

## 3. Remote control

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#### 3.1. PuTTY login

#### 3.2. SSH

#### 3.3. jupyter lab

#### 3.4. VNC

#### 3.5. WinSCP

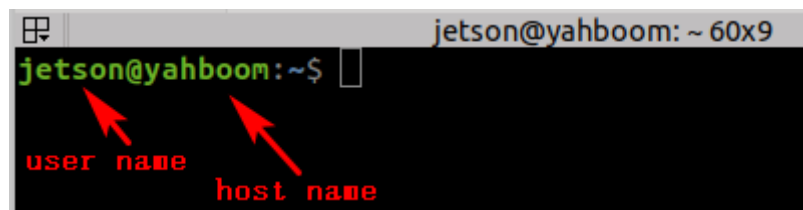
putty: <https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html>

VNC: <https://www.realvnc.com/en/connect/download/viewer/>

WinSCP: <https://winscp.net/eng/download.php>

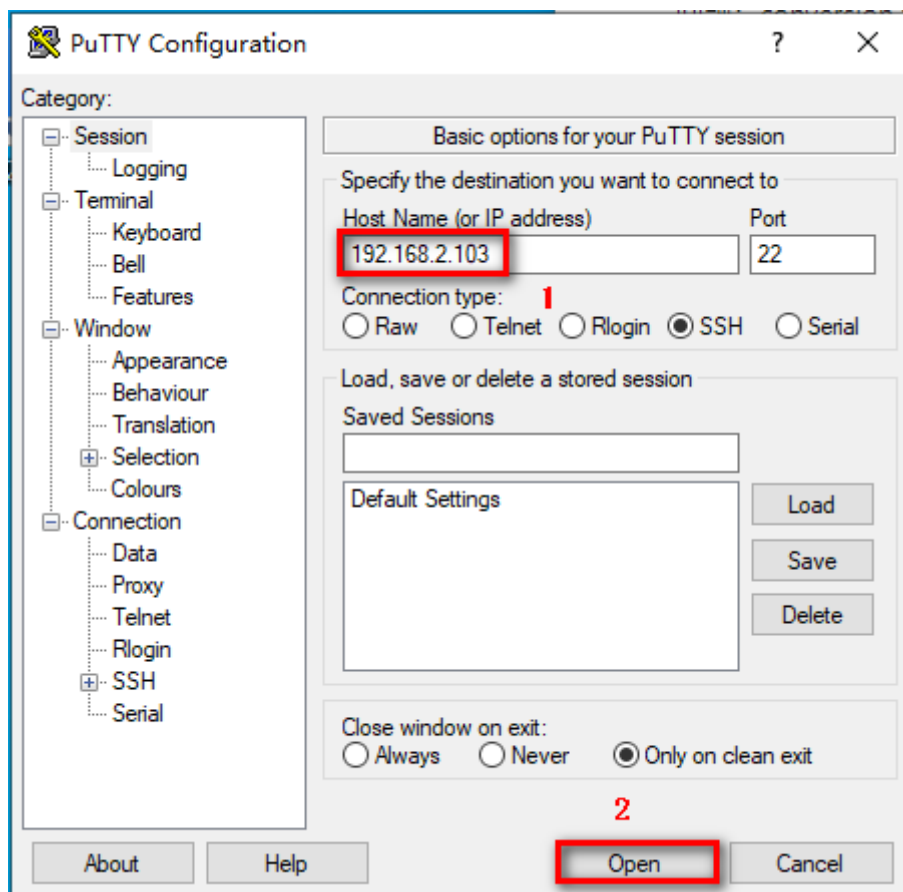
**Note: Before logging in remotely, you must know the IP of the robot, which can be displayed on an external monitor or OLED.**

For example, the following figure: Username [jetson], hostname [yahboom].

