Berryconda

Scientific Python on the Raspberry Pi

•••

Jonathan Helmus
jjhelmus@gmail.com

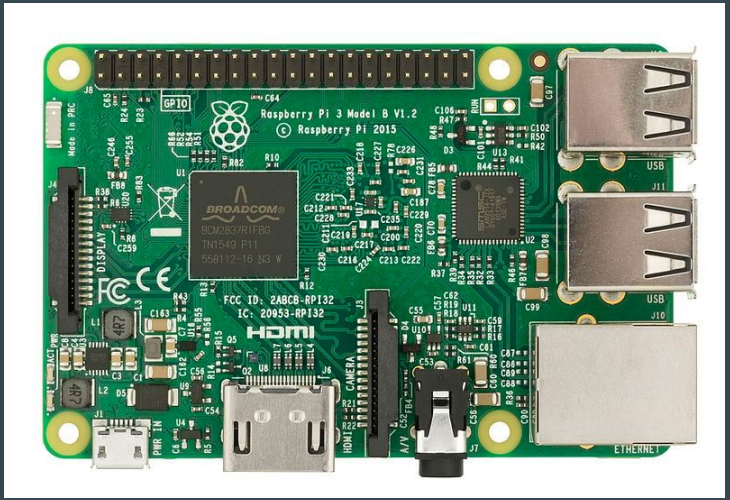
https://github.com/jjhelmus/berryconda

Raspberry Pi Models

RPi 1: single core ARMv6, 512 MB

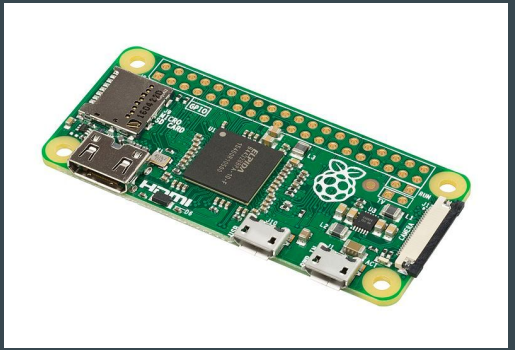
RPi 2: quad core ARMv7, 1 GB

RPi 3: quad core ARMv7, 1GB, Wifi + Bluetooth



RPi Zero : single core ARMv6, 512 MB

RPi Zero W : single core ARMv6, 512 MB, Wifi + Bluetooth

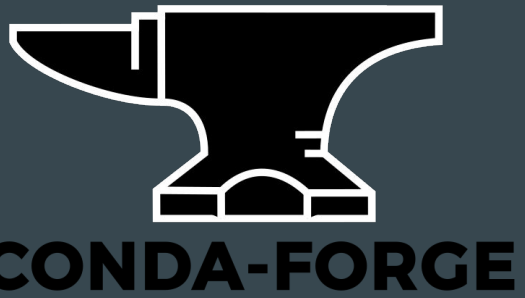


History

- Spring 2014 : Raspberry Pi 1 at PyCon 2014

- Spring 2015: conda-forge

- Summer 2016: Raspberry Pi 3
- Fall 2016: conda-forge transitions to conda-build 2
- Winter 2016: Berryconda

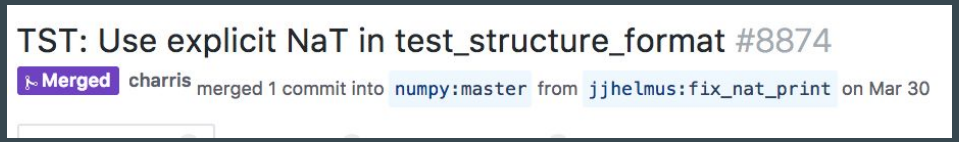


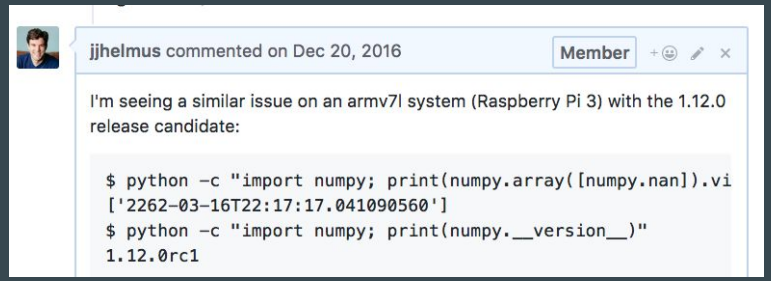
Introducing Berryconda

- A conda based Python distribution for the Raspberry Pi
- Designed to works on Raspbian jessie
- "Miniconda" like installers
  - armv6l : RPi 0 and 1
  - armv7l: RPi 2 and 3
- Over 200+ packages
- Recipes and tools
- https://github.com/jjhelmus/berryconda
- Packages stored on the Anaconda Cloud:
  - https://anaconda.org/rpi/

Applications

- Personal Jupyter notebook server.
- Remote data collection device.
- Lightweight development server.
- Test machine for the ARM architecture.





