

3. Jupyter Lab plugin installation

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1. Install Node.js
2. Enable plugins
3. Install the expansion pack

Installing plugins can enhance the functionality of Jupyter Lab and provide more tools and features.

1. Install Node.js

- View the architecture of Raspberry Pi

```
uname -a
```

```
yahboom@raspberrypi:~$ uname -a
Linux raspberrypi 6.1.0-rpi7-rpi-2712 #1 SMP PREEMPT Debian 1:6.1.63-1+rpt1 (2023-11-24) aarch64 GNU/Linux
```

Select the Node.js version suitable for ARMv8 architecture to install




- Node.js Download

```
https://nodejs.org/en/download/
```

Downloads

Latest LTS Version: 20.10.0 (includes npm 10.2.3)

Download the Node.js source code or a pre-built installer for your platform, and start developing today.

LTS Recommended For Most Users	Current Latest Features
 Windows Installer <small>node-v20.10.0-x64.msi</small>	 macOS Installer <small>node-v20.10.0.pkg</small>
 Source Code <small>node-v20.10.0.tar.gz</small>	

Windows Installer (.msi)

Windows Binary (.zip)

macOS Installer (.pkg)

macOS Binary (.tar.gz)

Linux Binaries (x64)

Linux Binaries (ARM)

Source Code

32-bit	64-bit	ARM64
32-bit	64-bit	ARM64
64-bit / ARM64		
64-bit	ARM64	
64-bit		
ARMv7	ARMv8	
node-v20.10.0.tar.gz		

Additional Platforms

Docker Image

Linux on Power LE Systems

Linux on System z

AIX on Power Systems

Official Node.js Docker Image	
	64-bit
	64-bit
	64-bit

- Unzip

Download the latest version of the binary file from the official website, unzip it, and name the folder node:

```
cd Downloads/
tar -xjf node-v20.10.0-linux-arm64.tar.xz
mv -i node-v20.10.0-linux-arm64 node
```

```
yahboom@raspberrypi:~ $ cd Downloads/
yahboom@raspberrypi:~/Downloads $ ls
node-v20.10.0-linux-arm64.tar.xz
yahboom@raspberrypi:~/Downloads $ tar -xjf node-v20.10.0-linux-arm64.tar.xz
yahboom@raspberrypi:~/Downloads $ mv -i node-v20.10.0-linux-arm64 node
yahboom@raspberrypi:~/Downloads $ ls
node node-v20.10.0-linux-arm64.tar.xz
```

- Move binary files and add soft links

```
sudo mv ./node /usr/local
sudo ln -s /usr/local/node/bin/node /usr/bin/node
sudo ln -s /usr/local/node/bin/npm /usr/bin/npm
```

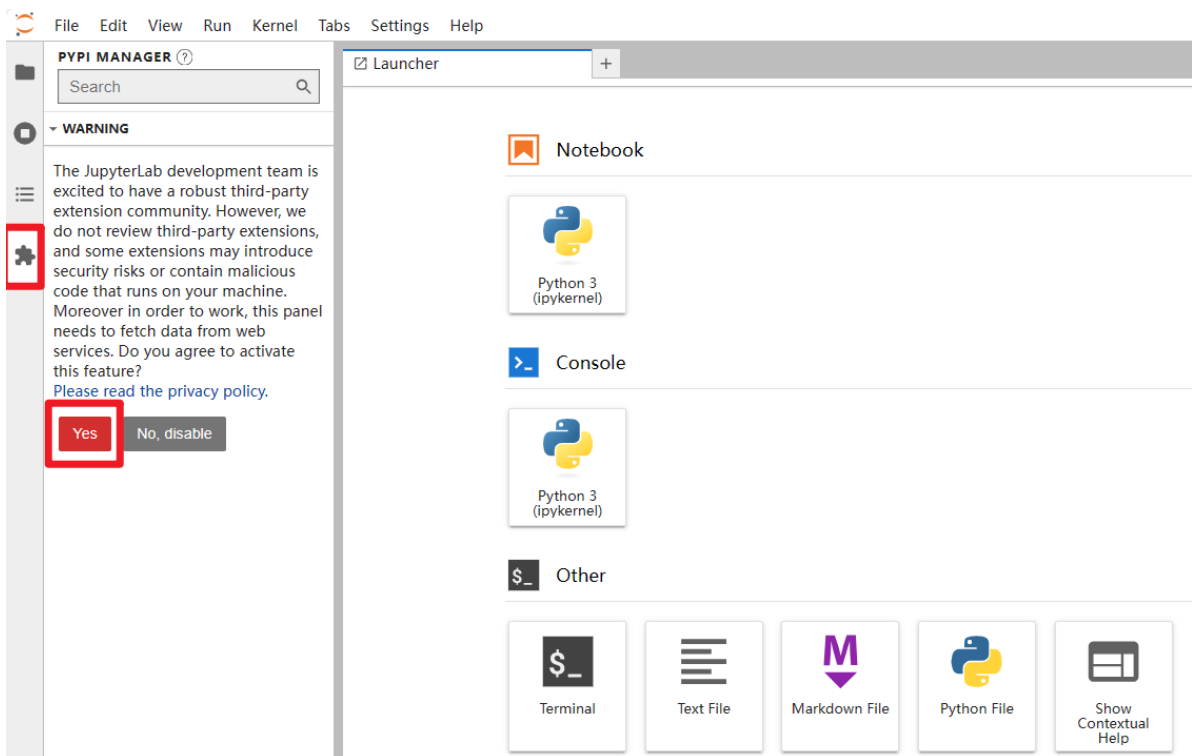
- Check whether node and npm are installed successfully