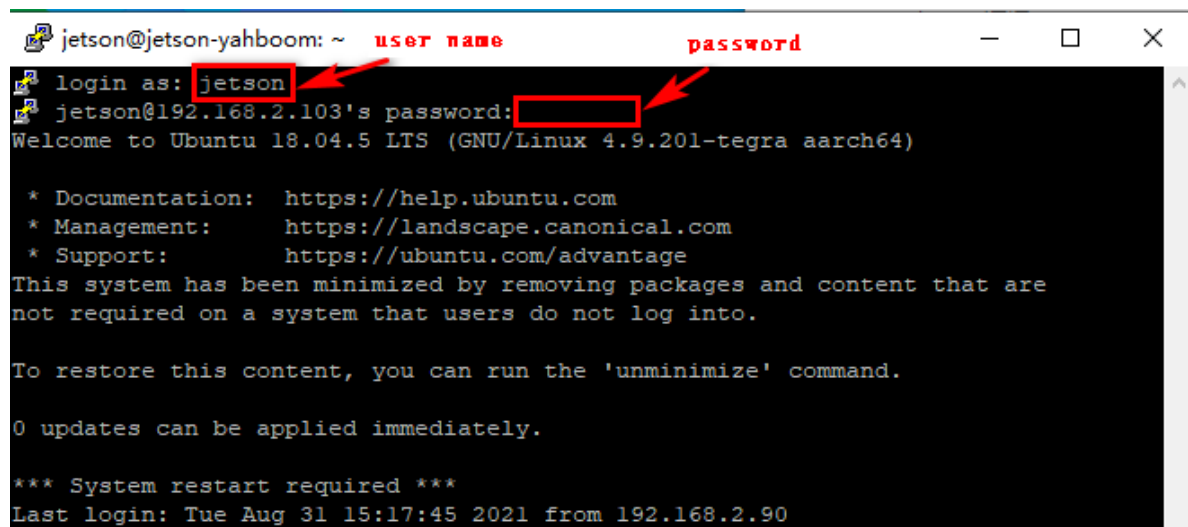


### 3.1. PuTTY login

Enter the relevant link at the top, download the installation file, and double-click the [.exe] file to install.



After entering the IP address of the robot, click [open];



Enter the username [jetson] and password [yahboom], and press Enter to confirm.

The sign of successful login appears as shown below

```
jetson@yahboom:~$
```

## 3.2. SSH

**Note:** The interface cannot be displayed.

- Log in

operate under ubuntu system

A terminal window titled 'jetson@jetson-yahboom: ~' shows the process of establishing an SSH connection. The user enters 'ssh jetson@192.168.2.103'. The terminal displays a warning about the host's authenticity, asking for confirmation to continue. The user responds with 'yes'. Then, the user is prompted for a password and enters 'yahboom'. The terminal shows the Ubuntu 18.04.5 LTS login banner, including system information and a message about system restart requirements. Red boxes and numbers 1, 2, and 3 highlight the IP address, the 'yes' response, and the password respectively.

```
jetson@jetson-yahboom: ~
jetson@jetson-yahboom: ~ 80x24
yahboom@Yahboom:~$ ssh jetson@192.168.2.103
The authenticity of host '192.168.2.103 (192.168.2.103)' can't be established.
ECDSA key fingerprint is SHA256:9UYkw1sqeLwQDgjTc+dzH//Ey8AtRTa4jgz8sMbXChE.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.2.103' (ECDSA) to the list of known hosts.
jetson@192.168.2.103's password:
Welcome to Ubuntu 18.04.5 LTS (GNU/Linux 4.9.201-tegra aarch64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage
This system has been minimized by removing packages and content that are
not required on a system that users do not log into.

To restore this content, you can run the 'unminimize' command.

0 updates can be applied immediately.

*** System restart required ***
Last login: Tue Aug 31 15:33:40 2021 from 192.168.2.106
```

1. Enter the following command in the terminal

```
ssh jetson@192.168.2.103
```

2. Then enter [yes], 3) Enter the password [yahboom]

- copy file

If jetson's IP is 192.168.2.103, username: jetson; virtual machine username: yahboom

```
scp jetson@192.168.2.103:/home/jetson/xxx.tar.gz /home/yahboom/ # Copy files
from remote to local (file)
scp /home/yahboom/xxx.png jetson@192.168.2.103:/home/jetson/ # from local to
remote (file)
scp -r jetson@192.168.2.103:/home/jetson/test /home/yahboom/ # from remote to
local -r (folder)
scp -r /home/yahboom/test jetson@192.168.2.103:/home/jetson/ # from local to
remote (folder)
```

