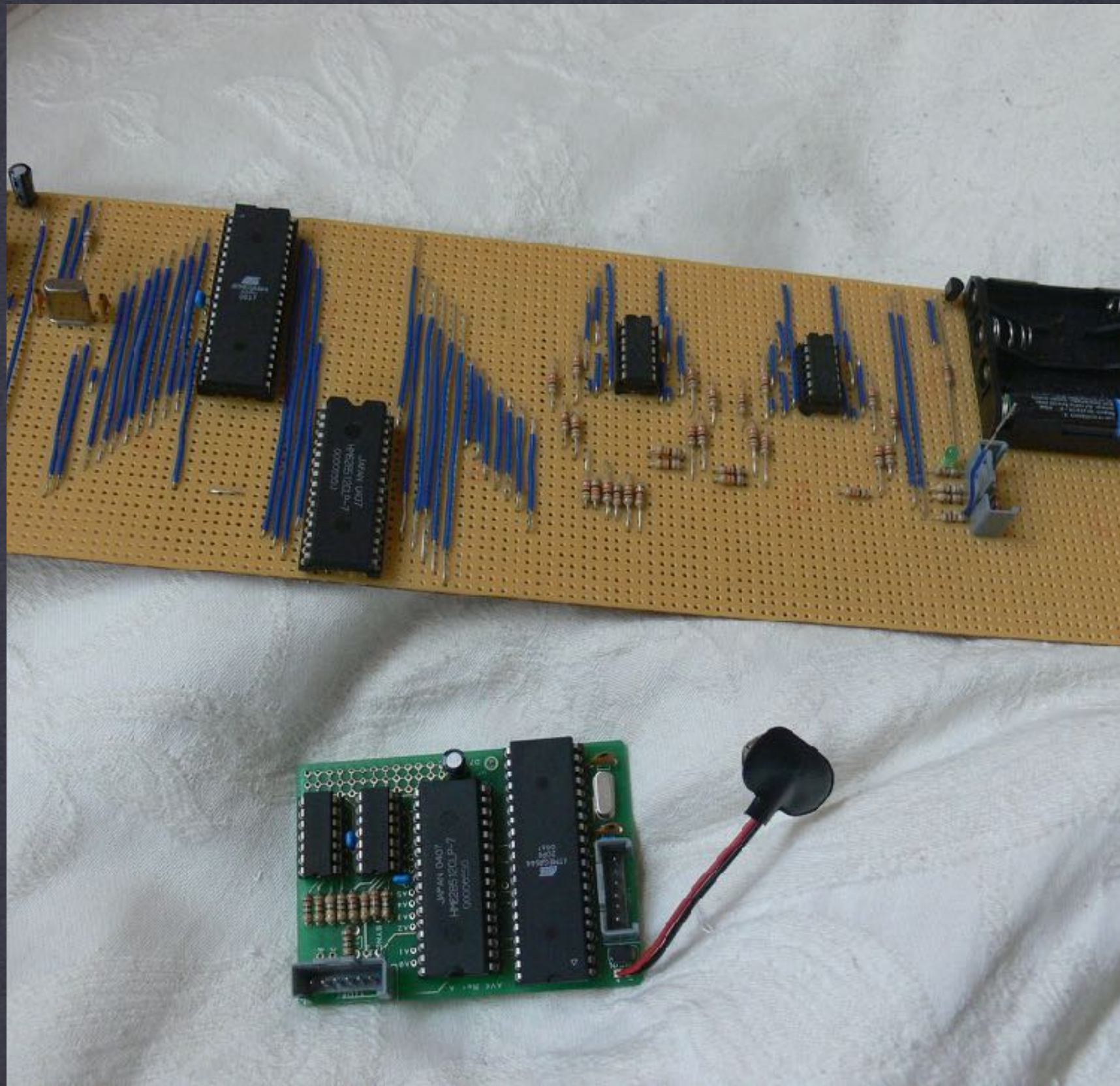
- **Inexpensive**
  - it would have to be cheap – their price target was \$25, which they thought was the price of a textbook.
- **Fun**
  - It would have to be interesting to children, which for them meant playing games and videos also.
- **Robust**
  - It would have to be small and robust, so that children could carry it to school.
- **Programmable**
  - Obviously, it would have to be programmable, in as many languages as possible.



# Looked into ARM in cellphone

- **Eben Upton looked into Broadcom ARM GPU SoC chip in Nokia cellphone**
  - **It is enough speed to learn programming.**
  - **He inspired old PC (BBC Micro/PC-9800), it is enough to educate programming because cellphone has the same CPU speed nowadays as those old PC**
  - **It may be cheaper than ordinary x64-based PC**  
**It should be the same price as textbook (within 25US\$)**





## Raspberry Pi 2006 Edition and Raspberry Pi Alpha boards

The first Raspberry Pi has Atmel ATmega644 22.1MHz, and a 512K SRAM for data and framebuffer storage



'I felt that much higher performance, and the ability to run a general-purpose operating system, outweighed the benefits of home assembly'

- Eben Upton posted 'RASPBERRY PI — 2006 EDITION' to Raspberry Pi official blog, 23rd Oct 2011

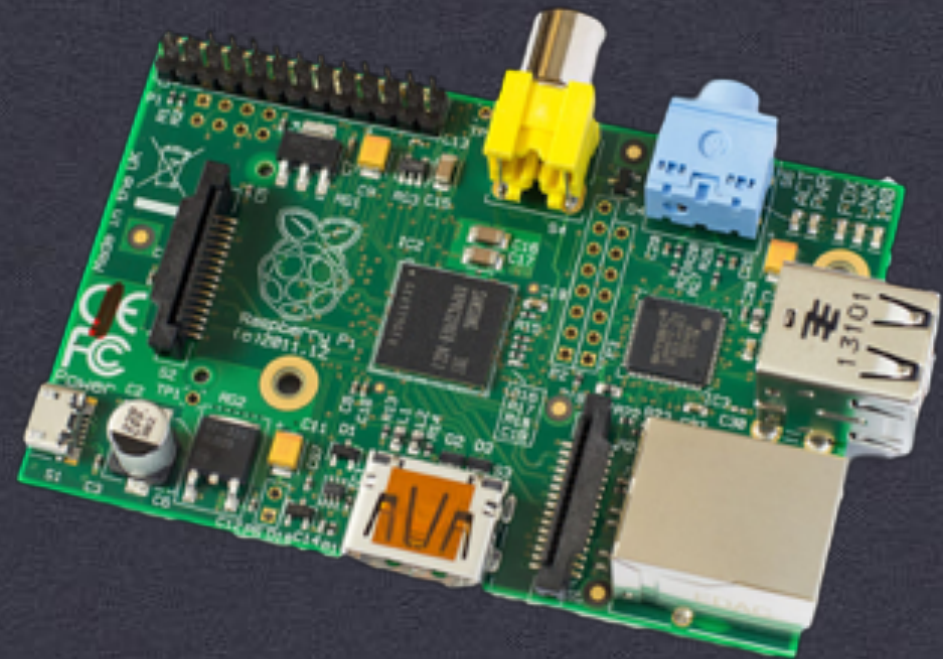


# Raspberry Pi 1

## Raspberry Pi 1 Model B

- First production release
- Launched in 2012
- 700MHz ARM11
- 256MB/512MB RAM
- \$35

Five major revisions has been released



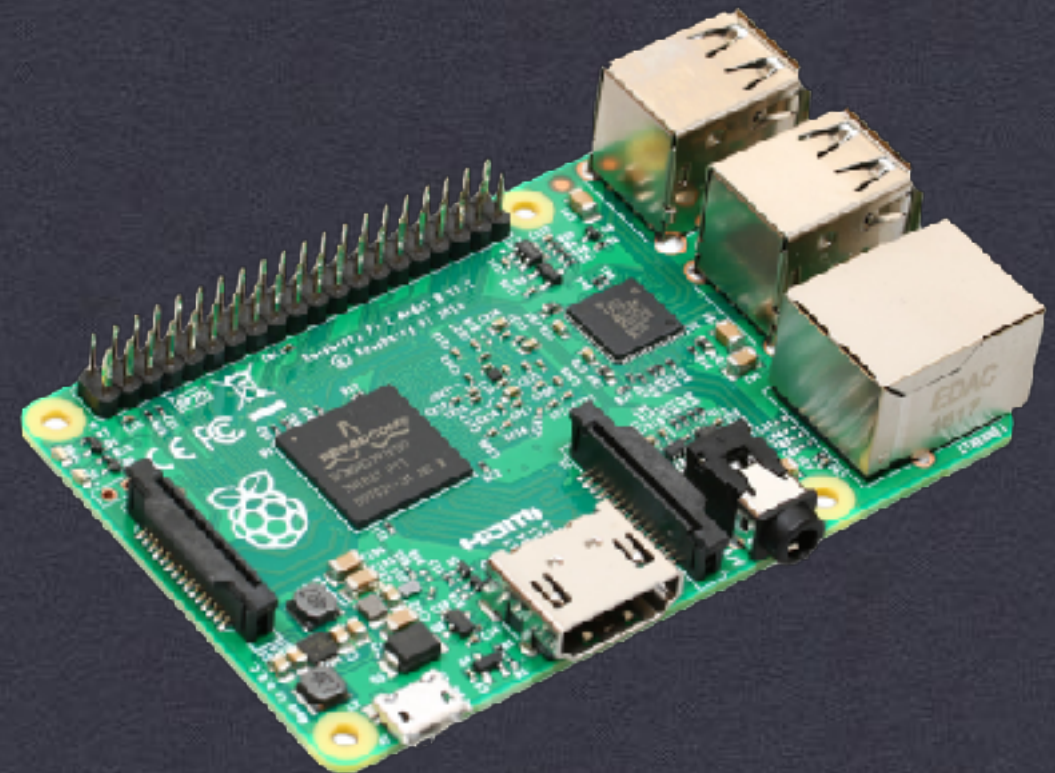


# Raspberry Pi 2

## Raspberry Pi 2(v1.2) Model B

- 900MHz quad ARM Cortex-A53
- 1GB RAM
- Omitted Wifi/BT antennas
- \$35

It is for who don't want to use any antennas and use within 5V/2A



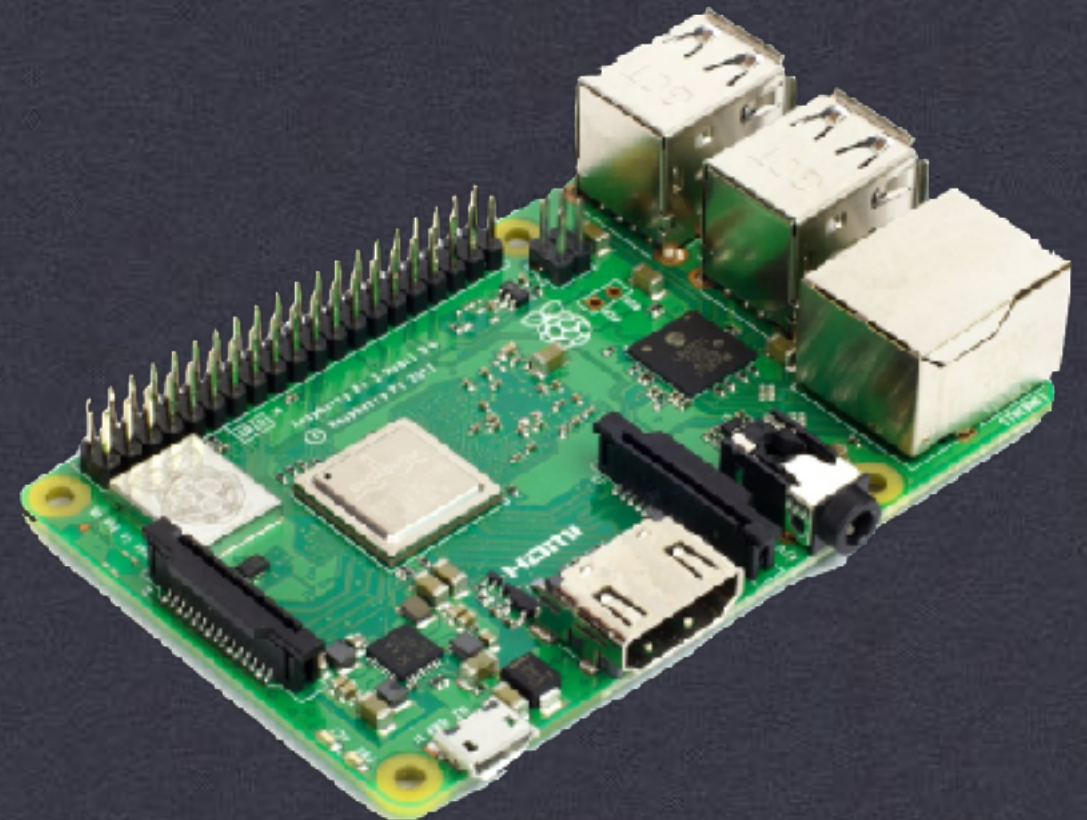


# Raspberry Pi 3

## Raspberry Pi 3 Model B+

- 1.4GHz quad ARM Cortex-A53 (BCM2837B0 compared BCM2837A1, which is for RPi3B)
- 1GB RAM
- 802.11ac + Bluetooth 4.2
- \$35

