

2.1 Commonly Used Tools

1. PC(Host) side --- WinSCP

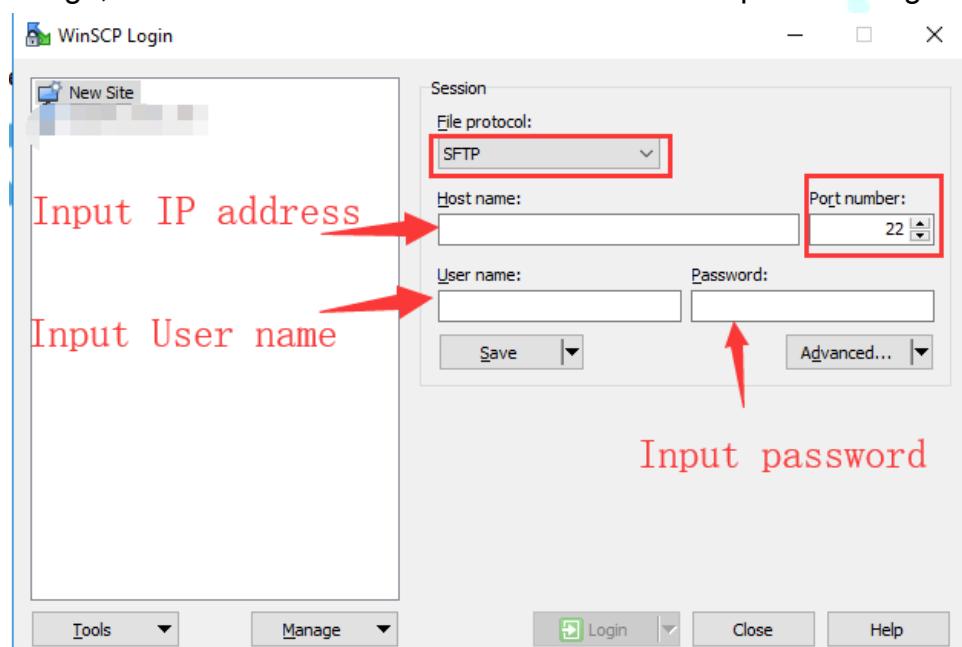
Install WinSCP:

Path of package : [Jetbot-AI Car] --> [Annex] --> [Tools]-->
[winscp556_setup.1416364912.exe]

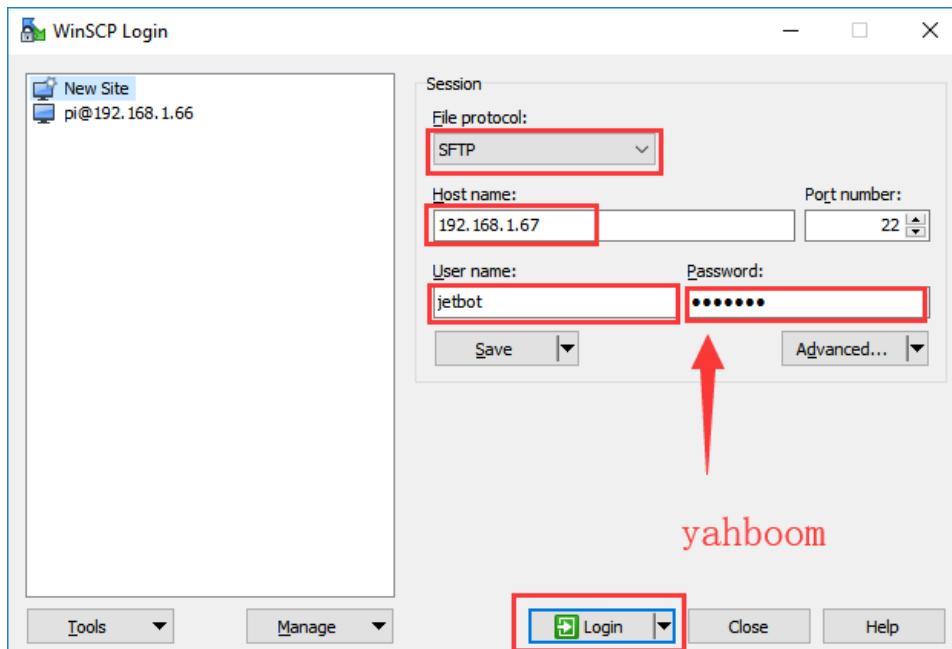
WinSCP is an open-source graphical SFTP client that uses SSH in a Windows environment and supports the SCP protocol. Its main function is to securely transfer files between local and remote computers.

