## 2.3 Software Setting

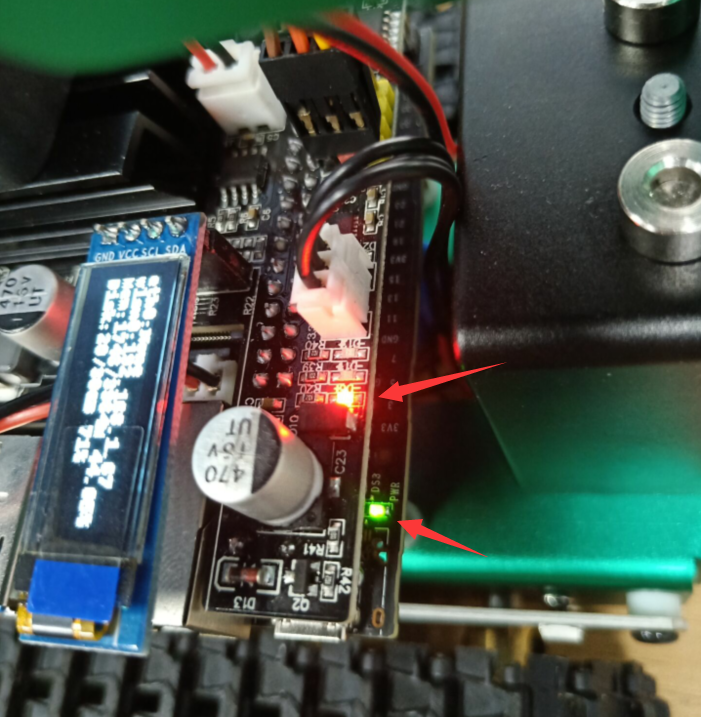
1. **Connecting to Jetbot by headless (head-free) mode**

In this mode, your Jetson Nano Developer Kit connects directly to your computer via a USB cable. No need network connection on the Jetbot and the need to determine the IP address on the network.

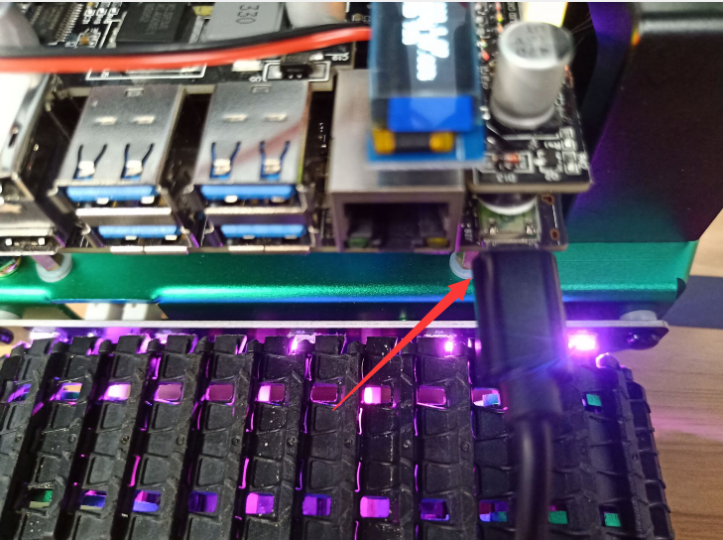
It is always in this mode 192.168.55.1:8888. This means you can't connect your monitor directly to the Jetson Nano Developer Kit. This approach saves memory resources on the Jetson Nano and eliminates the need for additional hardware (monitors, keyboards, and mice).

**Steps of headless mode**

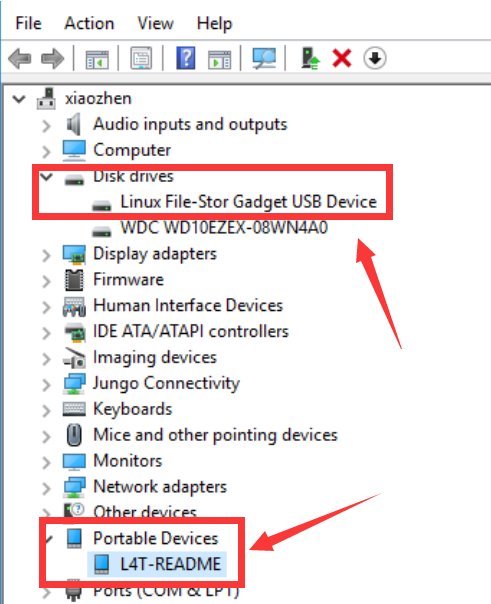
①You need to open the power switch of robot car. You will see the cooling fan will rotate, and you will some LED light on the Jetson NANO or expansion board, as shown below.