Incorporates the improved thermal design can go up to 1.4GHz



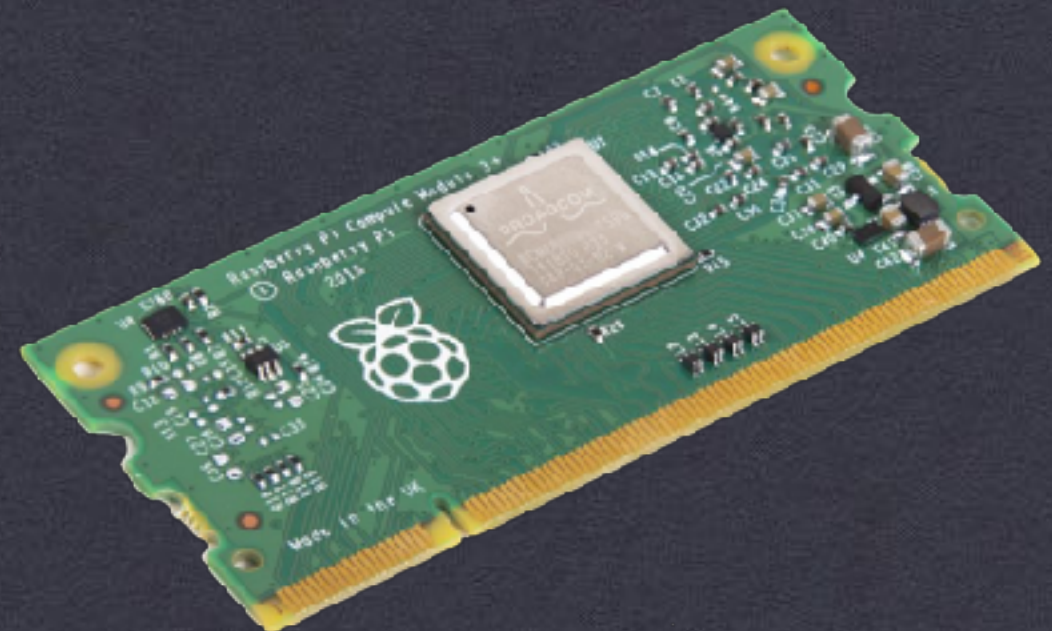


# Raspberry Pi Compute Module

## Raspberry Pi Compute Module 3+

- 1.2GHz quad ARM Cortex-A53(\*due to power-supply limitations)
- 1GB RAM
- Lite(No eMMC, SD Card slot)/8GB/16GB/32GB eMMC
- Long Term Availability (~2026)
- 25\$

Expand eMMC for the requests from enterprise business



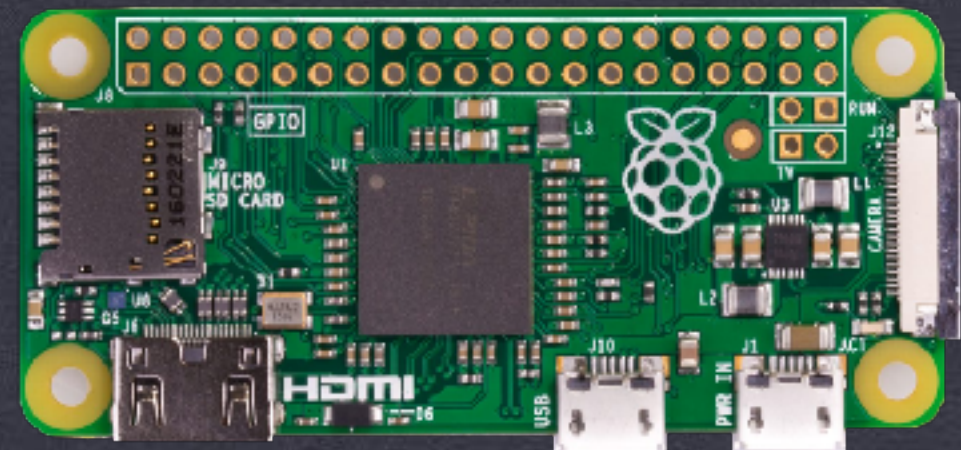


# Raspberry Pi Zero

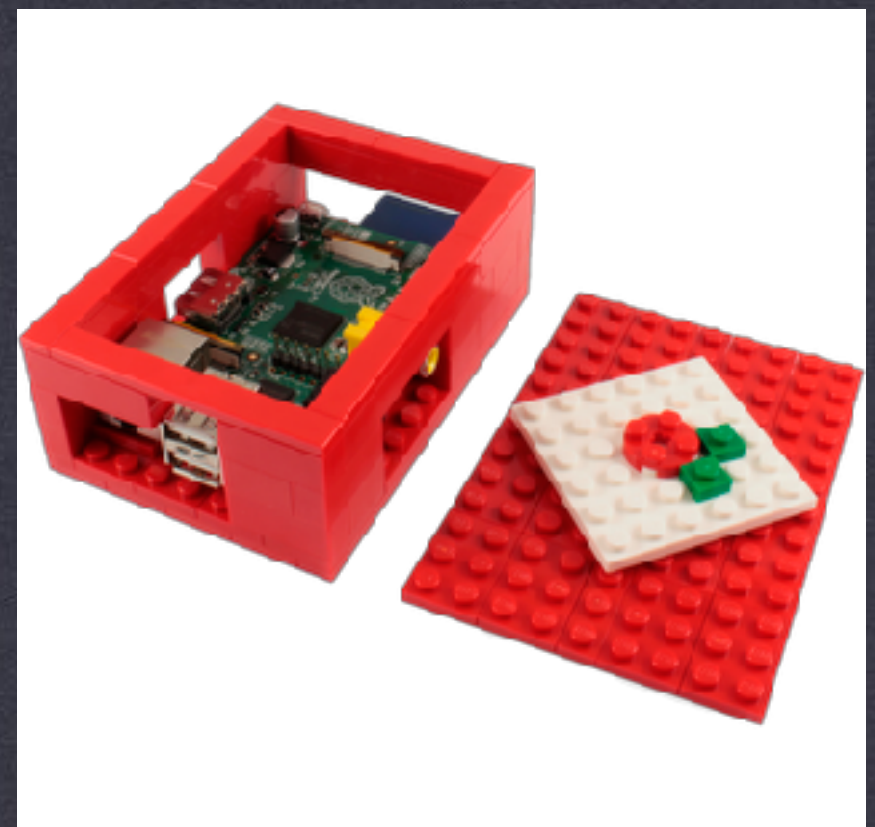
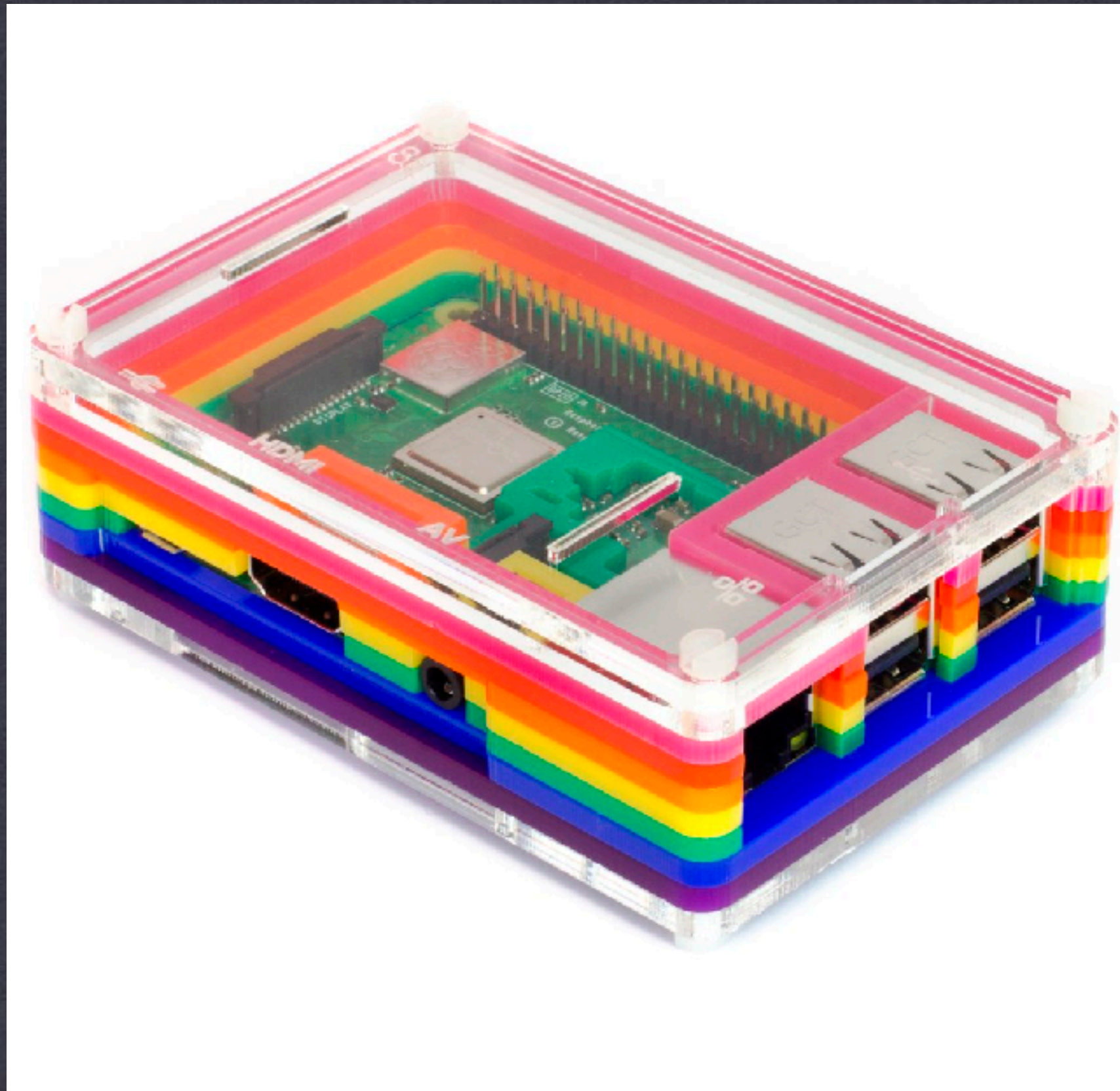
## Raspberry Pi Zero