We need to configure the host name IP address, port number, username and password, choose to remember the password and save the connection credentials.

As long as the next time you use, the IP address of the Jetbot in the LAN does not change, we do not need to enter the IP address and password again.



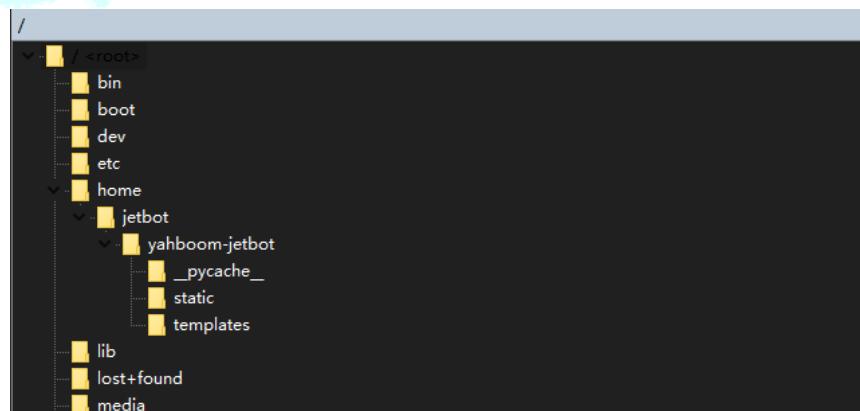
As shown below.



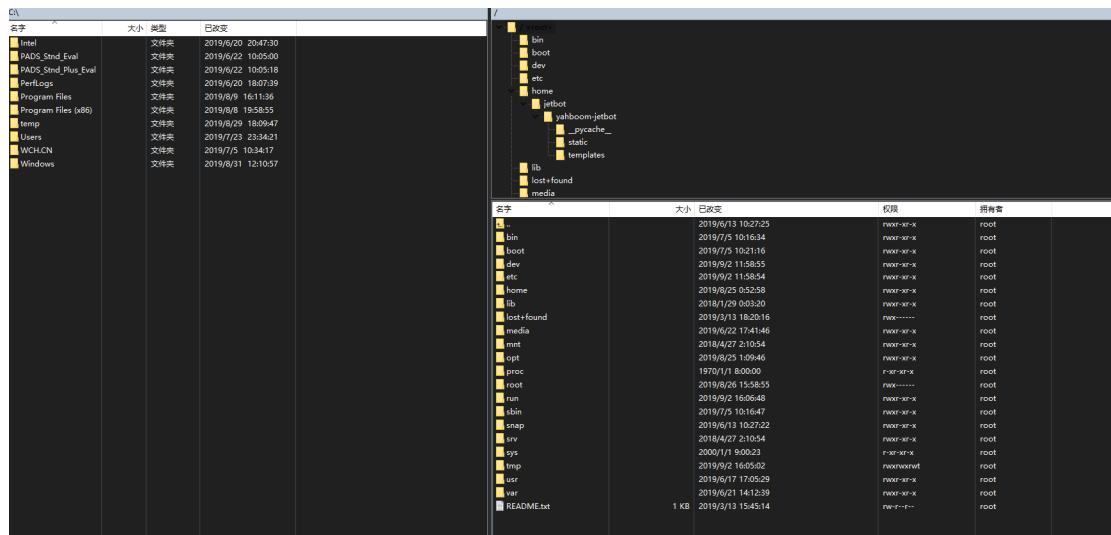
For example: my IP address is 192.168.1.67.

If you use image we provided, **the user name :jetbot password: yahboom**
 (The next course is to use this IP address and this image we provided.)

..		2019/6/13 10:27:25	rwxr-Xr-X
bin		2019/7/5 10:16:34	root
boot		2019/7/5 10:21:16	rwxr-Xr-X
dev		2019/9/2 11:58:55	root
etc		2019/9/2 11:58:54	rwxr-Xr-X
home		2019/8/25 0:52:58	rwxr-Xr-X
lib		2018/1/29 0:03:20	rwxr-Xr-X
lost+found		2019/3/13 18:20:16	rwx-----
media		2019/6/22 17:41:46	rwxr-Xr-X
mnt		2018/4/27 2:10:54	rwxr-Xr-X
opt		2019/8/25 1:09:46	rwxr-Xr-X
proc		1970/1/1 8:00:00	r-Xf-Xr-X
root		2019/8/26 15:58:55	rwx-----
run		2019/9/2 16:06:48	rwxr-Xr-X
sbin		2019/7/5 10:16:47	rwxr-Xr-X
snap		2019/6/13 10:27:22	rwxr-Xr-X
srv		2018/4/27 2:10:54	rwxr-Xr-X
sys		2000/1/1 9:00:23	r-Xr-Xr-X
tmp		2019/9/2 16:05:02	rwxrwxrwt
usr		2019/6/17 17:05:29	rwxr-Xr-X
var		2019/6/21 14:12:39	rwxr-Xr-X
README.txt	1 KB	2019/3/13 15:45:14	rw-r--r--