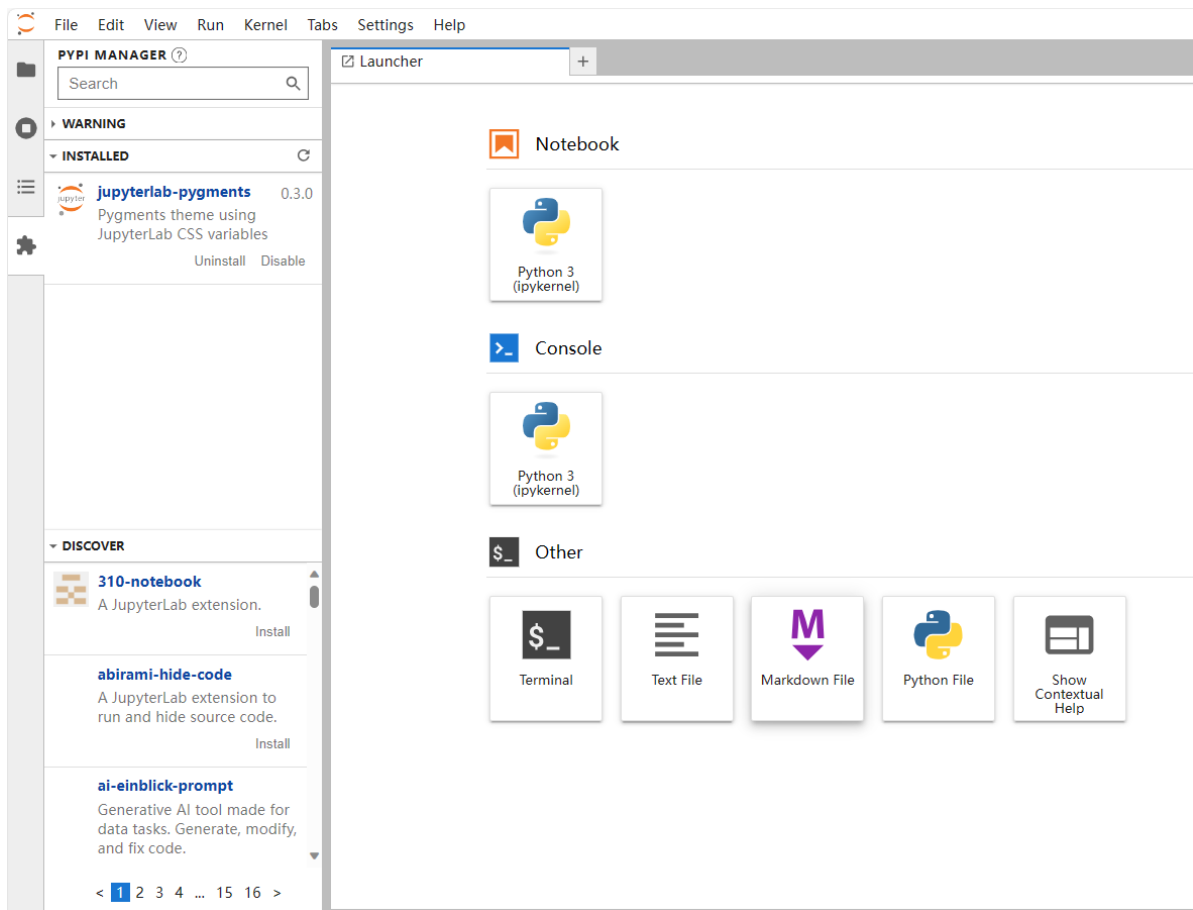
```
node -v && npm -v
```

```
pi@raspberrypi: ~/D..
pi@raspberrypi: ~/Downloads
File Edit Tabs Help
pi@raspberrypi:~$ uname -a
Linux raspberrypi 6.1.0-rpi7-rpi-2712 #1 SMP PREEMPT Debian 1:6.1.63-1+rpt1 (2023-11-24) aarch64 GNU/Linux
pi@raspberrypi:~$ cd Downloads/
pi@raspberrypi:~/Downloads$ tar -xJf node-v20.10.0-linux-arm64.tar.xz
pi@raspberrypi:~/Downloads$ mv -i node-v20.10.0-linux-arm64 node
pi@raspberrypi:~/Downloads$ sudo mv ./node /usr/local
pi@raspberrypi:~/Downloads$ sudo ln -s /usr/local/node/bin/node /usr/bin/node
pi@raspberrypi:~/Downloads$ sudo ln -s /usr/local/node/bin/npm /usr/bin/npm
pi@raspberrypi:~/Downloads$ node -v && npm -v
v20.10.0
10.2.3
pi@raspberrypi:~/Downloads$
```

