Menggunakan Raspbery pi 3 untuk menjalankan OpenCV

27 November 2018 15:29

Raspberry pi 3
(https://www.raspberrypi.org/products/raspberry-pi-3-model-b-plus/)

Hardware:

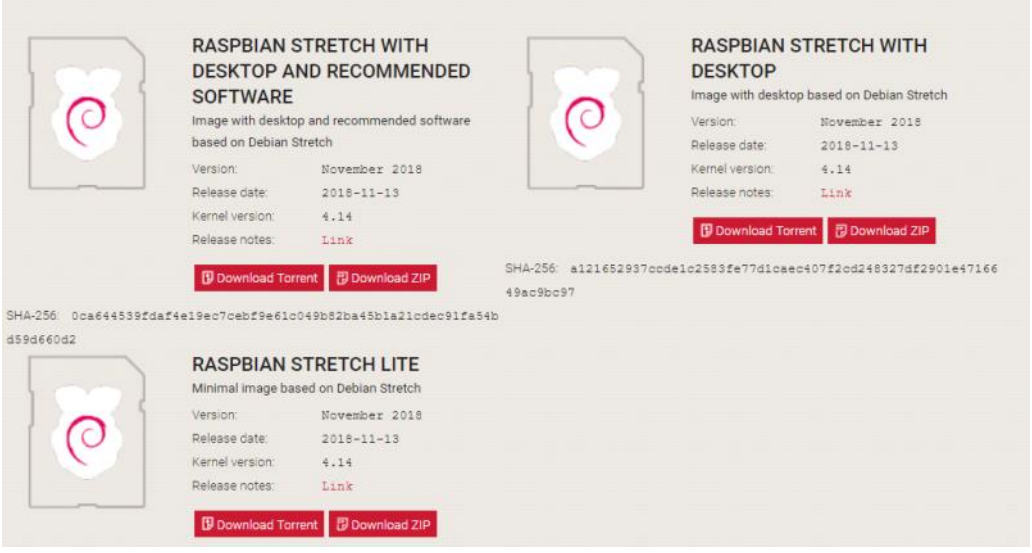
The Raspberry Pi 3 Model B+ is the latest product in the Raspberry Pi 3 range.

- Broadcom BCM2837B0, Cortex-A53 (ARMv8) **64-bit SoC @ 1.4GHz**
- 1GB LPDDR2 SDRAM
- 2.4GHz and 5GHz IEEE 802.11.b/g/n/ac wireless LAN, Bluetooth 4.2, BLE
- Gigabit Ethernet over USB 2.0 (maximum throughput **300 Mbps**)
- Extended 40-pin GPIO header (digital I/O)
- Full-size HDMI (display)
- 4 USB 2.0 ports
- CSI camera port for connecting a Raspberry Pi camera
- DSI display port for connecting a Raspberry Pi touchscreen display
- 4-pole stereo output and composite video port
- Micro SD port for loading your operating system and storing data (minimal 8GB)
- 5V/2.5A DC power input
- Power-over-Ethernet (PoE) support (requires separate PoE HAT)

From <https://www.raspberrypi.org/products/raspberry-pi-3-model-b-plus/>

SOFTWARE:

- Sistem operasi disimpan dalam Micro SD memeory, min 8 GB
- Jenis sistem operasi: Linux (Raspbian)
- Instalasi:
  - Download: Raspbian



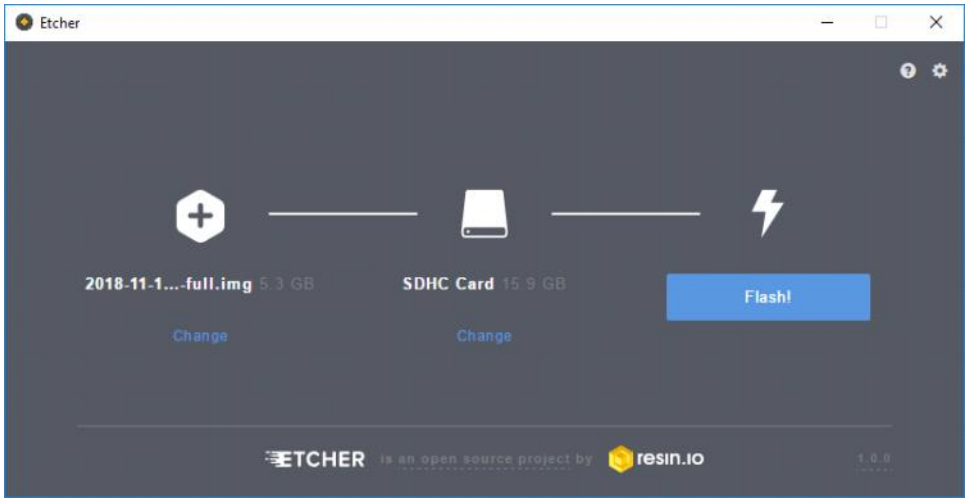
RASPBIAN STRETCH WITH DESKTOP AND RECOMMENDED SOFTWARE (sudah di lengkapi dengan beberpa aplikasi yang umum digunakan)