### 3.3. jupyter lab

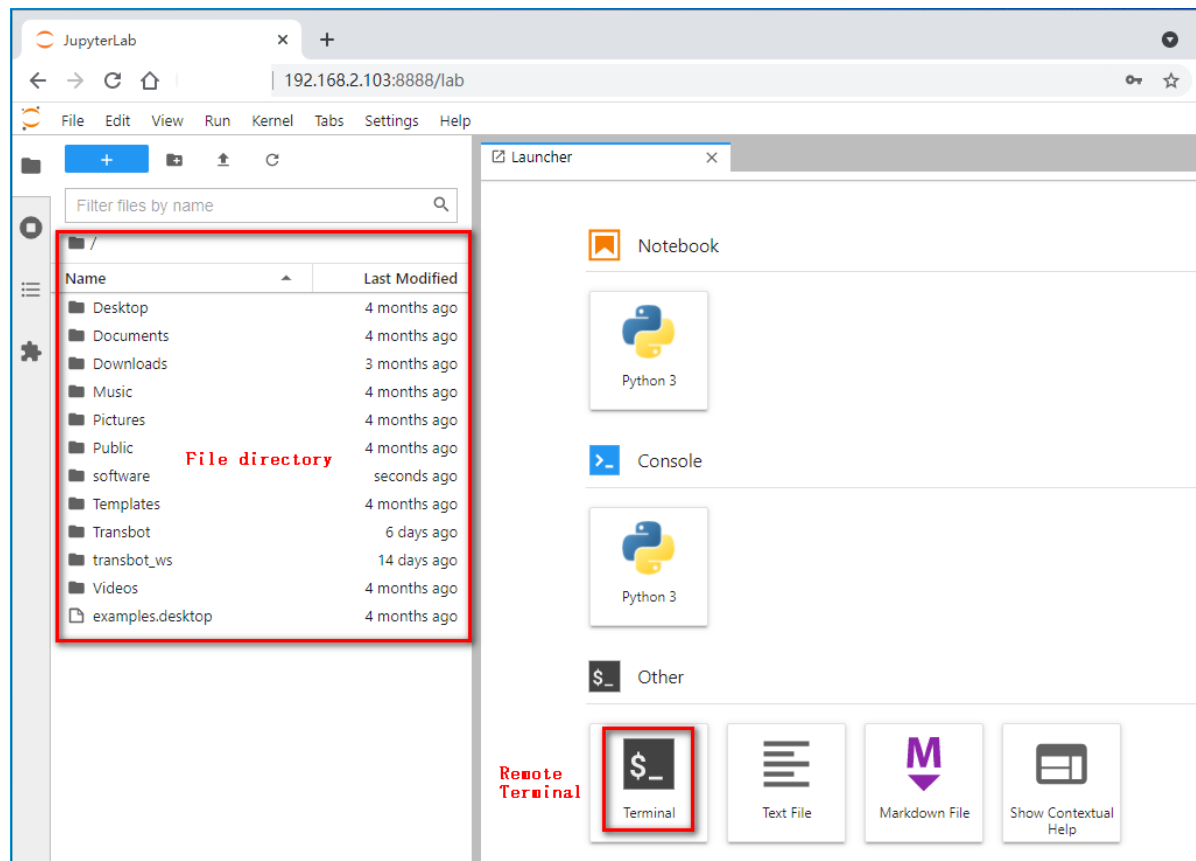
**Note:** The interface cannot be displayed.

A screenshot of a web browser showing the Jupyter login page. The address bar contains '192.168.2.103:8888/login?next=%2Ftab%3F'. The page has a Jupyter logo and a login form. Red annotations are present: '1. Enter IP and port' points to the address bar, '2. password' points to the password input field, and '3. confirm' points to the 'Log in' button. The password field contains several dots, and the 'Log in' button is highlighted with a red box.