2. Enable plugins

Enable third-party extension support in Jupyter Lab.





3. Install the expansion pack

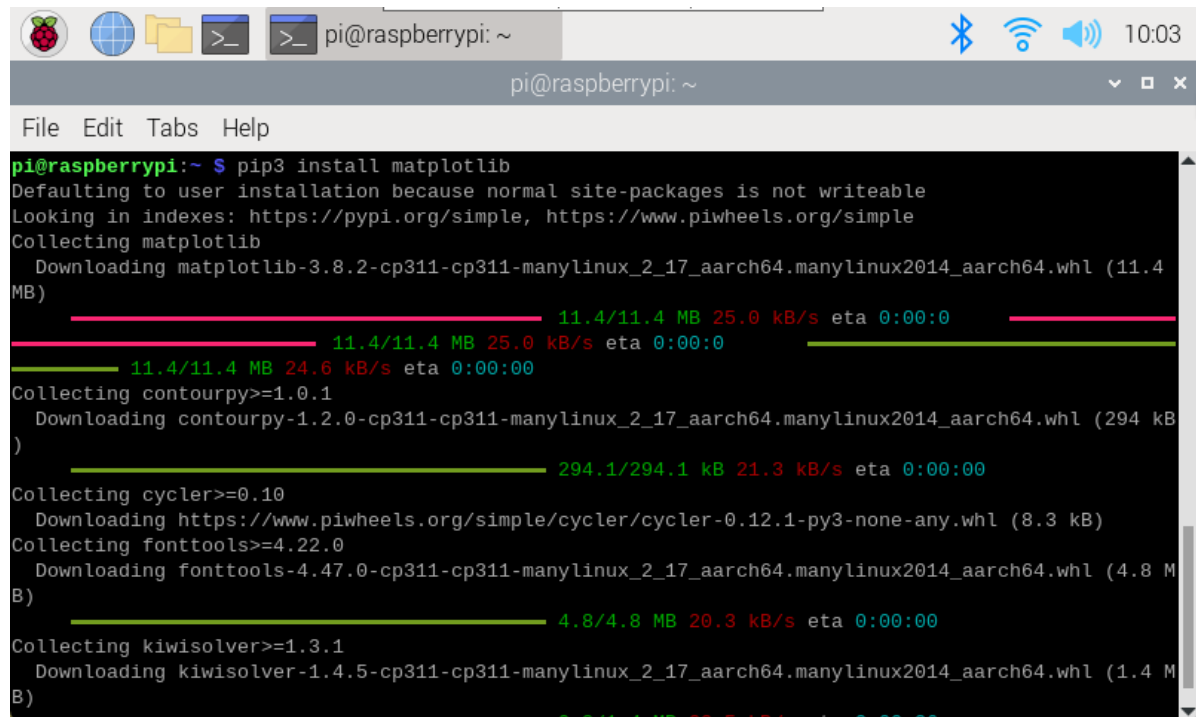
```
pip3 install ipywidgets
```

Provides functionality for creating interactive widgets in Jupyter Lab.