②Connect robot car to your computer by USB cable, as shown below.



③Wait patiently for a while. After the system is successfully booted, the PC will appear with the following device and a drive for communication between the two parties - **Linux File-Stor Gadget USB Device.**

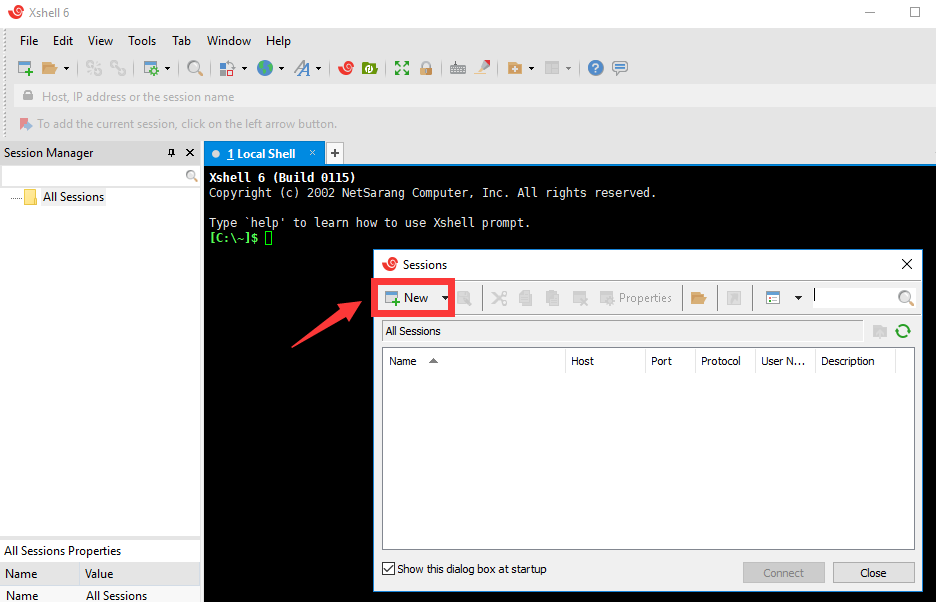


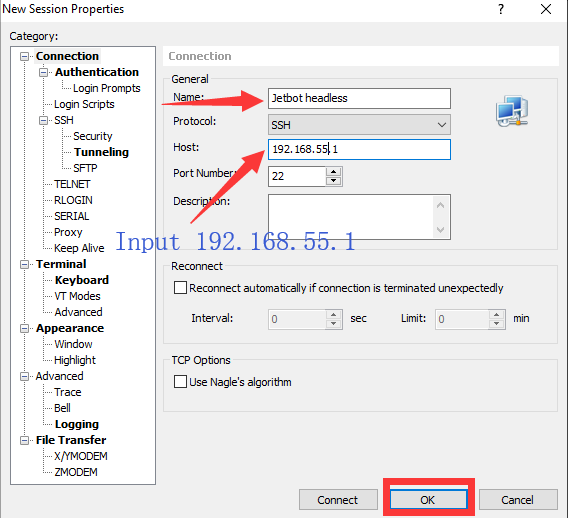
**!Note: You must first turn on the power switch of car, then connect to your computer by USB cable.**

After the above device appears on the PC, we can connect to Jetbot through Xshell/Putty without connecting to the network. The host number is fixed IP address **192.168.55.1**.

You can log in normally by entering the corresponding username and password of Jetbot.