RASPBIAN STRETCH WITH DESKTOP (dilengkapi dengan GUI interface)

RASPBIAN STRETCH LITE (no GUI) tetapi ukura file image (backup file system) paling kecil

File yang sudah di download harus di ektrak :
.zip -> .img   (biasanya ukurannya akan menjadi 3 sampai 4x lebih besar)

Selanjutnya file *.img di tuliskan ke dalam Micro SD, dengan menggunakan software tools Etcher (https://ethcer.io) 66.9 MB



Selanjutnya hasil penulisan file *.img ke dalam SD-Card dapat digunakan sebagai boot system dalam raspberrypi. (tidak perlu proses instalasi, seperti pada file *.iso)

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Remote akses menggunakan SSH:
Pastikan SSH aktif/enable pada raspberry:
Identifikasi IP ADDRESS raspberry:   ifconfig
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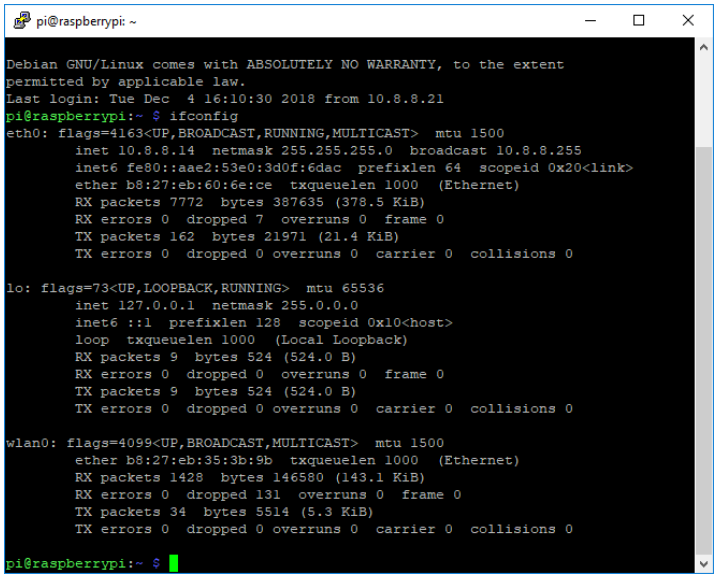


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Pada contoh tampilan di atas, raspberrypi menggunakan UTP (Ethernet
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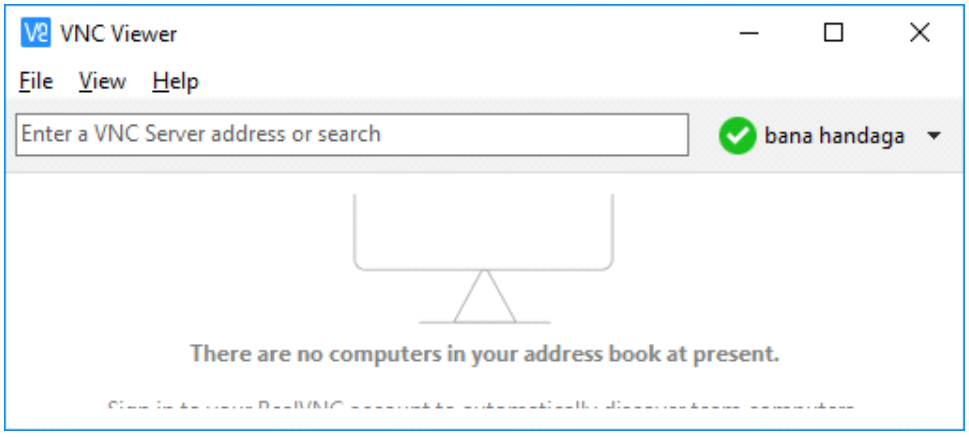
port), label **eth0** untuk koneksi ke jaringan LAN/Internet, dengan ipaddress : **10.8.8.14**