- 1GHz ARM11
- 512MB RAM
- 802.11bgn + Bluetooth 4.1(W)
- GPIO pin header (WH)
- 5\$

It is for Raspberry Pi newbie/trial use and still also limited when purchasing







**Well-designed case encourages using Raspberry Pi with fun**

You can check much more well-designed one with [search listings](#)



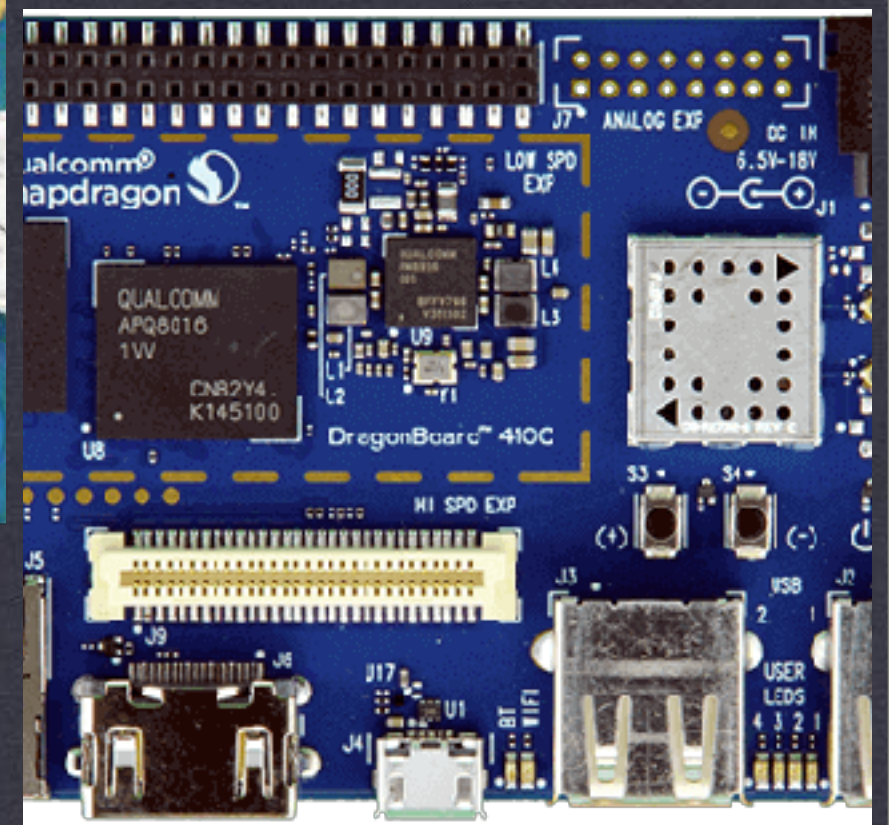
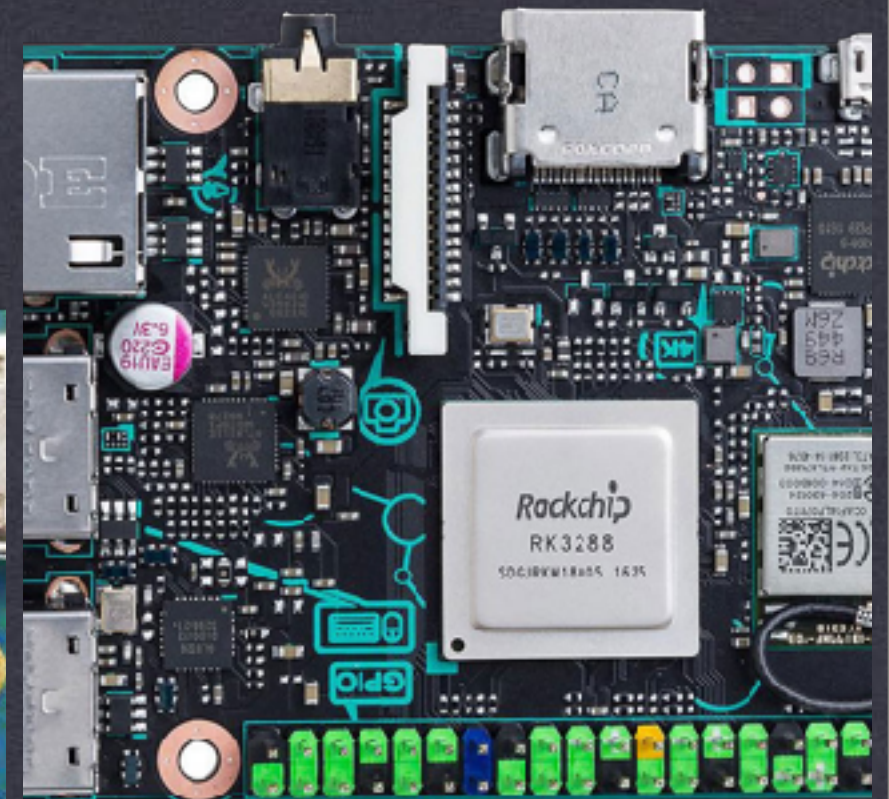
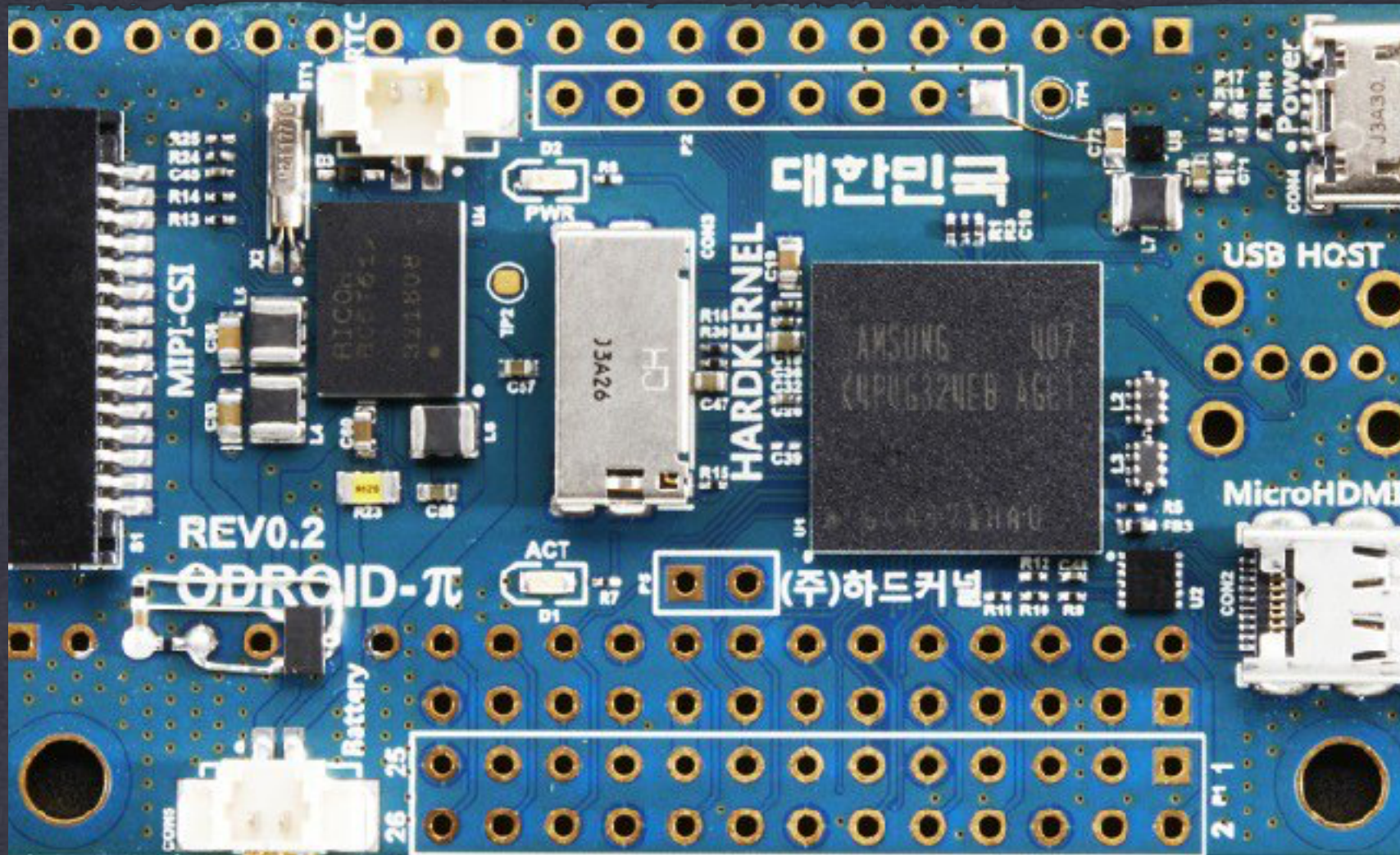
# Raspberry Pi forks was in bloom

- Official Forum was trolled by talks about Chinese ‘forks’ board
  - Orange, Banana Ads and Promotions were posted and they said ‘it is compatible with Raspberry Pi’.
  - Some were their employees trolled with incorporated organization that makes annoyed.
- Foundation was not so upset to sue those ‘forks’
  - But annoyed to ‘Raspberry Pi compatible’ as those folks said
  - There are an opportunities to release ton of card-sized computers that is very cheap and easy to get.



'should be flattered but not really not'





Which is said 'not Raspberry Pi compatible'?

Whose said it was 'Raspberry Pi compatible' and has issue...



Branch: release-4.4 ▾

kernel / README-tinkerboard

Find file

Copy path

 Masafumi Ohta modify for bluetooth use on rockchip kernel

602c5ce on 12 May 2018

1 contributor

56 lines (49 sloc) | 2.06 KB

Raw

Blame

History



```
1  Install rockchip image for Tinkerboard with patch
2
3  1)Compile kernel as debian_kernel
4  cd rk-linux/kernel$
5  patch -p1 < rk_kernel_tinker_wlan_bt.diff
6  make ARCH=arm miniarm-rk3288_defconfig -j16
7  make zImage ARCH=arm CROSS_COMPILE=arm-linux-gnueabi- -j16
8  make modules ARCH=arm CROSS_COMPILE=arm-linux-gnueabi- -j16
9  make ARCH=arm rk3288-miniarm.dtb CROSS_COMPILE=arm-linux-gnueabi- -j16
10 make dtbs CFLAGS=-g ARCH=arm CROSS_COMPILE=arm-linux-gnueabi- -j16
11
12 2)Make system.img as rockchip wiki instruction
13 build/mk-kernel.sh rk3288-miniarm
14 build/mk-image.sh -c rk3288 -t boot
15 cd cd ../rootfs/
16 sudo apt-get install binfmt-support qemu-user-static
17 sudo dpkg -i ubuntu-build-service/packages/*
18 sudo apt-get install -f
19 RELEASE=stretch TARGET=desktop ARCH=armhf ./mk-base-debian.sh
20 RELEASE=stretch ARCH=armhf ./mk-rootfs.sh
21 ./mk-image.sh
22 build/mk-image.sh -c rk3288 -t system -r rootfs/linaro-rootfs.img
23
24 3)Add modules to system.img
```