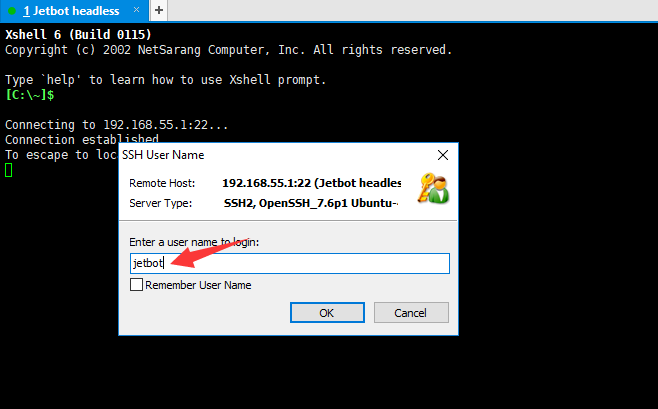
As shown below(by Xshell):

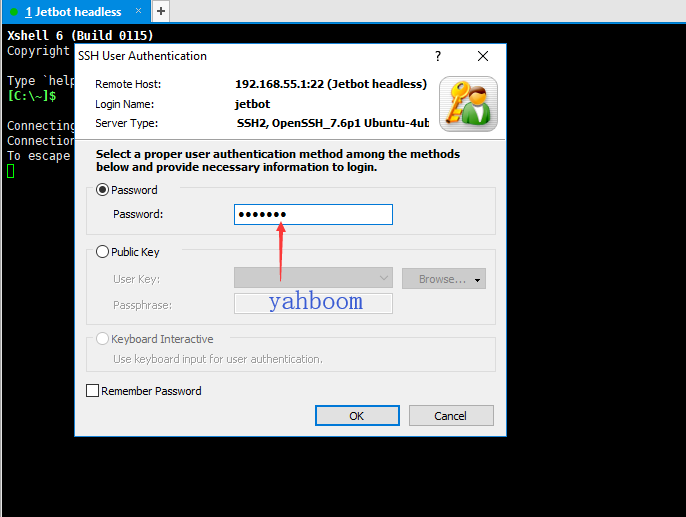


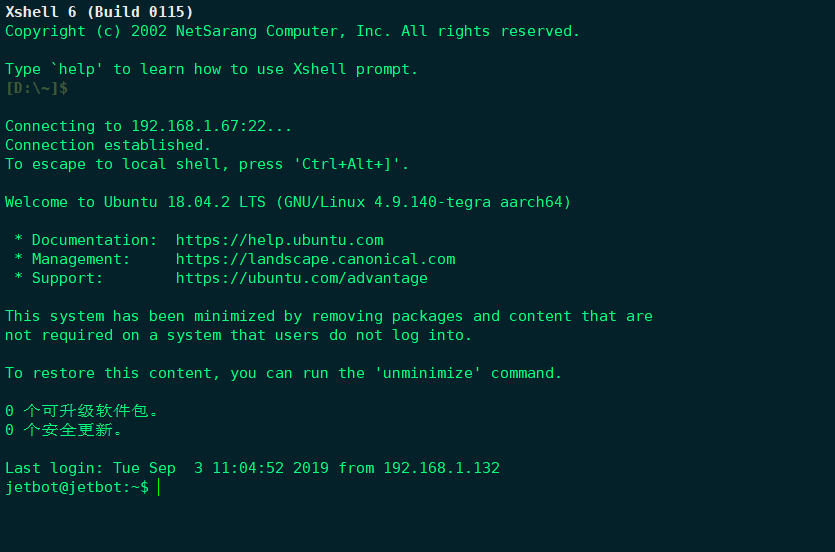


**User name :jetbot**

**Password: yahboom**







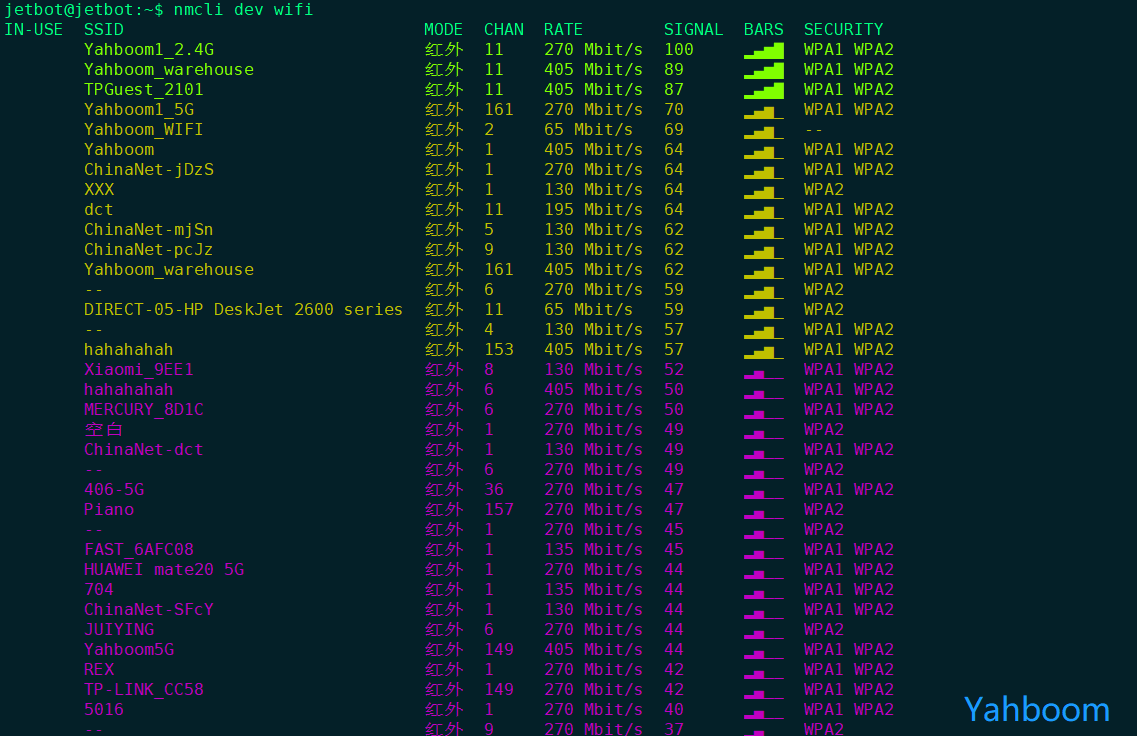
### Jetbot connect WIFI

**2.1 Method 1:**

Connect to