

A photograph of a wooden table set for a meal. In the foreground, a white plate contains a meal of white rice, a portion of orange curry with green herbs, and a side of browned cubes. Behind the plate are three wine bottles: a light-colored one on the left, a dark one in the middle with a label that says '2017 Muscat Bailey A', and a dark red one on the right with a label that says 'Cabernet Sauvignon'. Several small, handwritten labels are scattered on the table. To the left, a blue box with '100% BURN' and a green pen are visible. The background shows a person in a checkered shirt and a grassy area.

Journey with the vineyard

Japanese Raspberry Pi Users Group
Masafumi Ohta



Masafumi Ohta

- Masafumi used to be Core Contributor for OpenSolaris project by Sun Microsystems, had OpenSolaris-laptop-porting project and helped Automate Installer project.
- Masafumi used to be Active User Committer at OpenInfra Foundation contributing Infra Project at big-name Automotive company in Japan
- Masafumi has founded Japanese Raspberry Pi Users group with some Raspberry Pi nerd and geeks, and he has been volunteering Raspberry Pi Foundation since 2012.



About Katsunuma Vineyard

Located Yamanashi, is very near to Tokyo









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后大夫晴信入道信玄



A person wearing a green jacket and a cap is harvesting grapes in a vineyard. The vineyard is on a hillside, and there are power lines and mountains in the background. The sky is overcast.

About Vineyard Kikushima

Why Kikushima-san met Raspberry Pi



2019.5.25(sat)

ワインツーリズムやまなし2019・初夏の勝沼
開催決定！







The opportunities to develop the system

- Doing viniculture in Japan depends on the breed, though, because of relatively high temperature and humidity, Grapes are prone to diseases and those conditions affect not only the yield amount but also the quality.
- Any idea how to grow healthy grapes? And don't want to use any agricultural chemicals as possible.
- Is it possible to reduce the number of spray control times and agricultural chemical concentration by its efficient control at the timing of prone disease?
- it has occurred to collect the temperature and humidity data in the field.

Hinno IoT system: project requirements

- Check the timing of high humidity continuous, etc, collecting the temperature and humidity data measured automatically at regular intervals.
- Check those data in real time through the network because fields are scattered and far away from my office.
- Need solar + battery electric power. It might be better to share the solar+ battery for an electric fence to use the system.
- Reduce initial and communication costs because of my poor peasant (called Hinno) life that I can't pay much more expenses.

Hinno IoT system overview

- Core system: Raspberry Pi 3 and DHT22 thermo + humidity sensors
- Power: solar + battery + charge/discharge controller
- Network: wifi at my office, plan to use Soracom or IJmio(*1), for the next step.
- Display the data: via Twitter and ambient IoT visualization cloud service(*2)
- The stuff is into DIY Instrument shelter

(*1) 4G LTE IoT NVM0 cellular network in Japan

(*2) <https://ambidata.io/>

Current project status (now running 2 systems)

- No.1: Raspberry Pi 3 + DEXTER GrovePi + DHT22, checking the data via Twitter updated every hour, it is now running on production. The issue is it cannot see the data as a graph, and it cannot use it without wifi.
- No.2: Raspberry Pi 3 + DH2, uploaded the data to ambient IoT visualization cloud service updated every hour, it is trial use. The issue is the solar + battery electric power system, which is shared with the electric fence is low, PWR LED for Raspberry Pi 3 is often off and unstable.



Next step

- Try to run ambient IoT cloud service on No.1 and try to run No.2 stably.
- Try to change cellular network with wifi to use the same system at the other of his vineyards that are far away from my office.

Total cost

- Now the system is the trial phase, though, one is used for the field test, another is for the system development, the other is reserved.
- The total cost is 30,000-40,000JPY (is about 205-275GBP) included solar system. I am planning to add 3G dongles to my system, so the total expected cost will be 50,000-60,000JPY (is about 340-410GBP).

Raspberry Pi is very easy to use and apply

- It is easy to get Raspberry Pi at the store in Akihabara and online shops. Even though the project may not going well, the loss should be minimal.
- There are a ton of various use cases, and tips we can see on the internet, and we can reach with search listings. It might be something like 'illusion' to make it without any programming skills on Linux.
- It is really fun to assemble by 'watching and imitating.'

Why not using Raspberry Pi for vineyard business ?

- If the electronic display and measurement of temperature and humidity in the vineyards are going well, it could be applied to the other uses with the same platform.
- The wine must be delicious with Raspberry Pi :-)

My comment

- Kikushima-san worked for a big-name Japanese manufacturer, but he didn't have any experience for programming. He tried to build the system with search listings. It is a good activity to make some with Raspberry Pi.
- Less chemical is very important for a small winery in Japan. It makes more homemade wine than a big-name one to compete with them
- I am looking forward to his next step for the project. I will continue to help him to provide some useful information, etc.

Background- note

- It is too much higher temperature and humidity in Japan than in other areas (France, Chile, etc.)
- The cost of brewing wines in Japan is also much higher, which annoys brewers; lately, many farmers may think it might be better to grow table grapes' Shine Muscat', because the business has grown up too much in Japan.
- There are many more small-handmade wine breweries in Japan, though it is over 200,000US\$ at least to own a brewery.

Latest interview①

Q. Has it reduced business costs?

A. It is for determining the timing of pesticide spraying, so the frequency and amount of spraying does not change much. but as a result, it makes reduced the number of grape diseases and thus increased the yield of good grapes. It is a bit difficult to express quantitatively, though.

Latest interview②

Q. Has Raspberry Pi proved reliable and would he recommend it for others - and why.

A. Yes, I would recommend to other vineyards near my area because it is low-cost and easy-to-manage.

Latest interview③

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Thank you!

Masafumi Ohta

Tweet: @masafumiohta mailto:masafumi@pid0.org

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