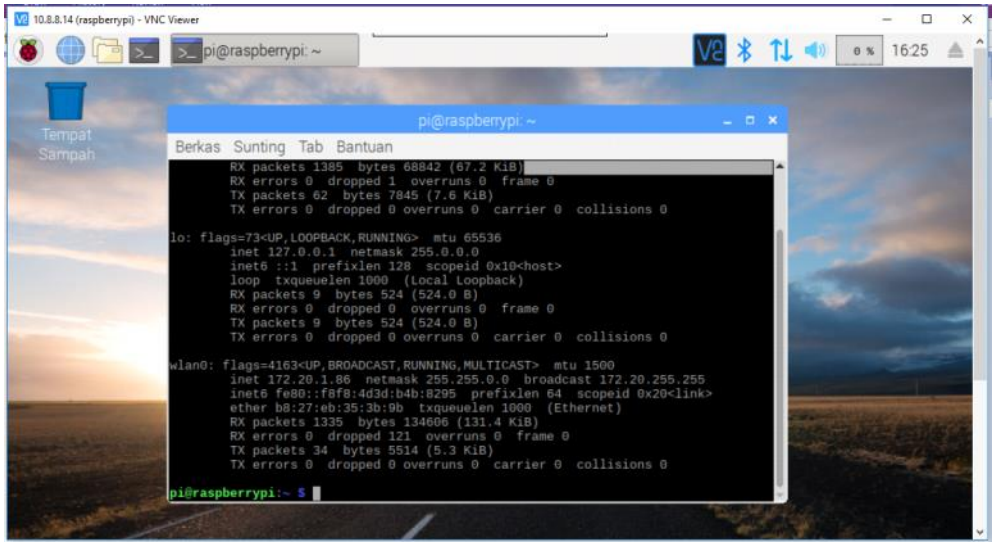
Remote akses menggunakan SSH menggunakan PuTTY
https://www.putty.org/
Download software Putty dari link di atas:

Remote akses berbasis GUI: "VNC Viewer" (free)

Download dan install VNC Viewer for windows dari link berikut:
https://www.realvnc.com/en/connect/download/viewer/windows/



Contoh tampilan REMOTE AKSES dengan menggunakan VNC Client



Instalasi OpenCV 3.4.3 dalam Raspberry pi

Default python dalam raspbian adalah python 2.7 (tetapi pyhton3 sudah terinstall dalam folder /usr/bin/pyhton3)

Jika menggunakan Python 2.7 dapat langsung dinstall OpenCV, disarankan membuat "virtual Environment"
Contoh virtual untuk Python 2.7:

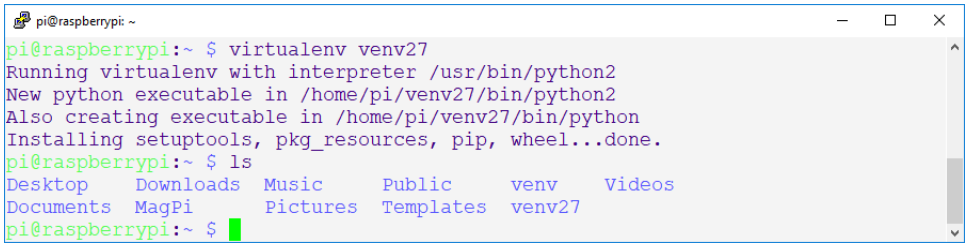
Instalasi modul virtualenv

- Buka terminal
- Sudo pip install virtualenv

Membuat virtual environment python2.7

- virtualenv venv27

Tunggu proses selesai, kemudian virtual environtment akan terinstall pada direktori "venv27":