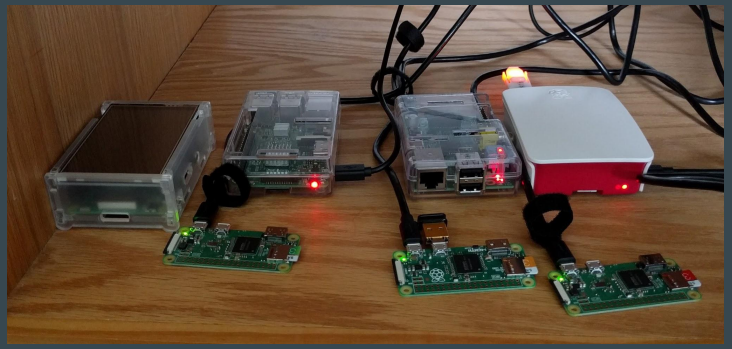
Making it work

- Existing recipes are updated as new versions are released.
- New recipes sourced from conda-forge or anaconda-recipes.
- Packages created for new Python or NumPy versions.
- Packages are built on actual hardware:
  - Initial on a Raspberry Pi 3 - armv7l
  - Next on a Raspberry Pi Zero - armv6l

- Sometimes the package backlog can get long...

Speeding up the process

- Scale out
  - Buy more Raspberry Pis



- Automate the process
  - Script to find outdated packages
  - Script to update recipes

- Reduce the packaging needs
  - noarch: python packages

Berryconda

A conda based Python distribution for ~~the Raspberry Pi~~

... the ARM architecture.

Berryconda Beyond: Asus C201 Chromebook

CPU: Rockchip RK3288C

Quad-core 1.8 GHz ARM7

RAM: 4 GB

OS: Crouton on ChromeOS

13 hour battery, 2 lbs, ~$170

Python 3.6 build time: ~8.5 minutes

RPi 3 build time: 17 minutes

Berryconda Beyond: Nexus 4

CPU: Qualcomm Krait

Quad-core 1.5 GHz ARM7

RAM: 2 GB RAM

OS: Ubuntu Touch

Python 3.6 build time: ~24 minutes

Berryconda Beyond: Geekbox

CPU: Rockchip RK3368

Octo-core 1.2 GHz AArch64 (ARM8)

RAM: 2 GB RAM

OS: Debian Jessie

Python 3.6 build time: ~14.5 minutes

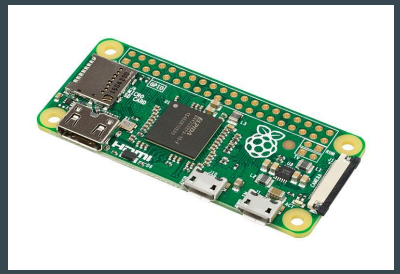
```
~$ conda info
Current conda install:

               platform : linux-aarch64
          conda version : 4.3.16
       conda is private : False
      conda-env version : 4.3.16
    conda-build version : 2.1.10
         python version : 3.6.1.final.0
       requests version : 2.13.0
       root environment : /home/geekbox/gboxconda  (writable)
    default environment : /home/geekbox/gboxconda
       envs directories : /home/geekbox/gboxconda/envs
                          /home/geekbox/.conda/envs
          package cache : /home/geekbox/gboxconda/pkgs
                          /home/geekbox/.conda/pkgs
           channel URLs : https://conda.anaconda.org/aarch64_gbox/linux-aarch64
                          https://conda.anaconda.org/aarch64_gbox/noarch
            config file : /home/geekbox/.condarc
          offline mode : False
            user-agent : conda/4.3.16 requests/2.13.0 CPython/3.6.1 Linux/3.10.0 de
bian/8.7 glibc/2.19
                UID:GID : 1001:1001
```

Berryconda:

A conda based Python distribution for...

... ARM based systems

...and the Raspberry Pi



CONDA

Questions?

https://github.com/jjhelmus/berryconda

jjhelmus@gmail.com