Jupyter Lab environment setup tutorial

Note: This development environment has been built in the factory image. You can skip this tutorial if you use the factory image.

Since Jetson Orin NX/Orin Nano uses Docker and the system environment is already available, this installation takes Jetson Nano as an example.

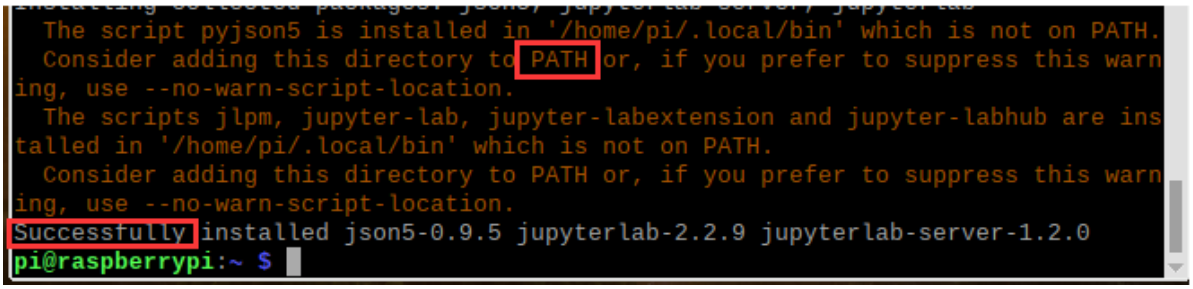
1. Jupyter Lab installation

First, install Jupyter Lab from Tsinghua source (the installation and download speed of this source in China is relatively fast at present, and other sources can also be used for installation). During the installation, some dependent packages need to be downloaded from the external network, and occasionally the connection will be disconnected, causing the installation to fail. You can execute the installation command again and continue the installation from the breakpoint.

```
sudo pip3 install jupyterlab -i https://pypi.tuna.tsinghua.edu.cn/simple
```

2. Add Jupyter Lab path

When successfully appears, it means that Jupyter Lab is installed, but it should be noted that the above alarm information does not find the path. If this problem is not solved, Jupyter Lab cannot be used.