If you need to transfer any file between Windows and the remote Linux file system, just drag and drop to the target folder.



Note: Because WinSCP's encoding format and indentation rules may be inconsistent with your original file, resulting in an error after modification, so please do not modify the file directly here.

2. PC(Host) side --- Putty/Xshell

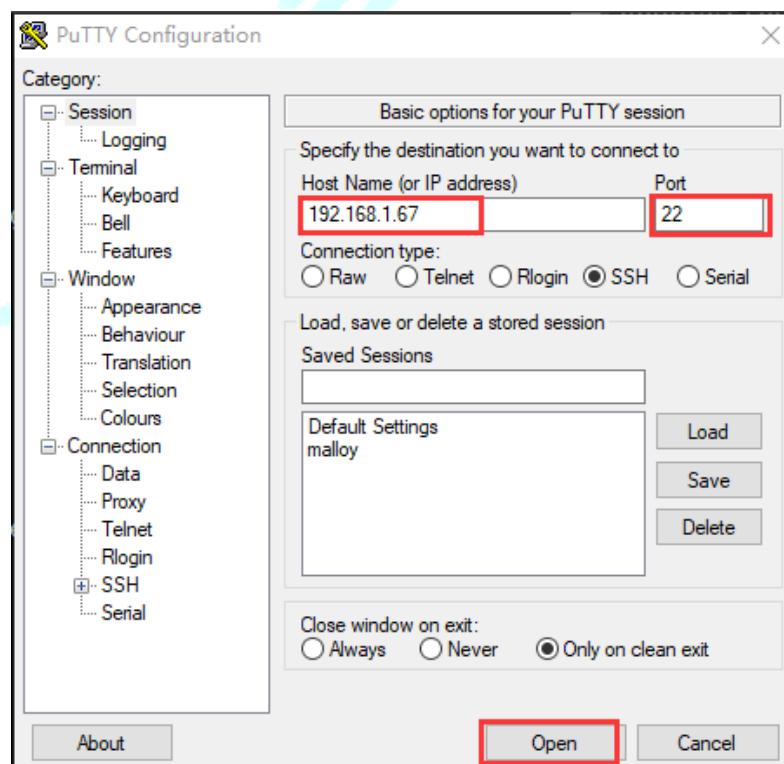
Install Putty :

Path of package : [Jetbot-AI Car] --> [Annex] --> [Tools]---> [PuTTY.exe]

Install Xshell :

Path of package : [Jetbot-AI Car] --> [Annex] --> [Tools]---> [xshell-6]

About Putty:



About Xshell:

- 1) Multiple window operations can be performed by copying a conversation or opening a new connection while opening multiple consoles.

```

File Edit View Tools Tab Window Help
ssh://192.168.55.1:22
To add the current session, click on the left arrow button.

Session Manager  1 Jetbot headless +
All Sessions
Jetbot headless

Xshell 6 (Build 0115)
Copyright (c) 2002 NetSarang Computer, Inc. All rights reserved.

Type `help` to learn how to use Xshell prompt.
[C:\~]$

Connecting to 192.168.55.1:22...
Connection established.
To escape to local shell, press 'Ctrl+Alt+]'.

Welcome to Ubuntu 18.04.2 LTS (GNU/Linux 4.9.140-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.

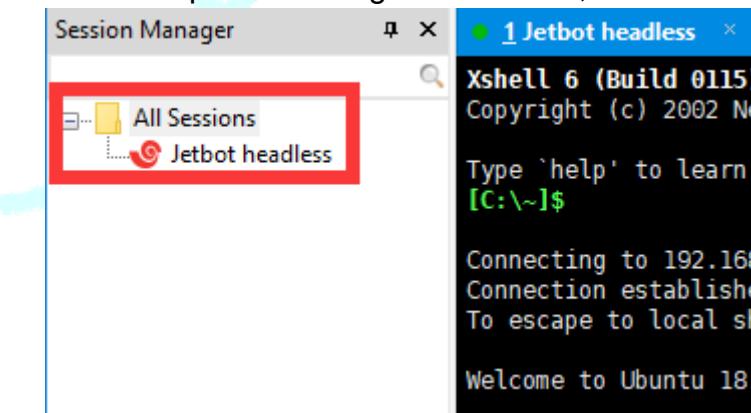
To restore this content, you can run the 'unminimize' command.

5 个可升级软件包。
5 个安全更新。

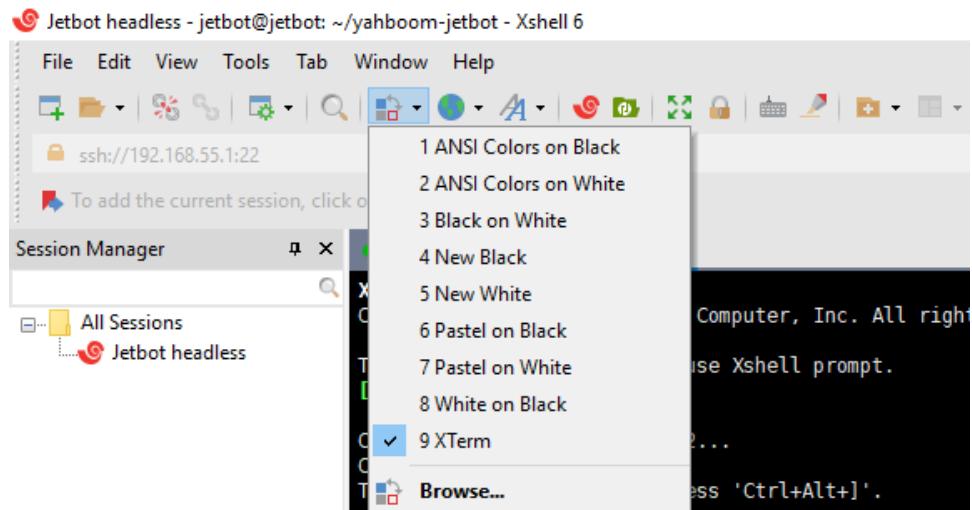
Last login: Tue Oct 22 19:54:21 2019 from 192.168.55.100
jetbot@jetbot:~$ ls
Desktop      jetbot    thinclient_drives
examples.desktop Notebook yahboom-jetbot
jetbot@jetbot:~$ cd yahboom-jetbot/
jetbot@jetbot:~/yahboom-jetbot$ ls
123.xml        config.txt   RGB.Lib.py           static
Battery_Vol.Lib.py PID.py     servoserial.py   templates
best_model.pth __pycache__  ssd_mobilenet_v2_coco.engine yahboom-jetbot.pyc
jetbot@jetbot:~/yahboom-jetbot$ vi config.txt
jetbot@jetbot:~/yahboom-jetbot$ ^C
jetbot@jetbot:~/yahboom-jetbot$ █

```

- 2) Ability to record multiple sets of login information, one-click connection.



- 3) Personalized color scheme.



3. Jetbot side - Jtop

Input this command to install: `sudo pip3 install jetson-stats`

Input this command to update: `sudo -H pip install -U jetson-stats`

Input this command to run: `sudo jtop`

Input this command to uninstall: `sudo pip3 uninstall jetson-stats`

About Jtop:

Jtop is a system monitoring utility that can run on the terminal to view and control the status of NVIDIA Jetson products in real time.

Control Jtop page:

Use the left and right arrow keys on your keyboard to switch between different status display interfaces.

Jtop has four different pages to monitor your Jetbot's running status:

About four interfaces of Jtop:

- ALL:** Collect all the information about development board: CPU, Memory, GPU, Disk, Fan and all the status about jetson_clocks, NVPmodel and others status.