The screenshot shows a terminal window on a Raspberry Pi. The user has run the command `pip3 install ipywidgets`. The output shows the installation process, including downloading `ipywidgets-8.1.1-py3-none-any.whl` (139 kB) and `widgetsnbextension-4.0.9-py3-none-any.whl` (2.3 MB). It also shows that requirements like `comm`, `ipython`, and `traitlets` are already satisfied. The terminal window has a title bar that says 'pi@raspberrypi: ~' and a menu bar with 'File', 'Edit', 'Tabs', and 'Help'.

```
pip3 install matplotlib
```

Functionality for creating various types of graphs and visualizations in Python, including line graphs, scatter plots, histograms, and more.



The screenshot shows a terminal window on a Raspberry Pi. The window title is "pi@raspberrypi: ~". The terminal output shows the command "pip3 install matplotlib" being executed. The output indicates that the installation is defaulting to user installation because the normal site-packages is not writeable. It then shows the collection and download of matplotlib-3.8.2-cp311-cp311-manylinux_2_17_aarch64.manylinux2014_aarch64.whl (11.4 MB) with a progress bar. Following this, it shows the collection and download of contourpy>=1.0.1, specifically contourpy-1.2.0-cp311-cp311-manylinux_2_17_aarch64.manylinux2014_aarch64.whl (294 kB) with a progress bar. Then, it shows the collection of cycler>=0.10 and the download of https://www.piwheels.org/simple/cycler/cycler-0.12.1-py3-none-any.whl (8.3 kB). Next, it shows the collection of fonttools>=4.22.0 and the download of fonttools-4.47.0-cp311-cp311-manylinux_2_17_aarch64.manylinux2014_aarch64.whl (4.8 MB) with a progress bar. Finally, it shows the collection of kiwisolver>=1.3.1 and the download of kiwisolver-1.4.5-cp311-cp311-manylinux_2_17_aarch64.manylinux2014_aarch64.whl (1.4 MB) with a progress bar. The terminal window has a menu bar with "File", "Edit", "Tabs", and "Help". The top of the window shows system icons for Bluetooth, Wi-Fi, and a speaker, along with the time "10:03".

```
pi@raspberrypi:~ $ pip3 install matplotlib
Defaulting to user installation because normal site-packages is not writeable
Looking in indexes: https://pypi.org/simple, https://www.piwheels.org/simple
Collecting matplotlib
  Downloading matplotlib-3.8.2-cp311-cp311-manylinux_2_17_aarch64.manylinux2014_aarch64.whl (11.4 MB)
    _____ 11.4/11.4 MB 25.0 kB/s eta 0:00:00
    _____ 11.4/11.4 MB 24.6 kB/s eta 0:00:00
Collecting contourpy>=1.0.1
  Downloading contourpy-1.2.0-cp311-cp311-manylinux_2_17_aarch64.manylinux2014_aarch64.whl (294 kB)
    _____ 294.1/294.1 kB 21.3 kB/s eta 0:00:00
Collecting cycler>=0.10
  Downloading https://www.piwheels.org/simple/cycler/cycler-0.12.1-py3-none-any.whl (8.3 kB)
Collecting fonttools>=4.22.0
  Downloading fonttools-4.47.0-cp311-cp311-manylinux_2_17_aarch64.manylinux2014_aarch64.whl (4.8 MB)
    _____ 4.8/4.8 MB 20.3 kB/s eta 0:00:00
Collecting kiwisolver>=1.3.1
  Downloading kiwisolver-1.4.5-cp311-cp311-manylinux_2_17_aarch64.manylinux2014_aarch64.whl (1.4 MB)
    _____ 1.4/1.4 MB 20.3 kB/s eta 0:00:00
```