**There are some developments needed to use those forks..**

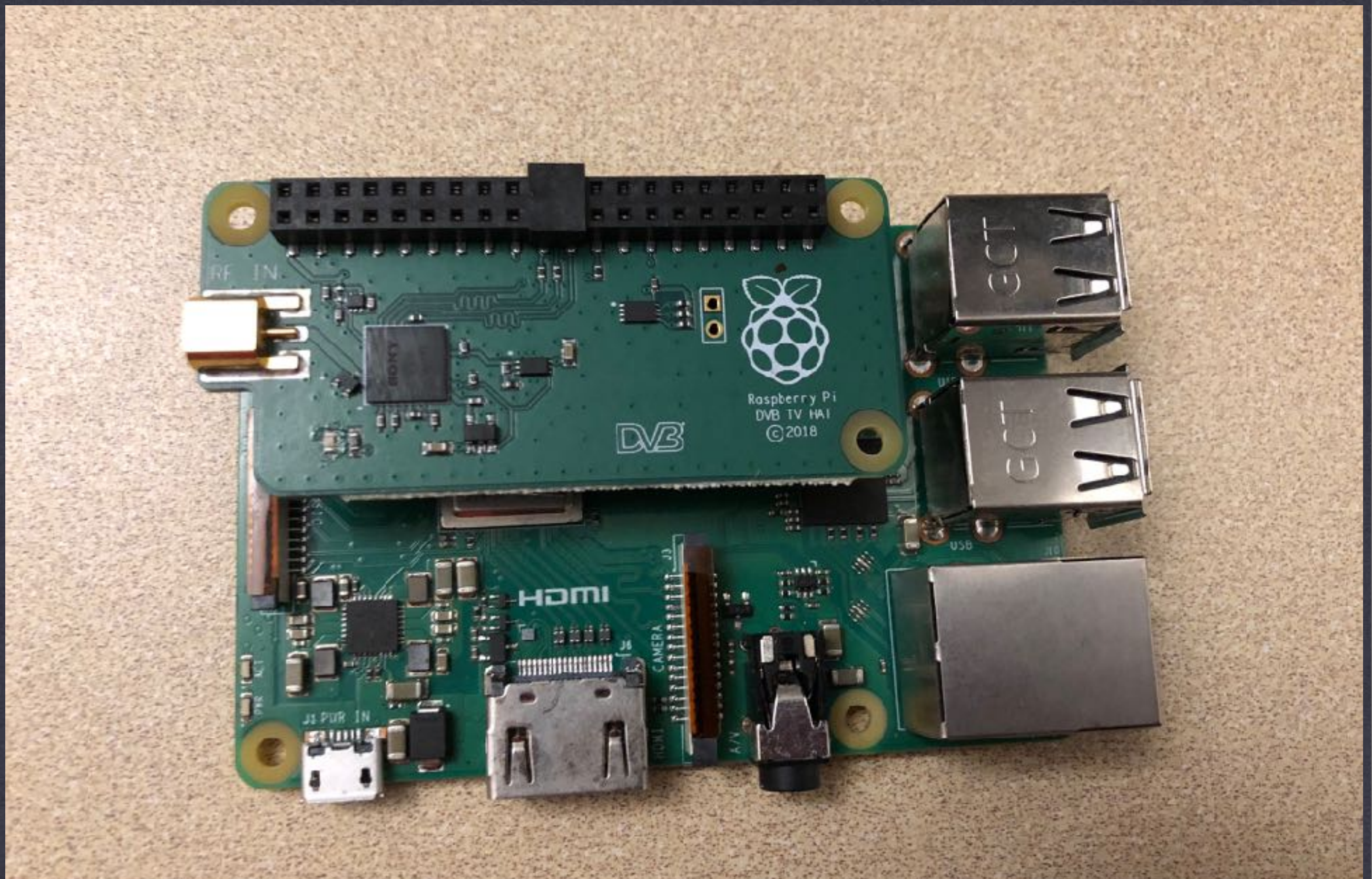
ASUS ports some Applications from Raspberry Pi but need to 'update-tool' to be close to Raspberry Pi



# Roadmaps..

- **Say 'who knows..'**
  - Raspberry Pi 4..
  - Options..
- **Whisper keys..**
  - Down-compatible: works old/new Raspberry Pi
  - 'It would have to be interesting to children, which for us meant playing games and videos'
  - Official stuff, magazines and books combined with Raspberry Pi
    - MagPi/Hackspace/WireFrame
    - Cases
  - Sneak Github :-)





**DVB-T HAT is one of fun to use and a hint to**

**Regret ISDB-T driver by Sony is proprietary...**



# Raspberry Pi tips and use case



Overclocking Raspberry Pi 3

54 posts

1 2 3

**Overclocking Raspberry Pi 3**  
Tue Mar 01, 2016 6:32 pm

Hi,

I just bought the Raspberry Pi 3 and I can't overclock it from the raspi-config tool anymore.  
Anyone else with the same problem and maybe a answer?  
Is the overclocking hardware locked or something on RPI3?

I am using Raspbian:  
PRETTY\_NAME="Raspbian GNU/Linux 8 (jessie)"  
NAME="Raspbian GNU/Linux"  
VERSION\_ID="8"  
VERSION="8 (jessie)"

Kernel version:  
4.1.18-v7+  
overclock.png  
overclock2.png

**Re: Overclocking Raspberry Pi 3**  
Tue Mar 01, 2016 6:48 pm

If I've read the article correctly, according to Gordon over at RTB (<https://projects.drogon.net/raspberry-pi-v3/>), overclocking is not yet implemented on the Pi 3. :@()

**bljardkungen**  
Posts: 6  
Joined: Sat Aug 04, 2012 4:23 am

**sarossell**  
Posts: 31  
Joined: Tue Feb 15, 2016 1:09 pm

**Much more tips/hints on the official forum - you should check**  
**Raspberry Pi Engineers often post and check someone posts carefully to improve the products**



Analogue audio redux - Raspb... X

← → ↺ https://www.raspberrypi.org/forums/viewtopic.php?f=29&t=195178 ☆ S 一路停止中

Analogue audio redux

Post Reply Search this topic... First unread post: 72 posts 1 2 3 >

### Analogue audio redux

Thu Oct 12, 2017 8:07 am

Available in latest Raspbian is a PWM audio driver that significantly increases the audio quality available from the 3.5mm TRRS jack.

It is enabled by default.

The analogue signal-to-noise ratio now approaches CD quality with this driver[1]. It works by oversampling the audio stream by a high factor and then pushing the quantisation noise away from audible frequencies by a technique known as sigma-delta noise shaping[2].

This is a continuation of the last thread which I closed as it contains a lot of previous bughunting activity that's no longer relevant.

The driver has undergone a few modifications that allow for multiple concurrent users (i.e. ALSA and omxplayer running simultaneously) and improvements in the additional GPU load the driver causes.

Features/bugfixes:

- The driver now allows for up to 8 simultaneous writers
- GPU vector unit utilisation has been reduced significantly as a much more efficient three-stage resampling pipeline is now used[3]
- on-the-fly switching of audio source between HDMI and Analogue with the driver in use no longer corrupts the analogue output
- Finer-grained resource locking in the driver means fewer contention points when the VPU is busy

The intention is to move to using this driver as the default analogue output driver for all models of Pi that have the 3.5mm jack. There may be some "busy" use-cases that cause lag such as playback of HD interlaced content with VPU audio decode (e.g. MPEG2 1080i source with DTS or AC3 audio or simultaneous CSI camera encoding + HD content playback).

Once any known incompatibilities are mapped out then they will either be documented or a slightly nerfed driver configuration could be implemented that expends a few dB of audio quality in exchange for GPU performance. As of the time of writing there's no obvious need for a nerfed version of the driver.

jdb  
Raspberry Pi Engineer & Forum Moderator  
ENGINEER  
Posts: 1810  
Joined: Thu Jul 11, 2013 11:37 pm

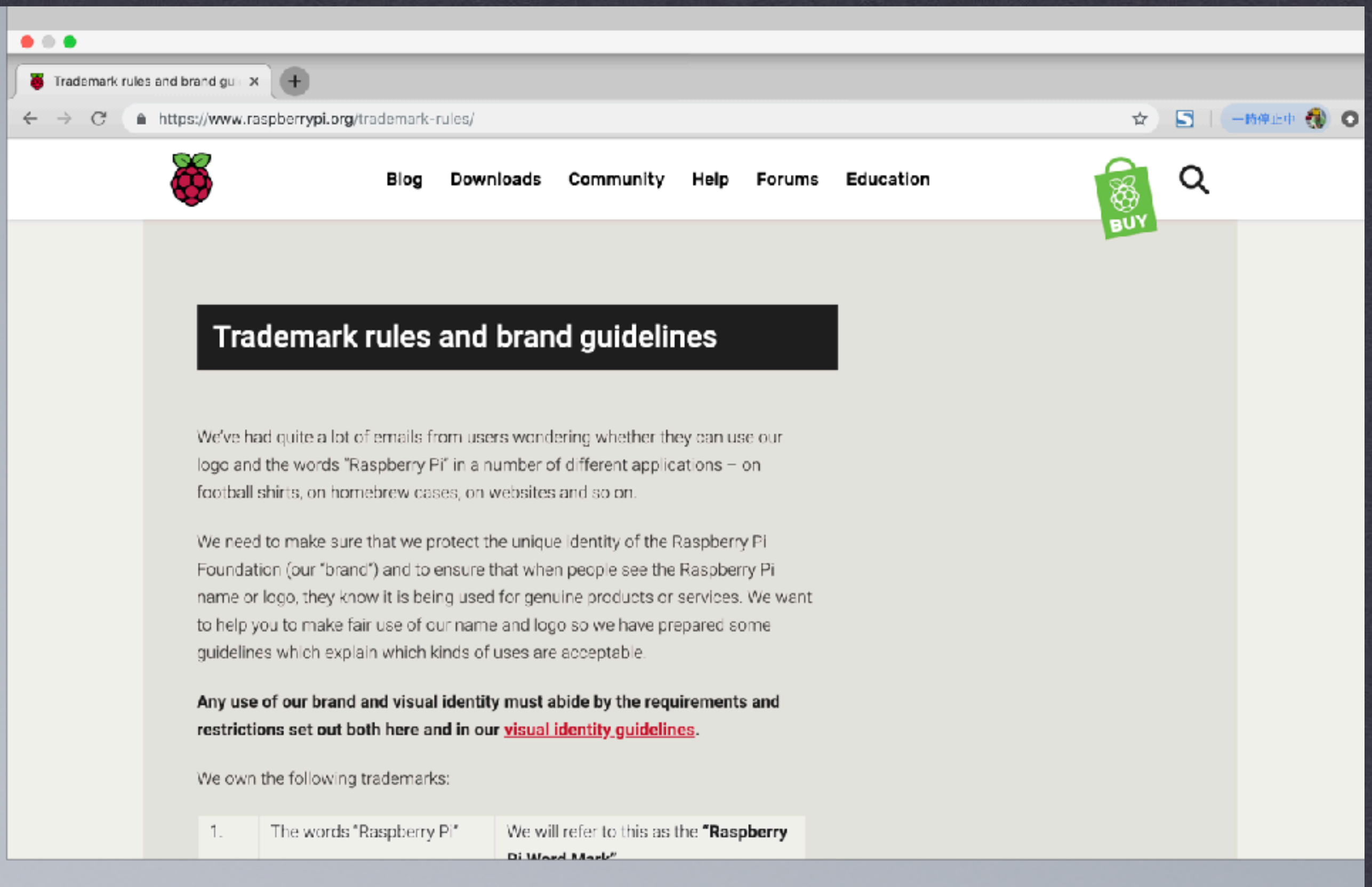
**Tip example 1: 3.5mm internal jack audio quality significantly improved**  
Raspberry Pi Engineers recommend and would ask to try..



# Software License issue on Raspbian

- Raspbian is included 'Mathematica', which is licensed software but it is free 'on Raspberry Pi' for 'education'
  - Wolfram prohibited re-deliver their license.
  - Need to remove if you sell your product included Raspberry Pi
    - It used to be installed as default but latest is not
- Debian has various OSS license, thus need to check as well
- (old release only) Note Oracle Java is 'OTN license' is for free to use evaluation and education use
  - Need to change OpenJDK to sell your product.