As shown below.



```
NVIDIA Jetson NANO/TX1 - Jetpack 4.2 [L4T 32.1.0]
CPU1 [| Schedutil - 7%] 102MHz
CPU2 [| Schedutil - 7%] 102MHz
CPU3 [| Schedutil - 3%] 102MHz
CPU4 [| Schedutil - 5%] 102MHz

Mem [|||||] 1.4G/4.0GB] (lfb 306x4MB)
Imm [ 0kB/252kB] (lfb 252kB)
Swp [ 0.0GB/4.1GB] (cached 0MB)
EMC [|||] 5%] 204MHz

GPU [
Dsk [#####
[info] [Sensor] [Temp] [Power/mW] [Cur] [Avr]
UpT: 0 days 0:16:10 AO 29.00C P0M_5V_CPU 123 450
FAN [ 0%] T= 0% CPU 25.00C P0M_5V_GPU 0 0
Jetson Clocks: inactive GPU 24.00C P0M_5V_IN 865 1426
NV Power[0]: MAXN PLL 22.00C
APE: 25MHz PMIC 100.00C
HW engine: iwlwifi 30.00C
ENC: NOT RUNNING thermal 25.25C
DEC: NOT RUNNING

1 ALL - 2 GPU - 3 CTRL - 4 INFO - Q to close
```

2. GPU: About your NVIDIA Jetson's real-time GPU history.

NVIDIA Jetson NANO/TX1 - Jetpack 4.2 [L4T 32.1.0]
GR3D

- 100%
- 93%
- 87%
- 81%
- 75%
- 68%
- 62%
- 56%
- 50%
- 43%
- 37%
- 31%
- 25%
- 18%
- 12%
- 6%
- 0%

GPU [0%] 76MHz GPU Temp: 24.5C

Jetson Clocks: inactive
NV Power[0]: MAXN

3. CTRL: Control your status



4. INFO: Collect all information about libraries, CUDA, serial numbers, interfaces, etc...

NVIDIA Jetson NANO/TX1 - Jetpack 4.2 [L4T 32.1.0]

- Up Time: 0 days 0:17:13
- Board:
 - * Name: NVIDIA Jetson NANO/TX1
 - * Type: NANO/TX1
 - * Jetpack: 4.2 [L4T 32.1.0]
 - * GPU-Arch: 5.3
 - * SN: 04213190337910400400
- Libraries:
 - * CUDA: 10.0.166
 - * cuDNN: 7.3.1.28-1+cuda10.0
 - * TensorRT: 5.0.6.3-1+cuda10.0
 - * VisionWorks: 1.6.0.500n
 - * OpenCV: 3.3.1 compiled CUDA: NO
- Hostname: jetbot
- Interfaces
 - * l4tbr0: 192.168.55.1
 - * wlan0: 192.168.1.67

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About Control Jetbot:

We can use following key on the keyboard to control Jetbot.

- a: Start/Stop jetson_clocks service (Note: jetson_clocks only starts after 60 seconds)
- e: Start/Disable jetson_clocks onboard boot
- +/-: Increase and decrease the NVP model
- p/m: Increase and decrease speed of fan (But because Jetbot uses a non-shiftable fan, this feature is negligible)

Others function:

Jetson_release:

Display information about the current version of Jetbot's environment component version, status, etc.

As shown below:

```

File Edit View Search Terminal Help
nvidia@jetson-xavier:~$ jetson_release
- NVIDIA Jetson AGX Xavier
  * Jetpack 4.1 [L4T 31.0.2]
  * CUDA GPU architecture 7.2
  * NV Power Mode: MAXN - Type: 0
- Libraries:
  * CUDA 10.0.117
  * cuDNN 7.3.0.21-1+cuda10.0
  * TensorRT 5.0.0.8-1+cuda10.0
  * Visionworks 1.6.0.500n
  * OpenCV 3.4.3 compiled CUDA: YES
- Jetson Performance: active
- Jetson Easy v1.4
nvidia@jetson-xavier:~$ █

```

export | grep JETSON:

This script generates a simple environment variable to understand the hardware version of Jetson and the installed Jetpack.

As shown below:

```

File Edit View Search Terminal Help
nvidia@jetson-xavier:~$ export | grep JETSON
declare -x JETSON_BOARD="Xavier"
declare -x JETSON_CUDA="10.0.117"
declare -x JETSON_CUDA_ARCH_BIN="7.2"
declare -x JETSON_CUDNN="7.3.0.21-1+cuda10.0"
declare -x JETSON_DESCRIPTION="NVIDIA Jetson AGX Xavier"
declare -x JETSON_JETPACK="4.1"
declare -x JETSON_L4T="31.0.2"
declare -x JETSON_L4T_RELEASE="31"
declare -x JETSON_L4T_REVISION="0.2"
declare -x JETSON_OPENCV="3.4.3"
declare -x JETSON_OPENCV_CUDA="YES"
declare -x JETSON_TENSORRT="5.0.0.8-1+cuda10.0"
declare -x JETSON_VISIONWORKS="1.6.0.500n"
nvidia@jetson-xavier:~$ █

```