Let's play mini-card-sized computer boards on the business!

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Japanese Raspberry Pi Users Group
Masafumi Ohta

• Masafumi used to be a Core Contributor for OpenSolaris project by Sun Microsystems, had OpenSolaris-laptop-porting project and helped Automate Installer project.
• Masafumi has founded the Japanese Raspberry Pi Users group with some Raspberry Pi nerds and geeks, and he has been volunteering for the Raspberry Pi Foundation since 2012.
• Masafumi has become an Active User Committer at OpenStack Foundation contributing Infra Project at a big-name Automotive company in Japan.
• Masafumi has become an ARM INNOVATOR helping ARM business in Japan.
日本語フォーラムについて

by masafumi_ohta
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。

ようやっと待望でもありました日本語フォーラムを作り上げていただきました。まずここまでも来てご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く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どうぞこのフォーラムをどうぞ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りごめんなさい、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つを承認とおこられました😭

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。(Google翻訳で調べているようですよ、まろで)

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うぞ太田までください。

ではでは、太田でした。
What is the mini-card-sized computer boards?
What is mini-card-sized computer?

- Small factor like name-card-size
  - Raspberry Pi 3B+ is the standard name-card-sized factor
- Bared and embed
  - Easy to access hardware stuff and useful for DIY and IoT
- Cheap
  - Raspberry Pi Zero (W/WH) is very cheap, it is 5-15US$
- Run full OS
  - Run full-distribution OS like x64 PC
    (Linux, BSD, hopefully run Windows10)
Why mini-card-sized computer?

- PC is the office and internet surfing tool and expensive.
  - PC works friendly with MS Office and net surfing apps
  - It is too complex to know/hack the whole of things on PC
- SoC are getting smaller, faster and cheaper rapidly
  - Smartphones are enough to use internet surfing in daily life.
- Raspberry Pi has opened the door to expand computer use.
  - It can be useful to learn not only software but also hardware.
  - It can change dynamically smaller embedded runs on full distro OS.
Model Concept
Why are they cheap?
They were for educational use at the first

- They should be ignored the cost, price is very important.
- They should be the same price as textbook
- They should encourage PC newbie use.
- They should be cheap student have a chance to ‘break’ for their studies.
- ‘Forked machines’ from China and reduce the TOC chasing each other prices. say ’Raspberry Pi (fake) compatible machine’ is in bloom’ and it makes less prices
Many more variation

• Raspberry Pi Foundation has been released many more versions of Raspberry Pi

• It is now not only use for education but also many more use - business and more.

• RasPi.tv has corrected many more version of Raspberry Pi pics and blogged on his website. https://raspi.tv/2017/new-raspberry-pi-family-photo-28-feb-2017
DISK Media

Bearable for business use?
Which disk media is useful..

- **SD Card** – really weak, very nervous electric voltage inputs, less write counts, software issues on Linux
- **eMMC** – good, low power consumption, low speed but costs higher than M.2 NVMe SSD.
- **USB DISK** – good, depends on USB controller
- **Network boot/PXE** – manage easily if you run many more PCs but need to consider the network
- **SDIO/SPI** – depends on use
Robustness

Is it really robust?
Are they really robust?

• You should check the robust issue before using it.
• Raspberry Pi is supposed children treat it roughly
  • They take it into their bags going back and forth between school and home.
• Some might be ‘fried’ because of unexpected momentary power.
  • We should know AC Adapter is not always correct in the voltage and Ampere.
  • We should deal ‘electric power’ on them carefully.
Kernel

is it really fit on the boards?
Kernel update is not so easy

• The most basic way to update is ‘compiling the latest and change it’
  • we often need to modify the parameters or add the patch to the kernel to compile.
  • Updating u-boot and dtb is different from each other.
  • Check carefully updating rootfs
  • Some boards may NOT fit original kernel see my project ‘How to use original Rockchip Kernel on tinkerboard.

• There are the easy way to update the kernel via the tool
  • Raspberry Pi has ‘rpi-update’ to update the latest kernel. but almost can be done with ‘dist-upgrade’ to update the fixable kernel.
Install rockchip image for Tinkerboard with patch

1) Compile kernel as debian_kernel
   cd rk-linux/kernel$
   patch -p1 < rk_kernel_tinker_wlan_bt.diff
   make ARCH=arm miniarm-rk3288_defconfig -j16
   make zImage ARCH=arm CROSS_COMPILE=arm-linux-gnuabihf- -j16
   make modules ARCH=arm CROSS_COMPILE=arm-linux-gnuabihf- -j16
   make ARCH=arm rk3288-miniarm.dtbo CROSS_COMPILE=arm-linux-gnuabihf- -j16
   make dtbo CFLAGS=-g ARCH=arm CROSS_COMPILE=arm-linux-gnuabihf- -j16

2) Make system.img as rockchip wiki instruction
   build/mk-kernel.sh rk3288-miniarm
   build/mk-image.sh -c rk3288 -t boot
   cd cd ../rootfs/
   sudo apt-get install binfmt-support qemu-user-static
   sudo dpkg -i ubuntu-build-service/packages/*
Operating System

is it easy to handle?
*NIXs are almost fine..

• *NIX systems are almost fine.
  • Ubuntu, Debian, Arc, Yocto is almost fine
  • UI is getting improved, it is useful for *NIX newbies.
    • Raspberry Pi make a great effort to their Raspbian UI so that Children could use with ease.

• Windows..
  • Windows 10 IoT is..rubbish?..lately I have seen Microsoft do some demonstration for Azure with 10 IoT, they use *NIX edge boards..
  • Hopefully Microsoft would make a great effort to port full-Windows 10 to the (ARM) boards..
It is still under ‘unofficial’
Other tips.
USB, SoC thermo, Auto-deploy, Edge-AI and etc..
Q&A tips

• Plugging USB to the board it suddenly reboots and cannot boot/reboot again and again/ finish booting..
  • Check your voltage/ampere is enough to work with (seriously)
  • Power regulators on the boards are now improved to prevent such issues.
  • Wifi/BT stuff(dongle, PCIe Cards) eat more ampere.

• Would you recommend heatsink/fan for latest SoC on the boards?
  • Yes, latest A72 or later gets really hot thus recommend heatsink/fan
  • It might be needed liquid cooling immersion in the future..
Why they use eMMC
• Why not using High-spec CPUs...
• Why they using cooling-fan switch
  → prevent from the damage.
  → Thermo is serious issue on any PCs

Why they use on their UMPC is..
Use cases at Enterprise companies

Opportunities, how to use, how to manage
Pivot to industry

- Such boards still sales mostly to ‘hobbyists’
  - still mainly sell to DIY makers
- Low-cost, robust, programmable
  - Good for toys, good for industry
  - Good for prototyping use for industry
- First industrial sales for Raspberry Pi mid-2013
  - First-party installations
  - Integration into products
- Volume forces quality
  - No room for error
15:52

企救丘 for Kikugaoka

15:57

先発 1st
次発 2nd

16:07

小倉 for Kokura

15:57

先発 1st
次発 2nd
BANK OF THE RYUKYUS
Comfort System
Powered by Raspberry Pi
PM 2.5 "boxes"

1. LASS FT (Field Trial)
2. LASS4U
3. AirBox
4. 87Live
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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.  
- Raspberry 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.  
- 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.  
- Internet Connection Sharing (via direct wiring).  
- Raspberry Pi -- open source hardware.  
- OpenEMR -- open source web-based EHR.  
  - Easy installation from the Internet -- LAMP.  
  - Full access to the (actual -- not virtual) system

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

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

Nurse triage (picture below)
Thank you!

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