**Trademark rule and brand guidelines needs for your business**

**You must check if you sell your product included Raspberry Pi**



Is your product "Powered by Raspberry Pi"?

Blog Downloads Community Help Forums Education



# Is your product "Powered by Raspberry Pi"?

25 Comments

One of the most exciting things for us about the growth of the Raspberry Pi community has been the number of companies that have grown up around the platform, and who have chosen to embed our products into their own. While many of these designs have been "silent", a number of people have asked us for a standardised way to indicate that a product contains a Raspberry Pi or a Raspberry Pi Compute Module.



At the end of last year, we introduced a "Powered by Raspberry Pi" logo to meet this need. It is now included in our trademark rules and brand guidelines, which you can



Posted by **Mike Buffham**

Director of Product Management (Trading)

Run Bike Run, Drink Tea, repeat

21st Jun 2017 at 12:54 pm

[« SHELFCHICKER SMART SHELF: BUILD A HOME LIBRARY SYSTEM](#)

[IS YOUR PRODUCT "POWERED BY RASPBERRY PI"?](#)

[CODERDOJO COOLEST PROJECTS 2017 »](#)

[BLOG FEED](#)

[VIEW THE ARCHIVE](#)

[RSS FEED](#)



Raspberry Pi Weekly

# Powered by Raspberry Pi brand for you business

Try submission (need to be screened)



# Pivot to industry

- **2012 sales mostly to hobbyists**
- **First industrial sales mid-2013**
  - **First-party installations**
  - **Integration into products**
- **Low-cost, robust, programmable**
  - **Good for toys, good for industry**
- **Volume forces quality**
  - **20,000 units a day**
  - **No room for error**



# Pivot to industry

**2012 sales mostly to 'hobbyists'**

- still mainly sell to DIY makers

**First industrial sales mid-2013**

- First-party installations
- Integration into products

**Low-cost, robust, programmable**

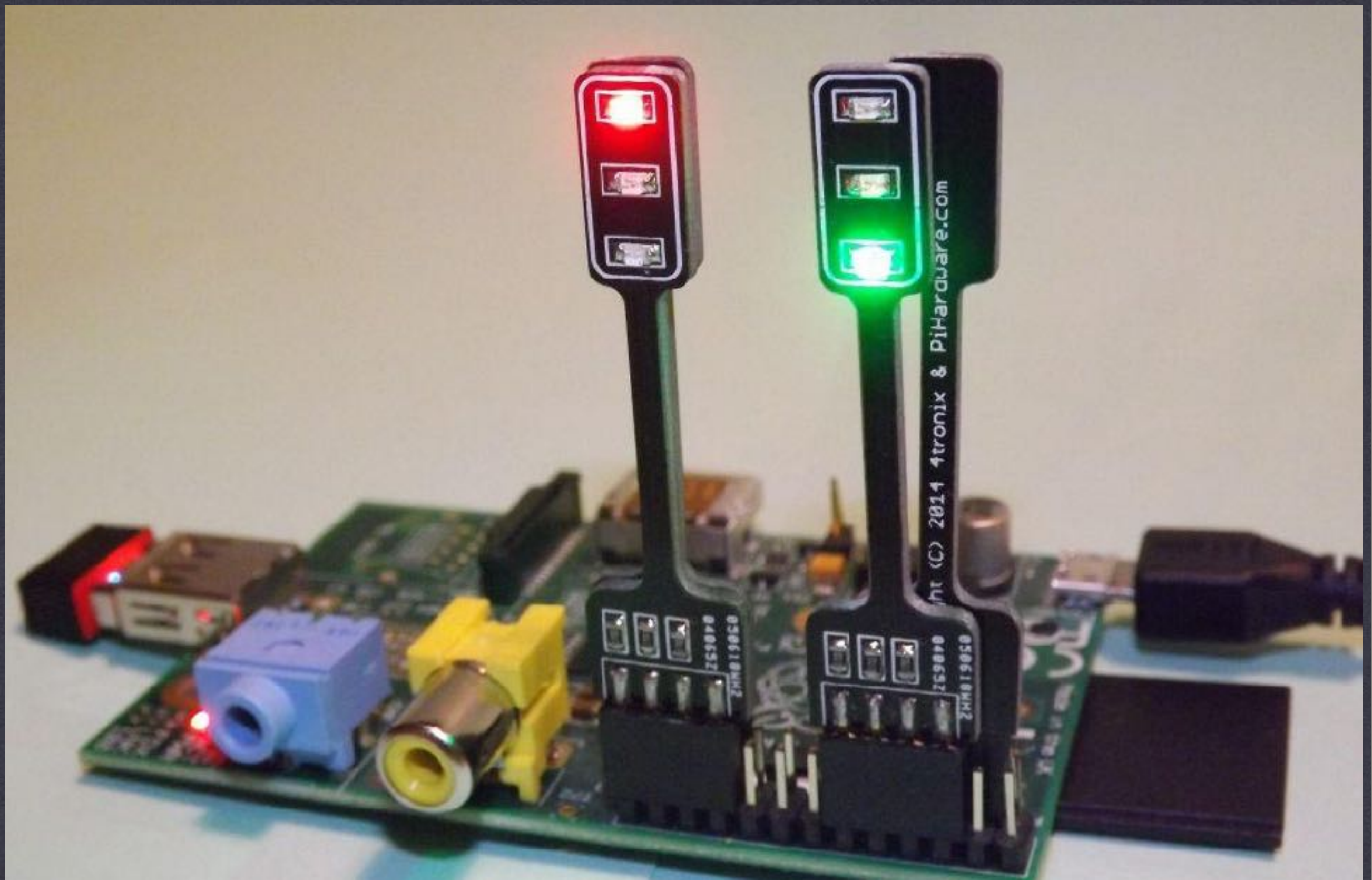
- Good for toys, good for industry
- Good for prototyping use for industry