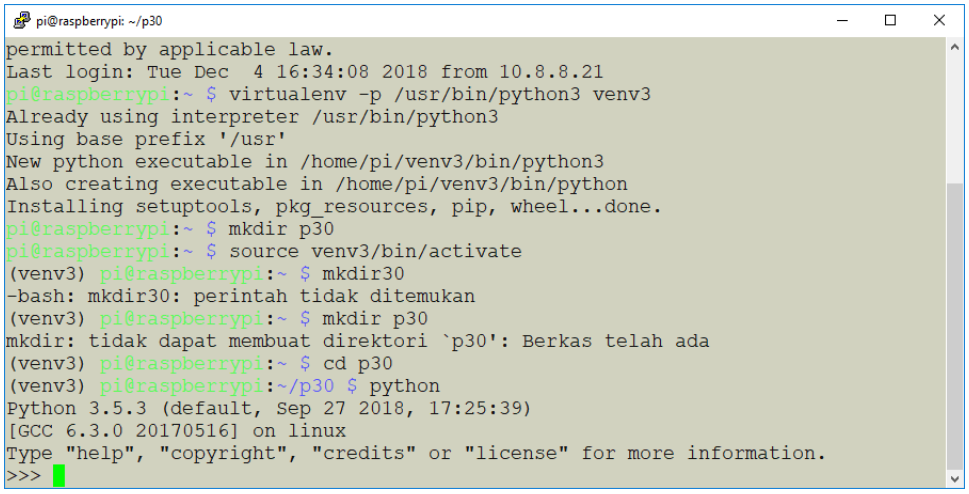


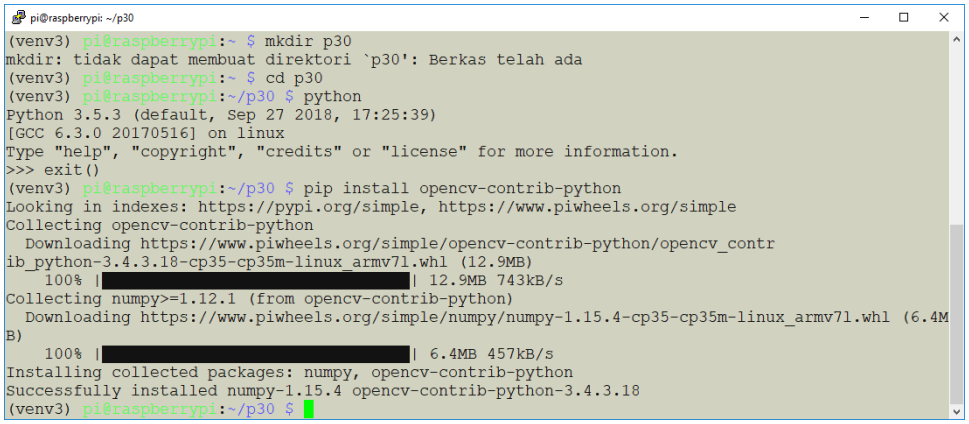
Mengaktifkan virtual environment python2.7 (dalam direktori 'venv27')

$ source venv27/bin/activate

Installasi opencv dalam virtual environment 2.7 and 3.5:

- opencv-python
- opencv-contrib-python




pi@raspberrypi: ~/p30
(venv3) pi@raspberrypi:~ $ mkdir p30
mkdir: tidak dapat membuat direktori `p30': Berkas telah ada
(venv3) pi@raspberrypi:~ $ cd p30
(venv3) pi@raspberrypi:~/p30 $ python
Python 3.5.3 (default, Sep 27 2018, 17:25:39)
[GCC 6.3.0 20170516] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> exit()
(venv3) pi@raspberrypi:~/p30 $ pip install opencv-contrib-python
Looking in indexes: https://pypi.org/simple, https://www.piwheels.org/simple
Collecting opencv-contrib-python
Downloading https://www.piwheels.org/simple/opencv-contrib-python/opencv_contr
ib_python-3.4.3.18-cp35-cp35m-linux_armv7l.whl (12.9MB)
100% | | 12.9MB 743kB/s
Collecting numpy>=1.12.1 (from opencv-contrib-python)
Downloading https://www.piwheels.org/simple/numpy/numpy-1.15.4-cp35-cp35m-linux_armv7l.whl (6.4M
B)
100% | | 6.4MB 457kB/s
Installing collected packages: numpy, opencv-contrib-python
Successfully installed numpy-1.15.4 opencv-contrib-python-3.4.3.18
(venv3) pi@raspberrypi:~/p30 $