English input method, enter the following command, press Enter, enter the password [yahboom], and click [Log in].

```
http://192.168.2.103:8888
```

after login



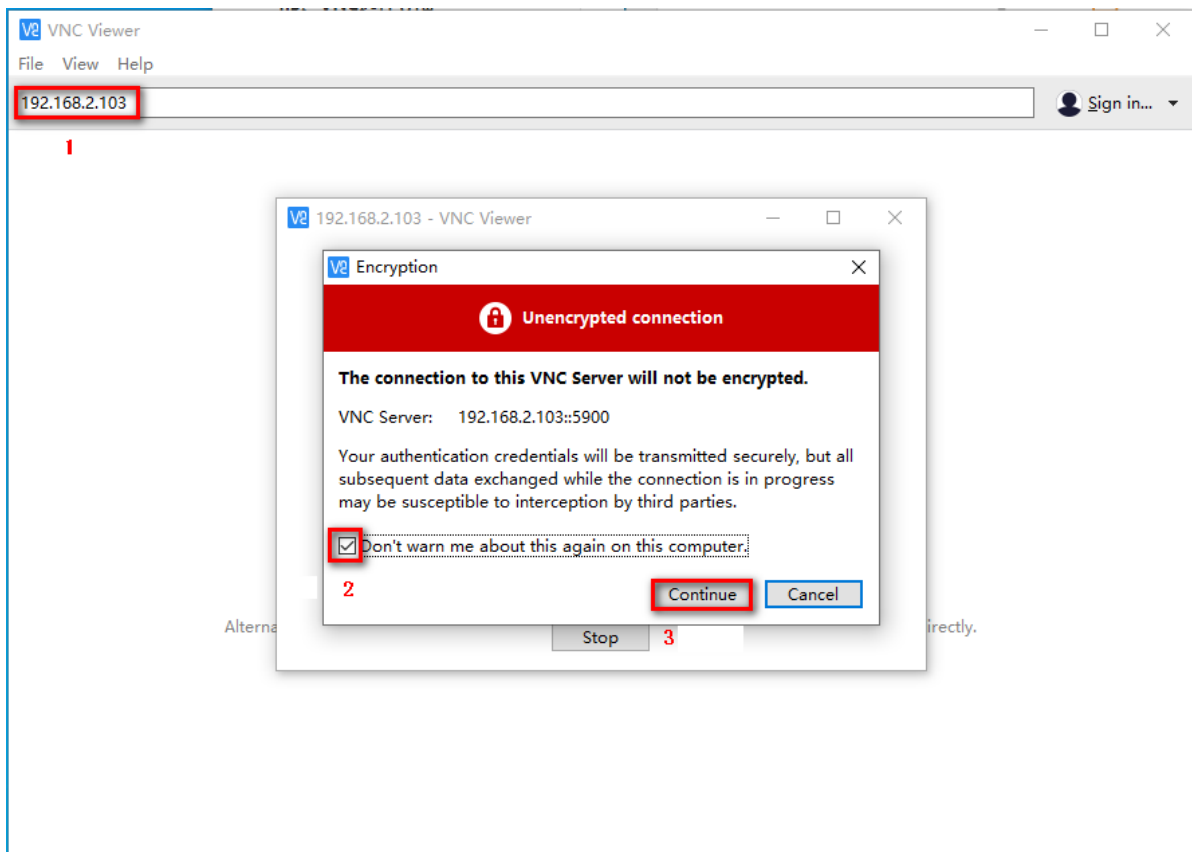
You can enter the folder, modify the contents of the file directly, click [Terminal] under [Other], enter the terminal, and execute the required command.