**Volume forces quality**

- 20,000 units a day
- No room for error



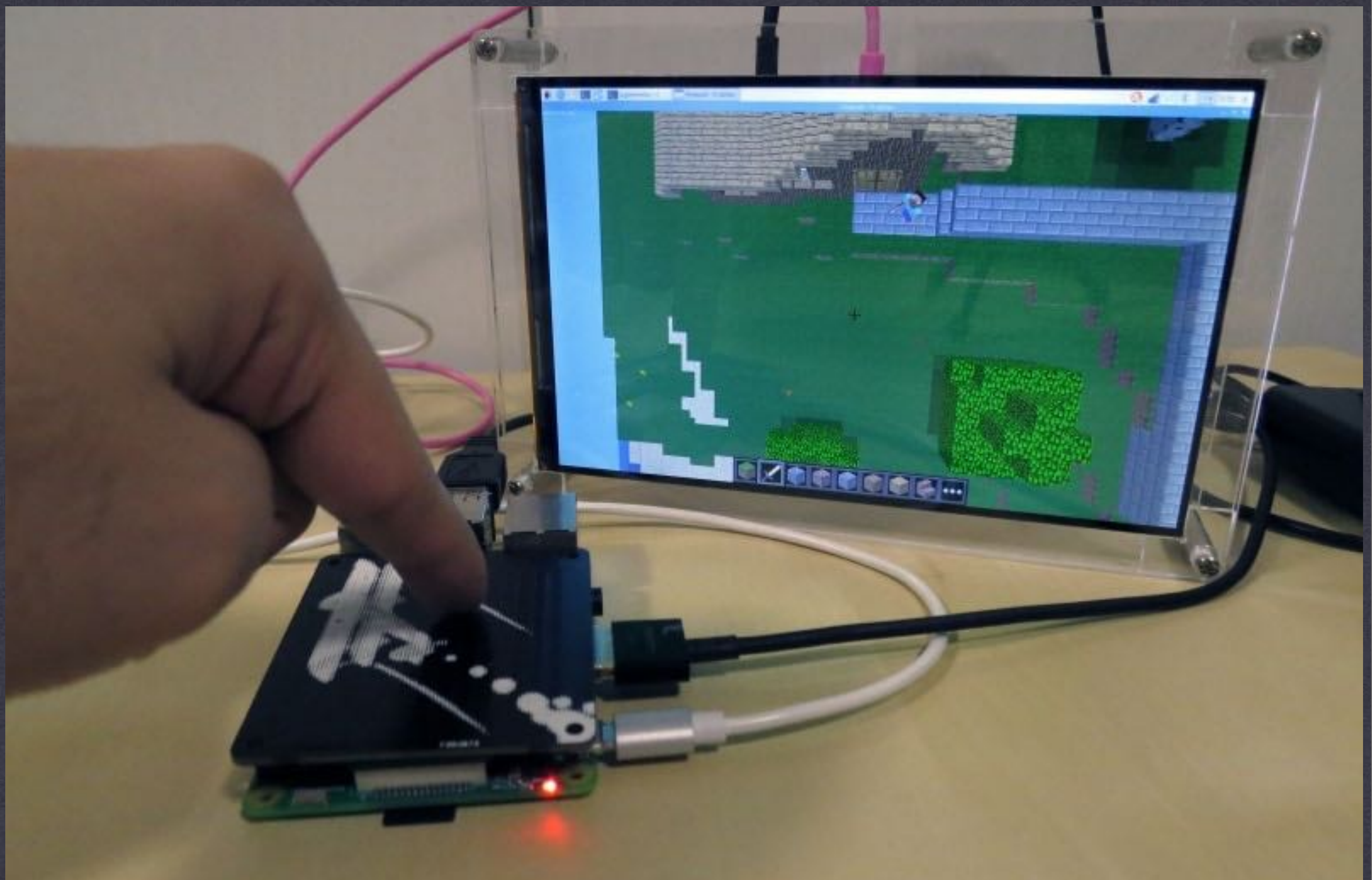




**First step for studying hardware**

LED blinker is basic usage to try such boards

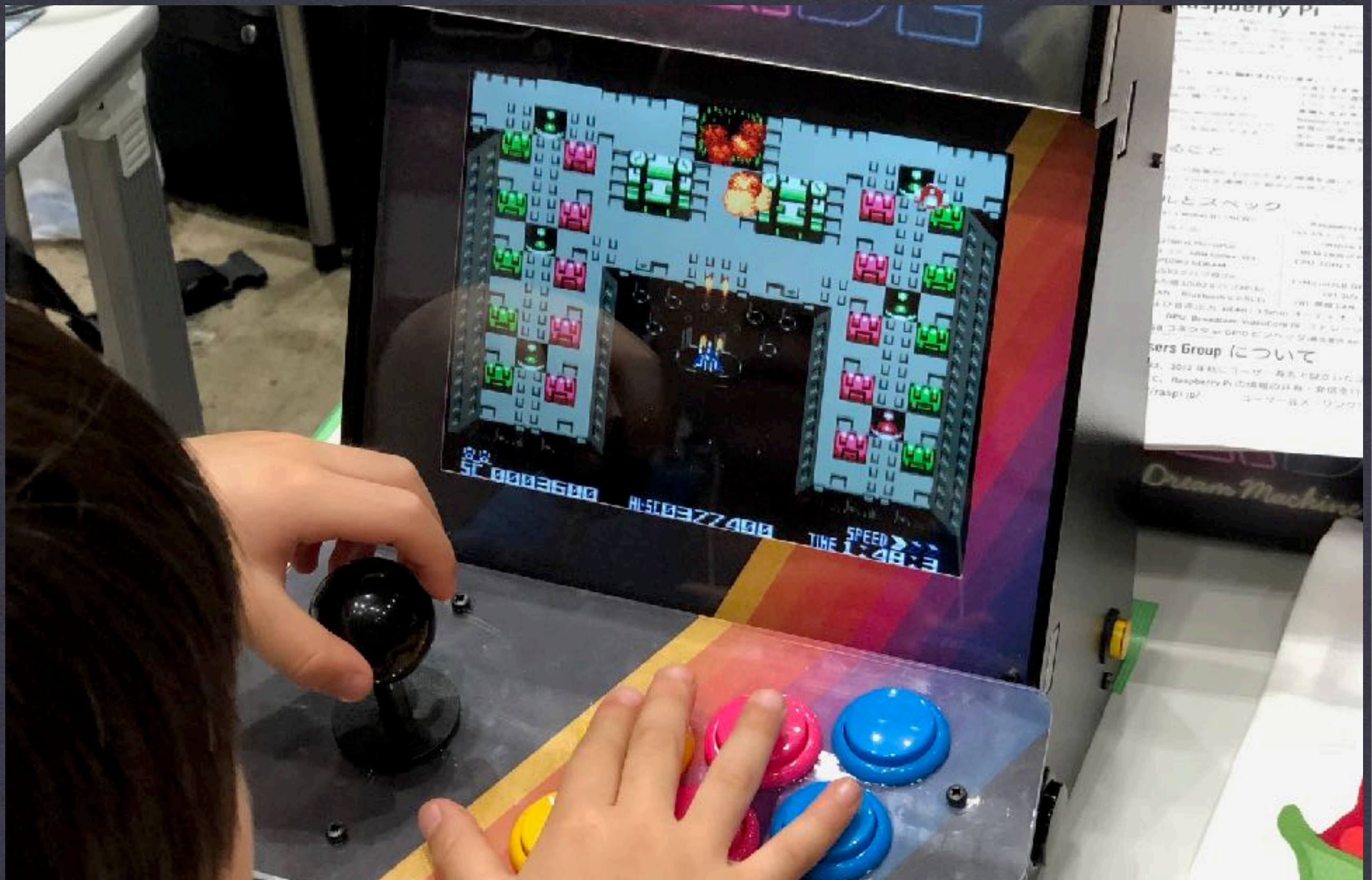




## Play Minecraft with 3D gesture sensor

3D gesture sensor makes the direction in the VR world

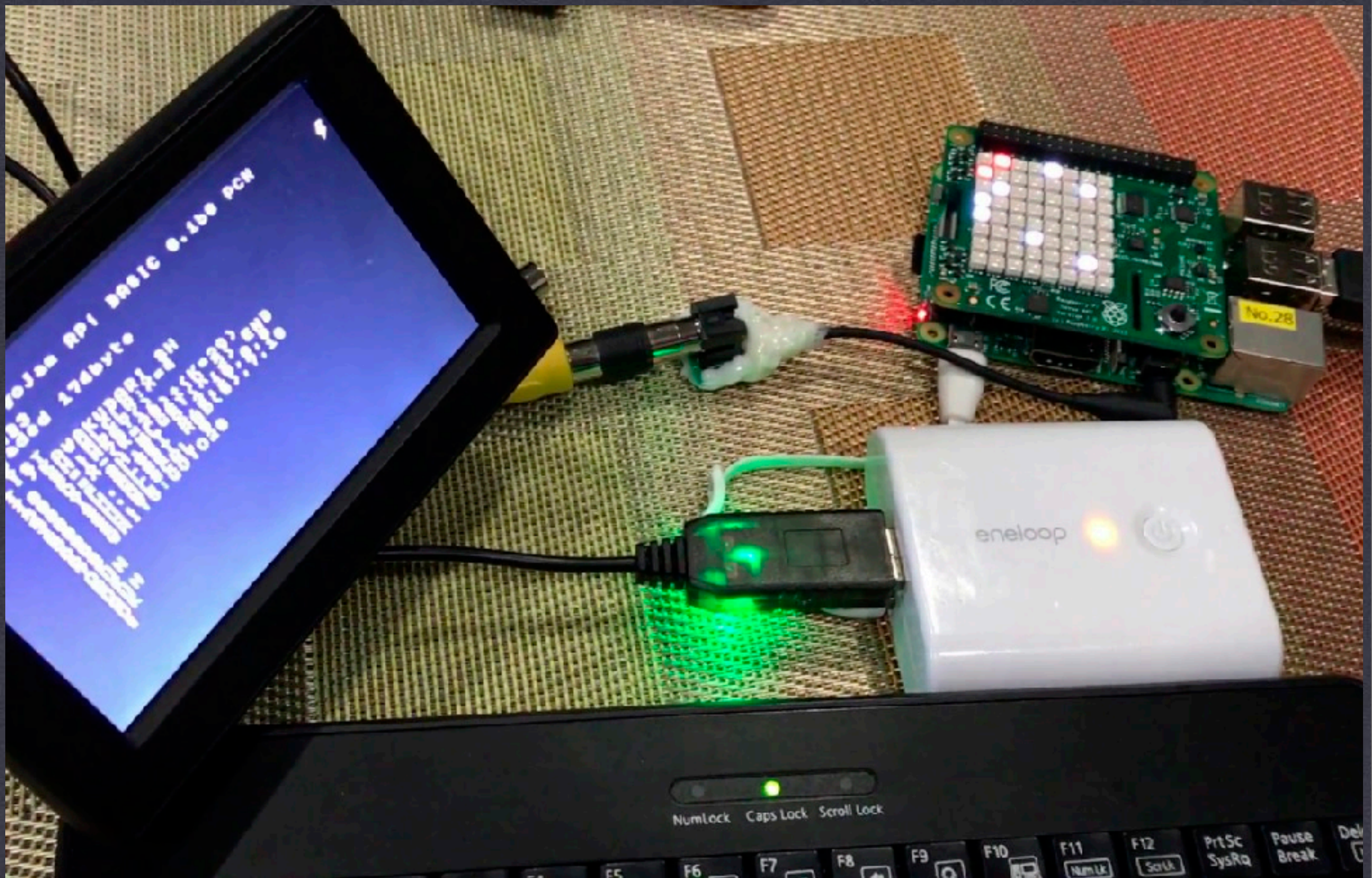




## Retrogame on Raspberry Pi encourages children to learn inside

My Friend Paul Beech designed this, good designs fascinate children to get interested in Raspberry Pi