the PC using the "headless mode" to configure the connection by command line.

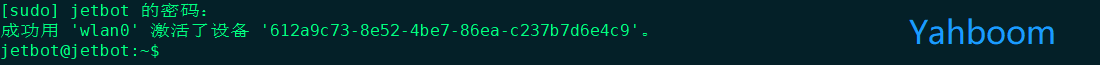
Follow the steps to connect Jetbot to the WIFI network using the following command:

nmcli dev wifi



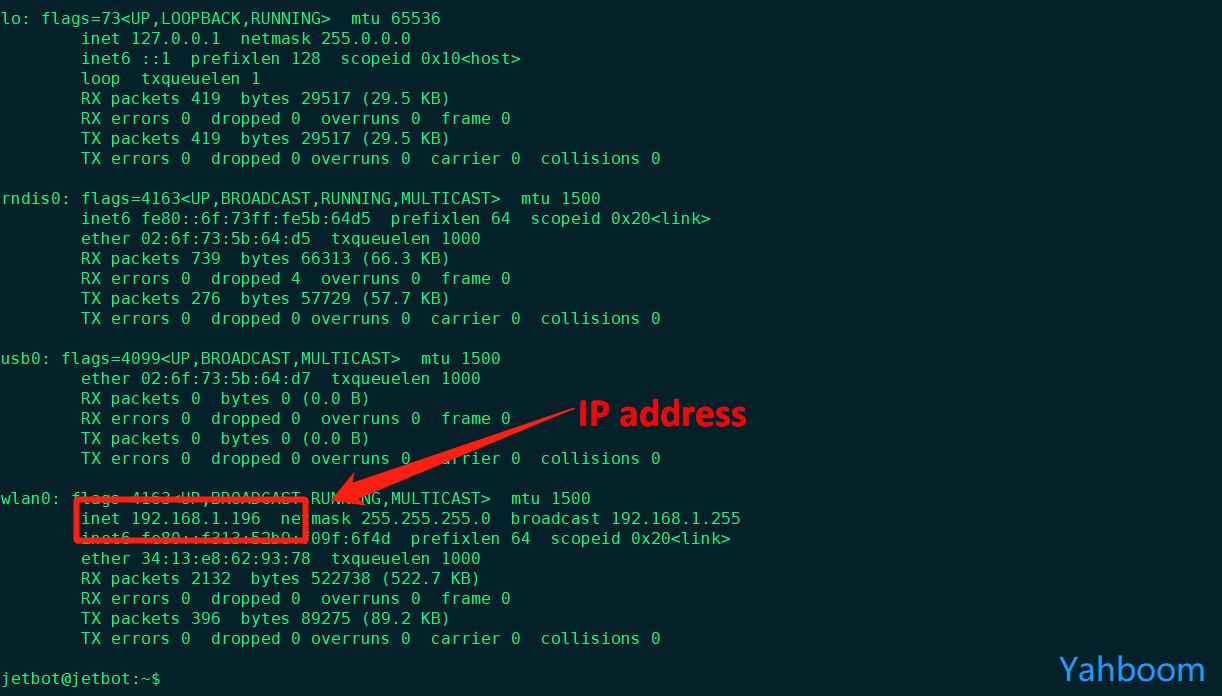
Input following command to connect WIFI:

sudo nmcli dev wifi connect wifi\_name password 12345678



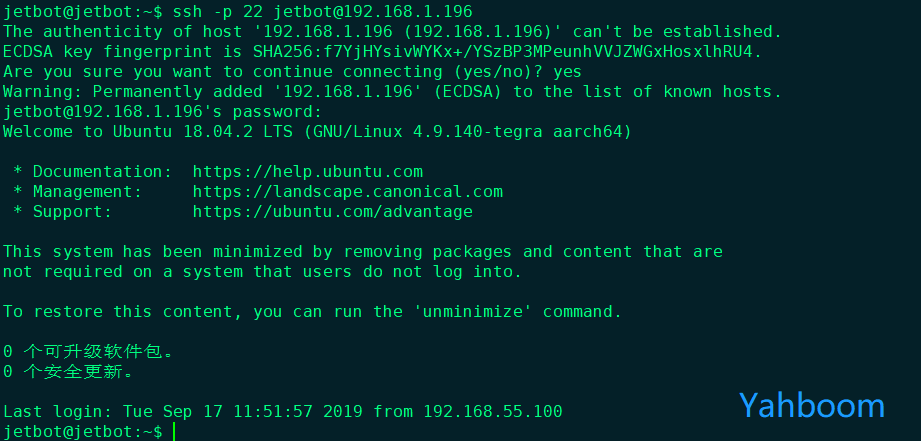
View the IP address after connecting to WIFI:

ifconfig



Connect Jetbot by new IP address, Input the command on the PC to control it.：

ssh -p 22 [jetbot@192.168.1.196](mailto:jetbot@192.168.1.67)

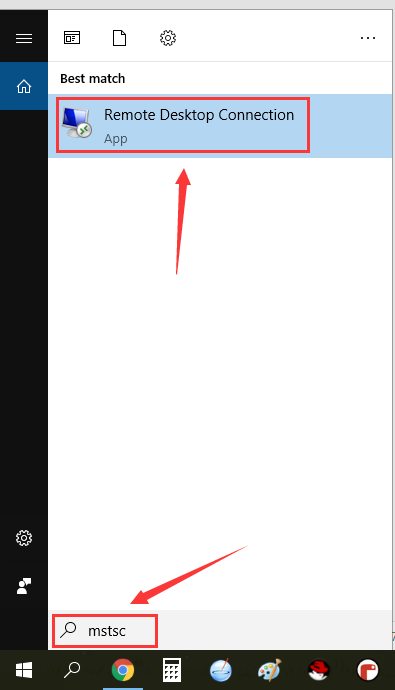


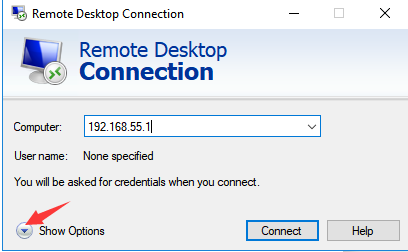
**2.2 Method 2:**Connect Jetbot to the HDMI screen and configure it on the graphical interface using the mouse and keyboard.