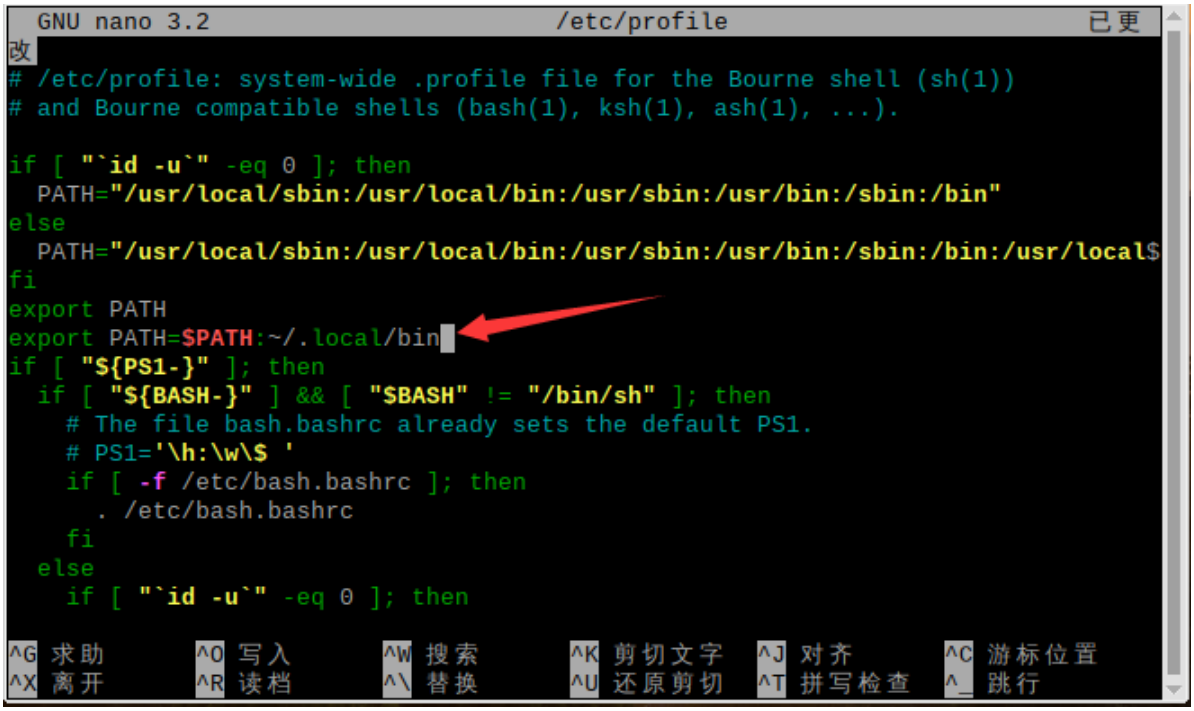


Modify the profile configuration file

```
sudo nano /etc/profile
```

Add configuration instructions, as shown in the figure

```
export PATH=$PATH:~/.local/bin
```



After writing, press Ctrl+S to save, and then press Ctrl+X to exit.

Then execute

```
source /etc/profile
```

Start jupyterlab. After starting, the browser will automatically pop up the jupyterlab interface.

```
jupyter lab
```

3. Set up LAN to access Jupyter Lab

If you want to run it on other devices in the same LAN, you need to follow the following process

1. Generate a key

Open the terminal and enter the following content in sequence, and then enter the password twice according to the prompt. It is recommended to be consistent with the user password.

```
ipython
from jupyter_server.auth import passwd
passwd()
```

A string of keys will be generated after the password confirmation is completed. Copy this key and enter the following command to exit.

```
exit()
```

2. Create a configuration file

After creation, the detailed location of the file will be output, please remember this location.

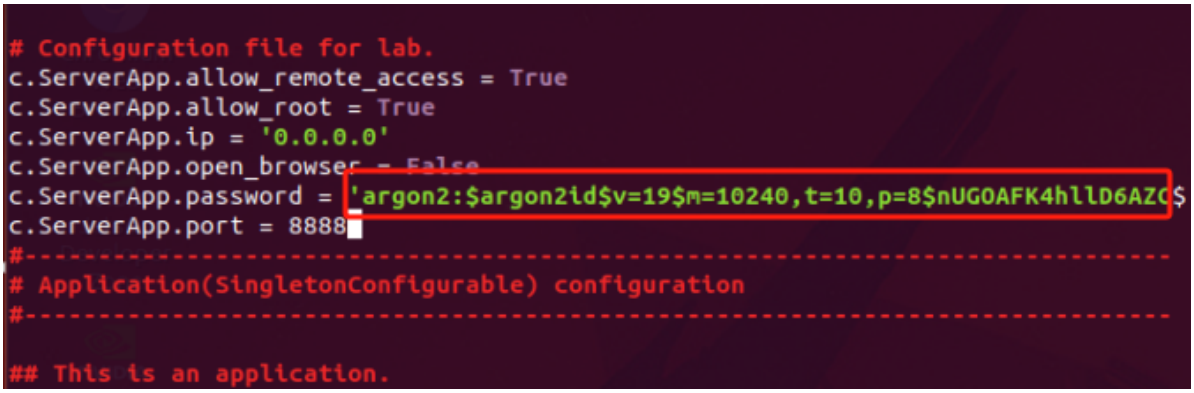
```
jupyter lab --generate-config
```

3. Modify the configuration file

```
nano ~/.jupyter/jupyter_lab_config.py
```

Add the following content, where the password item needs to be replaced with the key generated above.

```
c.ServerApp.allow_remote_access = True
c.ServerApp.allow_root = True
c.ServerApp.ip = '0.0.0.0'
c.ServerApp.open_browser = False
c.ServerApp.password =
'argon2:$argon2id$v=19$m=10240,t=10,p=8$nUGOAFK4hllD6AZCI00SaA$y/V3VPsHxRp8aox4Q
x/pOjOG2/dAYPW4dO0x23lxaxc'
c.ServerApp.port = 8888
```



After writing, press Ctrl+S to save, and then press Ctrl+X to exit.