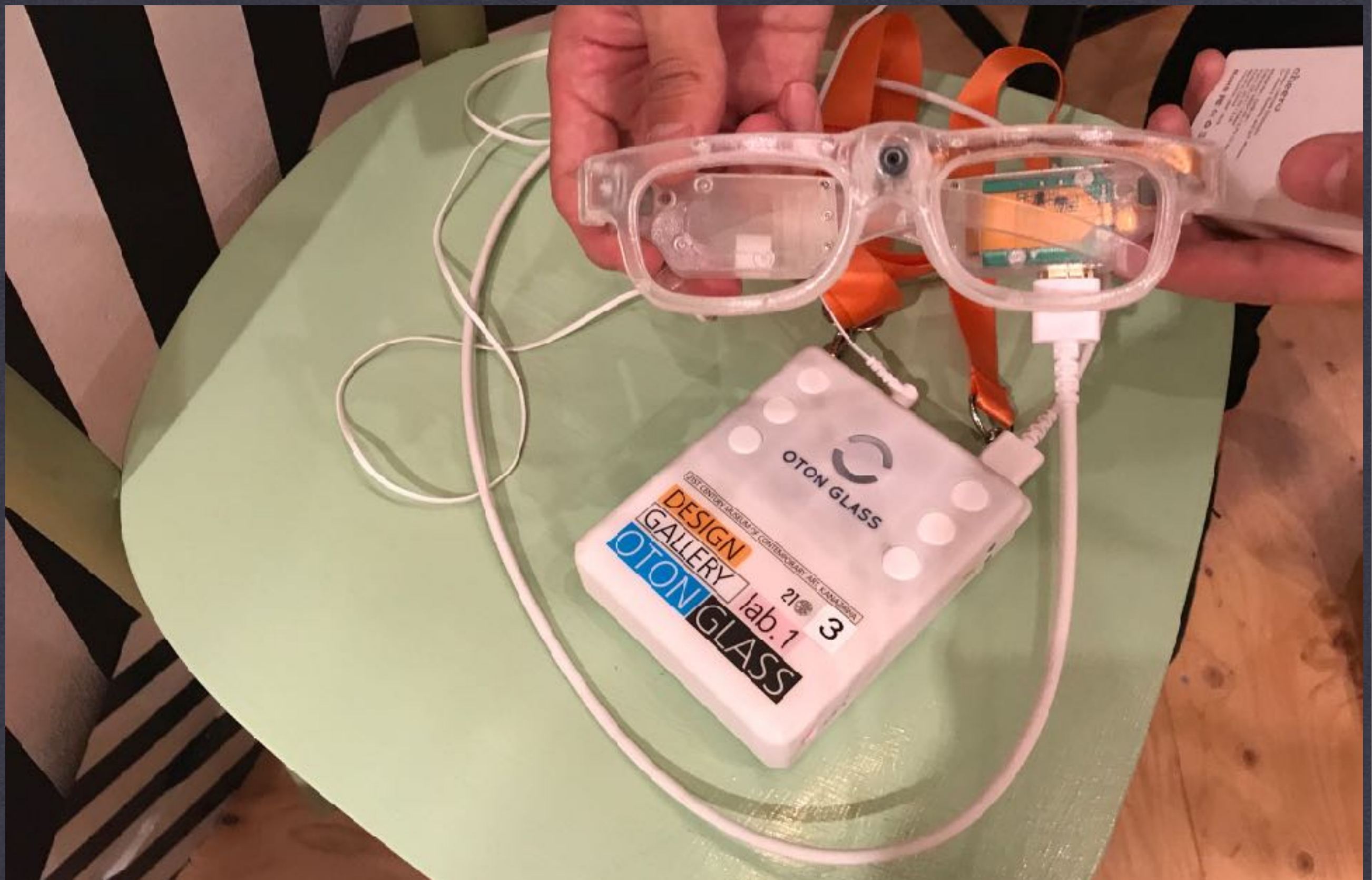




**Ichigo Jam RPi OS is BASIC OS for education**

BASIC is the another way to educate programming to kids

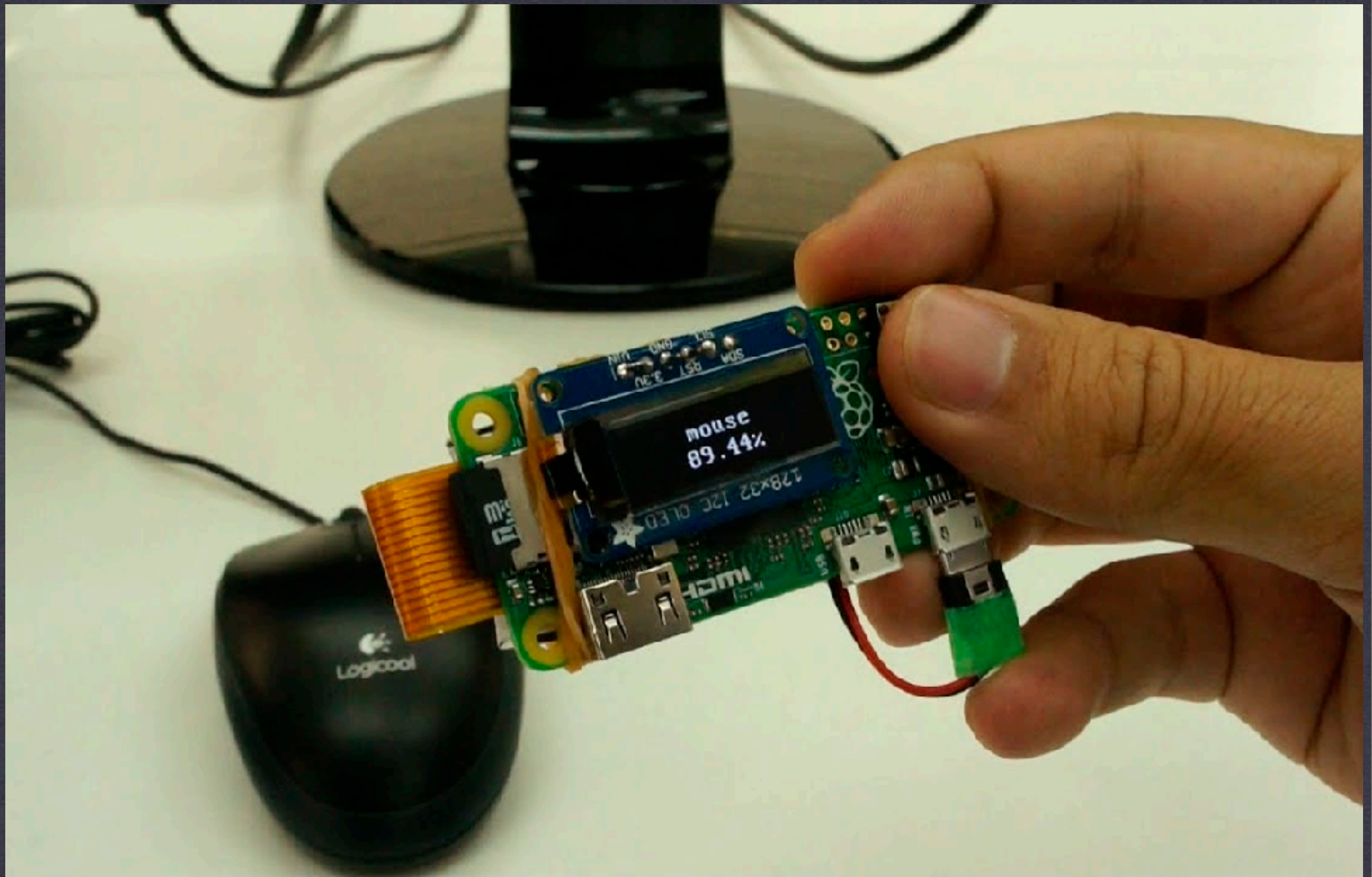




## OTON GLASS to read characters

OTON GLASS has been made for handicapped who cannot read characters

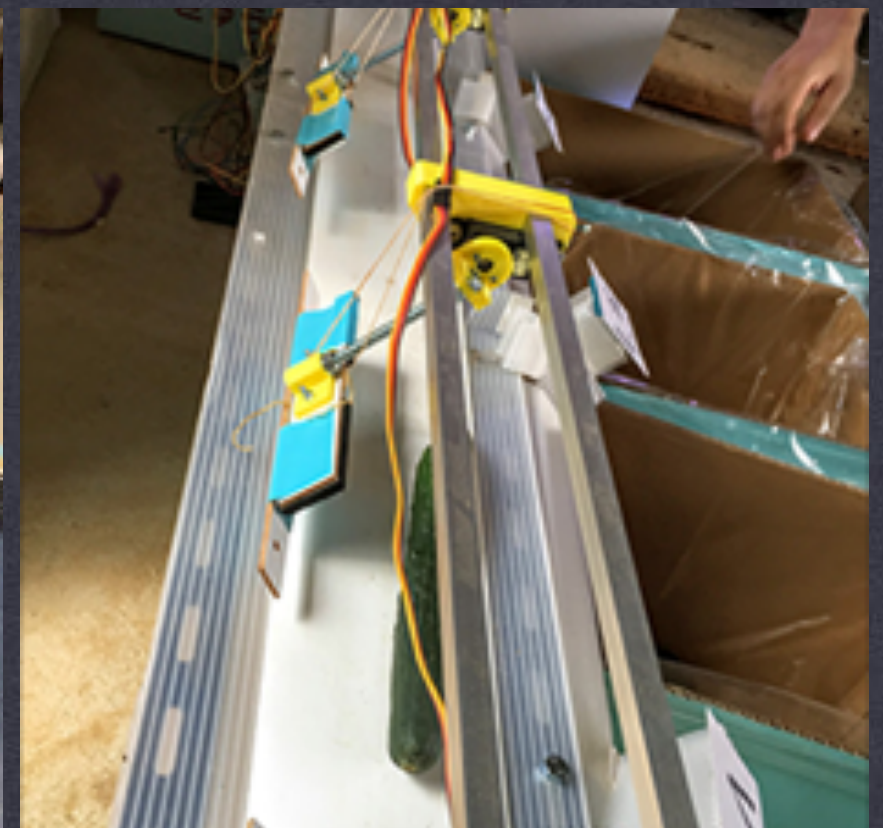




## Raspberry Pi, CPU+GPU for image recognition

An AI vendor Idein has made image recognition system runs PiZero and it works very faster.





## Cucumber sorting automation with Raspberry Pi and TensorFlow

Makoto Koike, who worked for automotive company in Japan solved his mother work - choosing good one





**Make wine grapes better with Raspberry Pi to reduce Agricultural chemicals**

Kunio Kikushima, who is owner of Kikushima winery, check thermo and temperature with Raspberry Pi



## Curriculum.

### Courses required:

- Business Core (70 credits)
  - Accounting
  - Economics
  - Analytics
  - Communication & presentations
  - Law
  - Organizational Theory & Behavior
  - Operational Management
  - Finance
  - Marketing
  - Information Technologies
- Public Health Administration (20 credits)
  - Administration & supervision
  - Process improvement
  - Insurance
  - Policies, standards & regulations
  - Human resource
- Information Technology (20 credits)
  - Networking
  - Database
  - System analysis & design
  - Information security management
  - **Health information technology**
- Internship or cooperative education (5 credits)

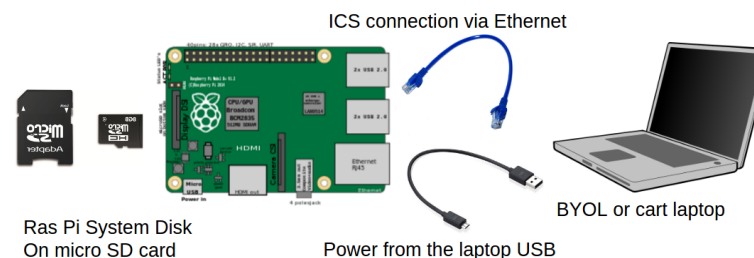
### Features:

- AACSB International accredited.
- Goal: IT management in healthcare industries.
- Close relation with local industries.
  - Hospitals
  - Related services (medical images such as Inland Imaging, speech recognition such as NextIT, etc.)

## Hands-on materials.

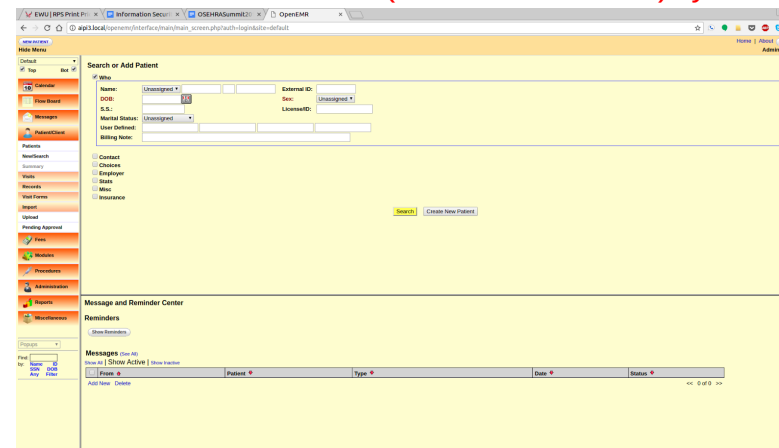
### Raspberry Pi -- open source hardware.

- **Raspbian OS** on Raspberry Pi 3.
  - (Optional) **Raspberry Pi zero+USB only.**
- Internet Connection Sharing (via direct wiring).
  - (Optional) WiFi AP+an Internet router.
- USB power supply.
- MicroSD as a disk.



### OpenEMR -- open source web-based EHR.

- ONC certified complete EHR (2014 edition).
- Easy installation from the Internet -- LAMP.
- **Full access to the (actual -- not virtual) system**



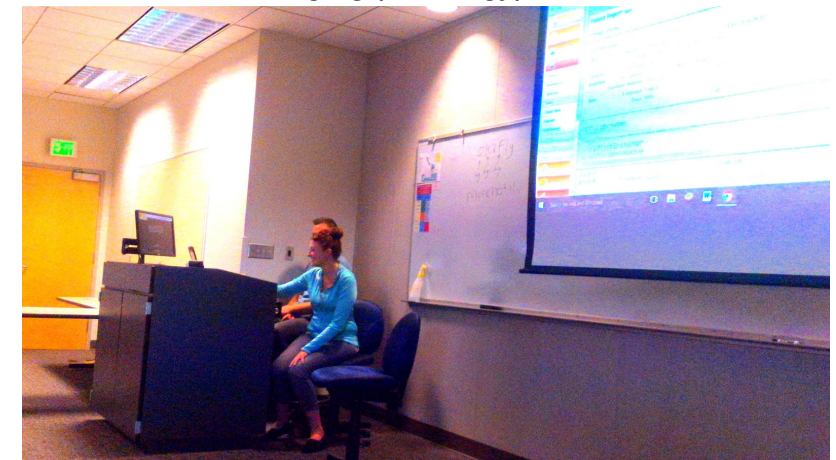
### Students

- install and configure the server.
- generate mock medical records and users.
  - (optional) **phpmyadmin**

## Simulated healthcare practice.

### A small group to play a skit.

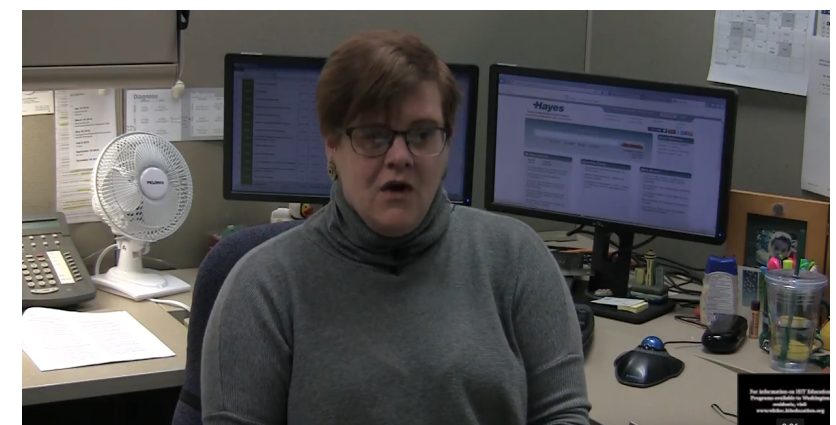
- Nurse triage (picture below)
- Clark -- scheduling, check-in, etc.
- Billing and accounting
- Lab -- ECG, EEG, using other IoT devices
- Medical imaging (radiology)