### 3.4. VNC

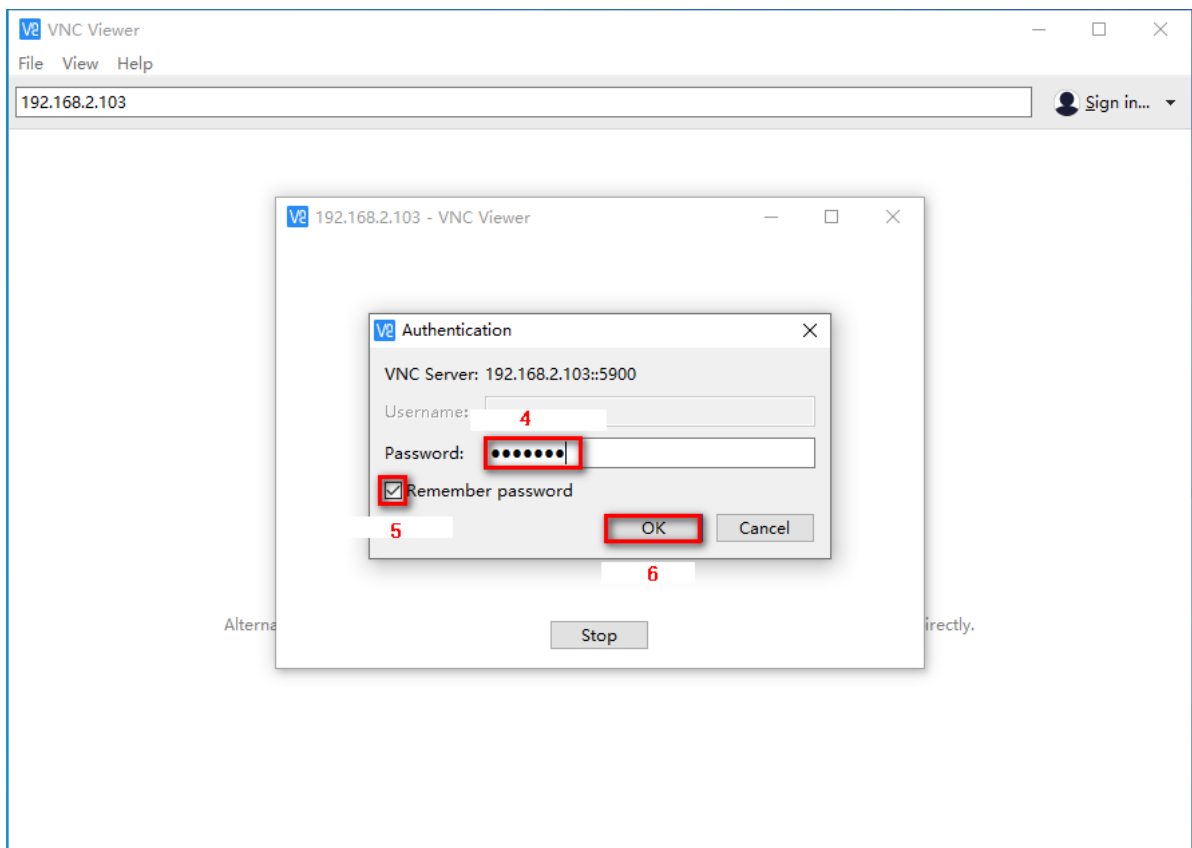
**Note: The interface can be displayed.**

Enter the relevant link at the top, download the installation file, and double-click the [.exe] file to install.

The login steps are as shown in the picture. To use the vnc viewer software for VNC connection, you first need to query the IP address. What I found here is [192.168.2.103]. After entering the IP address, click [Enter] on the keyboard.



Enter the corresponding VNC user and enter the password [yahboom], select Remember password, and click [OK] to enter the VNC interface. The next time the IP remains unchanged, you do not need to enter the password again.