Restart the system

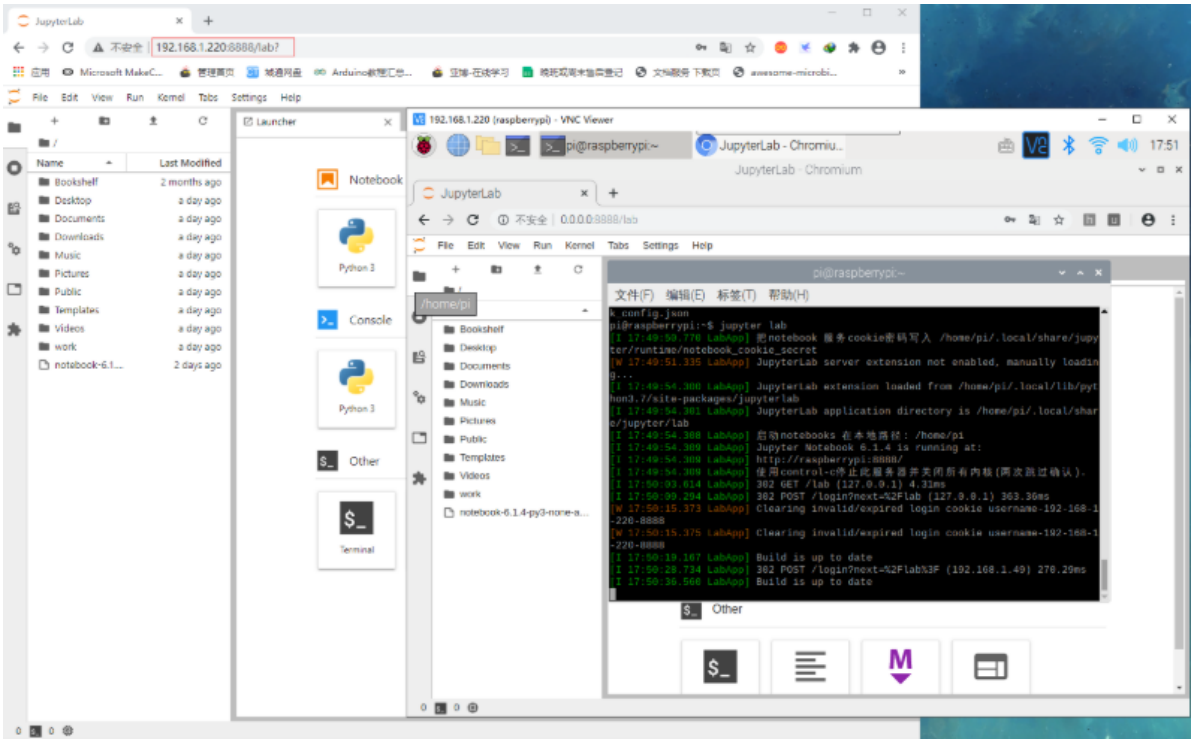
```
sudo reboot
```

Step 5: Run the test

```
jupyter lab
```

You can access http://127.0.0.1:8888 in your local browser or http://:8888 on a machine in the LAN, then enter the password you set, and you can operate your robot on the web page.

For example: If the robot's address is 192.168.1.220, then the machine in the LAN should access http://192.168.1.220:8888 as shown below:



4. Configure Jupyter Lab's startup program

After the installation is complete, under normal circumstances, each time you use JupyterLab, you need to enter the command jupyter lab to start. For convenience, we configure the startup program. The operation is as follows:

Step 1: Create a startup file

```
sudo vim /etc/systemd/system/yahboom_jupyterlab.service
```

Step 2: Copy the code to this file, save and exit

jetson nano system service file

```
[Unit]
Description=Jupyter Lab Service

[Service]
Type=simple
User=jetson
Environment="OPENBLAS_CORETYPE=ARMV8"
ExecStart=/bin/sh -c "jupyter lab --ip=0.0.0.0 --no-browser"
WorkingDirectory=/home/jetson
Restart=always

[Install]
WantedBy=multi-user.target
```

Raspberry Pi system service file

```
[Unit]
Description=Jupyter Lab Service

[Service]
Type=simple
User=pi
Environment="OPENBLAS_CORETYPE=ARMV8"
ExecStart=/bin/sh -c "jupyter lab --ip=0.0.0.0 --no-browser"
WorkingDirectory=/home/pi
Restart=always

[Install]
WantedBy=multi-user.target
```

After writing, press Ctrl+S to save, and then press Ctrl+X to exit.

Step 3: Enable the service to start automatically at boot

```
sudo systemctl daemon-reload
sudo systemctl enable yahboom_jupyterlab.service
sudo systemctl restart yahboom_jupyterlab.service
```

Step 4: Restart the system

```
sudo reboot
```

Try to access http://127.0.0.1:8888 locally

Or

Access http://《your-ip-address》:8888 on a machine in the LAN, such as: http://192.168.1.220:8888

If the access is normal, the Jupyter Lab environment is successfully built!