### AND/OR

### A small group to develop a video of expertise in health information technologies (WHIIEC Expert Series).

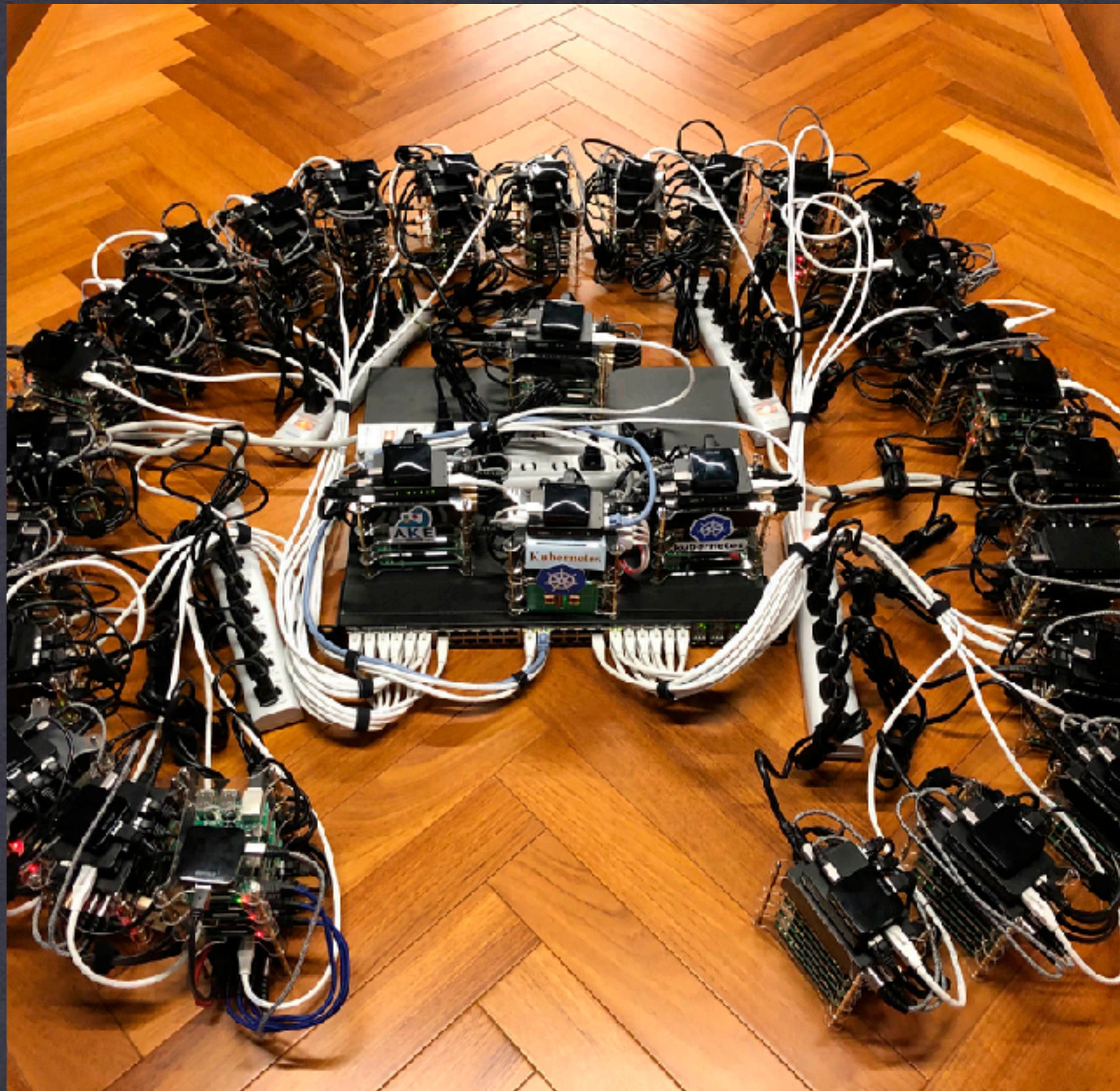
- Interview
- Panel



# Small prototype use for learning IT

Atsushi Inoue is the professor at Eastern Washington Univ using RPi for IT+Major and 'mini-startup' studies..





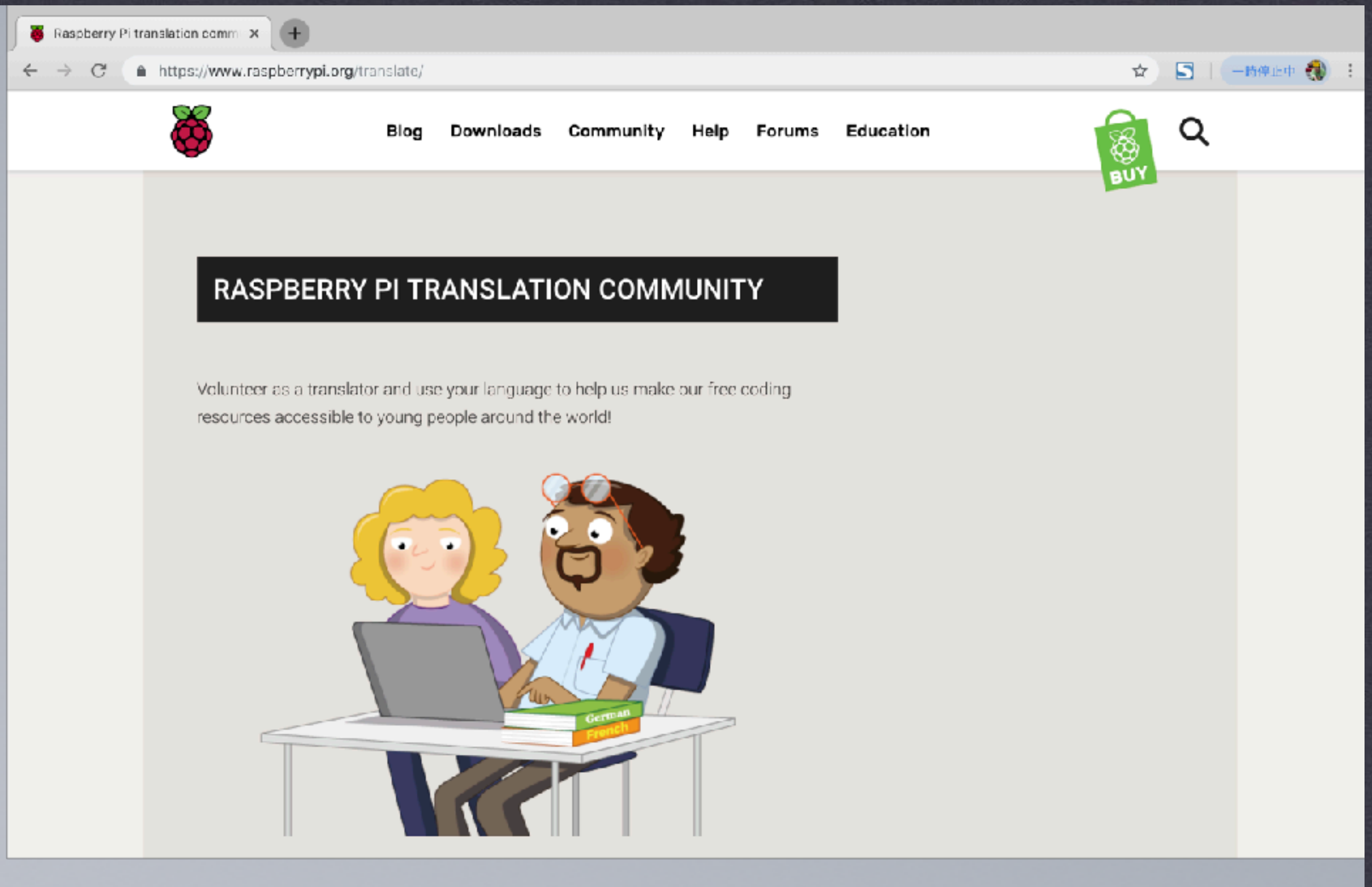
## Kubernetes studies for Prospective employees

Cyberagent was hold the workshop for prospective employees to learn Kubernetes



**etc...**





**Raspberry Pi Foundation is looking for translator for multi-lang**

**They need to translate their programing text to many more language to build the multi-lang website**




Projects | Raspberry Pi Projects x

https://projects.raspberrypi.org/en/projects

Projects English


Find a Project: Any topic Any hardware Any software Any level



**Whoopi cushion**

Make a whoopee cushion powered by a Raspberry Pi to prank your pals

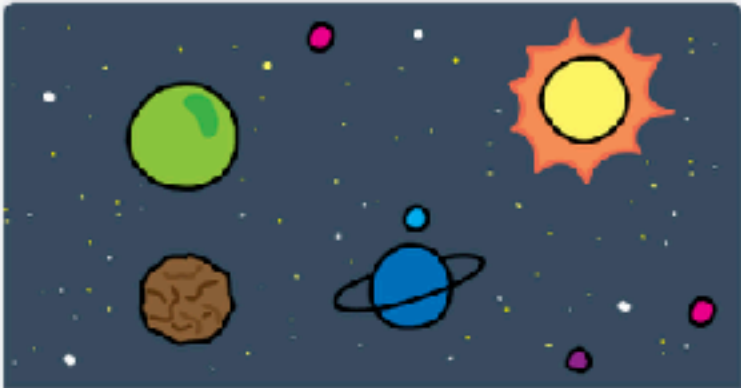
Electronic components, Raspberry Pi, Python



**Tweeting Babbage**

Tweet messages and pictures from your Raspberry Pi

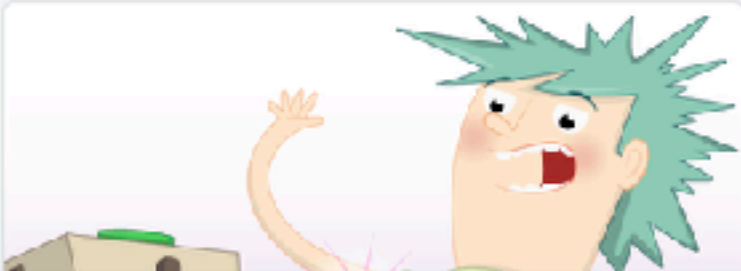
Pi Camera Module, Python





**Lost in space**

Learn how to program your own animation!

Scratch







**Need to trans online training stuff - [projects.raspberrypi.org](https://projects.raspberrypi.org)**

Foundation is now making many of online training stuff because of teacher shortage for programing



step\_2.md - RPF - Project (Ras x)

https://crowdin.com/translate/rpf-project-raspberry-pi-setti/4213/en-ja

File Language Project View

Search in file

## 必要なもの

### どのラズベリーパイがいいのか？

ラズベリーパイにはいくつかのモデルがあり、ほとんどの人は Raspberry Pi 3 model B+を選択するかと推測されます。

Raspberry Pi 3 model B +は、最も新しく、最も速く、最も使いやすい製品です。

Raspberry Pi ZeroとZero Wはより小さく、消費電力が少なくて済む製品で、ロボットなどのポータブルプロジェクトに便利で、一般的に、はじめはRaspberry Pi 3を使ってプロジェクトを開始し、より小さいラズベリーパイが役に立つプロトタイプを使い始める際に、Raspberry Pi Zeroに移行するのが楽です。

ラズベリーパイを購入するには、こちらから [rpf.io/products](http://rpf.io/products)。

## 電源

電源ソケットに接続するために、ラズベリーパイにはmicro USBポート（よく携帯電話で見かけるものと同じもの）があります。

少なくとも2.5アンペアを供給する電源が必要です。私たちは、公式ラズベリーパイ電源アダプタを利用することをお勧めしています。

## Text for Translation

### What you will need



Context | Request Context


Headline 2  
XPath: /h2

必要なもの


← → ↺ 18 / 5 Save


Japanese Suggestions Other Languages Search TM

 必要なもの  
2 months ago by you 0 

 あなたが必要とするもの  
4 months ago by Raspberry Pi Foundation (RaspberryPiFoundation) 0 + -

### Translation Memory and Machine Translation suggestions

 必要なもの  
RPF - Project (Python) - About me's TM, Perfect match

 必要なもの  
RPF - Jam worksheet (Python) - Make a traffic lights controller GUI's TM, Perfect match

# Review and modify machine translation by crowdin

Many of sentences might be odd so you can modify to be better translation



# Conclusion

- **Raspberry Pi is programmable, robust, cheap and fun like purchasing textbook at School**
  - **it would have to be cheap – their price target was \$25, which they thought was the price of a textbook.**
- **It might be useful in many ways in everywhere.**
- **You can check many useful tips at Raspberry Pi Official forum (their engineers often drop on great one)**
- **Sneak for Raspberry Pi 4...**





**THANKS COMING MY SESSION**

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