Adjust resolution

- Jetson nano

Use the command line to adjust as needed, it is only valid for this startup. Open a terminal and enter the following command

```
xrandr --fb 1920x1080
```

- raspberry pie

Modify the [config.txt] file to be permanently valid. Open a terminal and enter the following command

```
sudo vim /boot/firmware/config.txt
```

For example, add it at the bottom (set the resolution to 1920x1080)

```
hdmi_force_hotplug = 1
config_hdmi_boost = 4
hdmi_group = 2
hdmi_mode = 82
hdmi_drive = 2
hdmi_ignore_edid = 0xa5000080
disable_overscan = 1
```

```
device_tree_address=0x03000000
# The following settings are "defaults" expected to be overridden by the
# included configuration. The only reason they are included is, again, to
# support old firmwares which don't understand the "include" command.

enable_uart=1
cmdline=nobtcmd.txt

include syscfg.txt
include usercfg.txt

hdmi_force_hotplug=1
config_hdmi_boost=4
hdmi_group=2
hdmi_mode=82
hdmi_drive=2
hdmi_ignore_edid=0xa5000080
disable_overscan=1
```

For the introduction of configuration parameters, please refer to the blog:

<https://blog.csdn.net/coolwriter/article/details/77719003>

### 3.5. WinSCP

Go to the top related link, download the installation file, and double-click the [.exe] file to install. Double-click the icon below to open the WinSCP software



This time the robot IP [192.168.2.93], username [jetson], password [yahboom].

If the login dialog box does not pop up, click [New Session] in the upper left part, enter the host name (H), user name, and password in turn, and click Login.

An example of a successful login is as follows

C:\Users\Administrator\Desktop\				/home/jetson/			
名字	大小	类型	已改变	名字	大小	已改变	权限
..		上级目录	2022/2/11 14:51:46	..		2021/12/11 10:38:34	rwxxr-xr-x
3研发部 (yahboomr...	2 KB	快捷方式	2021/2/27 6:25:09	Desktop		2021/12/11 10:40:17	rwxxr-xr-x
360安全卫士.lnk	2 KB	快捷方式	2021/2/25 14:20:40	Documents		2021/12/11 10:40:16	rwxxr-xr-x
360软件管家.lnk	3 KB	快捷方式	2022/2/11 19:08:50	Downloads		2021/12/11 10:40:16	rwxxr-xr-x
advanced_ip_scann...	2 KB	快捷方式	2021/2/26 14:15:58	Music		2021/12/11 10:40:16	rwxxr-xr-x
balenaEtcher.lnk	3 KB	快捷方式	2021/12/3 15:24:27	Pictures		2021/12/11 10:40:16	rwxxr-xr-x
Beyond Compare 2...	1 KB	快捷方式	2021/9/6 17:02:16	Public		2021/12/11 10:40:16	rwxxr-xr-x
Delta-3A.exe.lnk	1 KB	快捷方式	2021/12/17 9:28:29	Rosmaster		2021/12/24 19:01:58	rwxxrwxxr-x
DiskGenius.exe.lnk	2 KB	快捷方式	2021/3/1 15:43:36	software		2022/2/14 18:33:26	rwxxrwxxr-x
FlyMcu.exe.lnk	1 KB	快捷方式	2021/2/26 4:09:11	Templates		2021/12/11 10:40:16	rwxxr-xr-x
frame_grabber.exe...	1 KB	快捷方式	2021/12/17 9:28:11	Videos		2021/12/11 10:40:16	rwxxr-xr-x
FSCapture.exe.lnk	1 KB	快捷方式	2021/8/31 15:42:23	yahboomcar_ws		2022/2/10 17:54:35	rwxxrwxxr-x
Google Chrome.lnk	3 KB	快捷方式	2022/2/10 9:29:26	examples.desktop	9 KB	2021/12/11 10:38:34	rw-r--r--
Keil uVision5.LNK	1 KB	快捷方式	2021/3/30 10:03:28				
putty.exe.lnk	2 KB	快捷方式	2021/6/2 18:51:28				
QQ浏览器.lnk	2 KB	快捷方式	2021/2/26 2:43:04				
rpi-imager.exe.lnk	2 KB	快捷方式	2021/11/16 18:11:35				
SDFormatter.exe.lnk	2 KB	快捷方式	2021/7/14 9:02:17				

- Transfer files from computer to robot [jetson nano]

Just select the file (folder) that needs to be transferred and drag it to the right, then the column of [/home/jetson/],

- Robot [jetson nano] transfer files to computer

Just select the file (folder) that needs to be transferred and drag it to the left, the column of [C:], or drag it directly to the desktop.