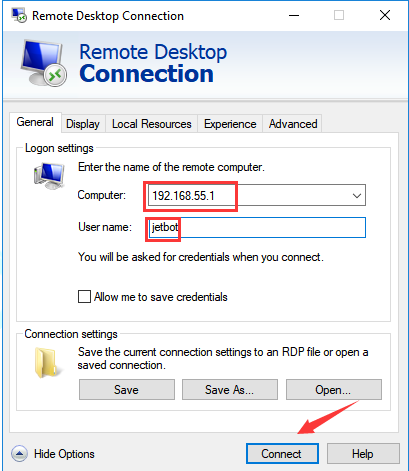
**2.3 Method 3:**

Use Windows to log in to Remote Desktop/VNC Remote Desktop

1. We can connect PC by “headless mode” and find the remote login application in the PC.

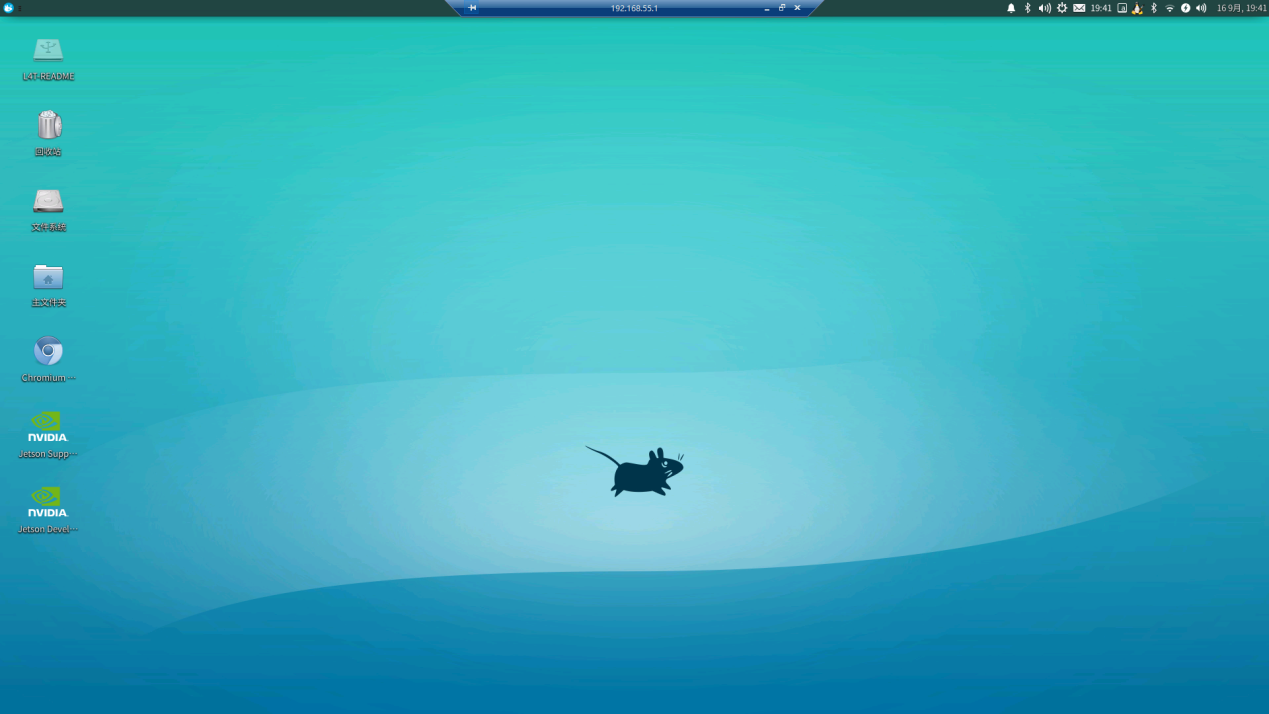






1. Then, click “connect”.

After a successful connection, we can see the interface shown below.

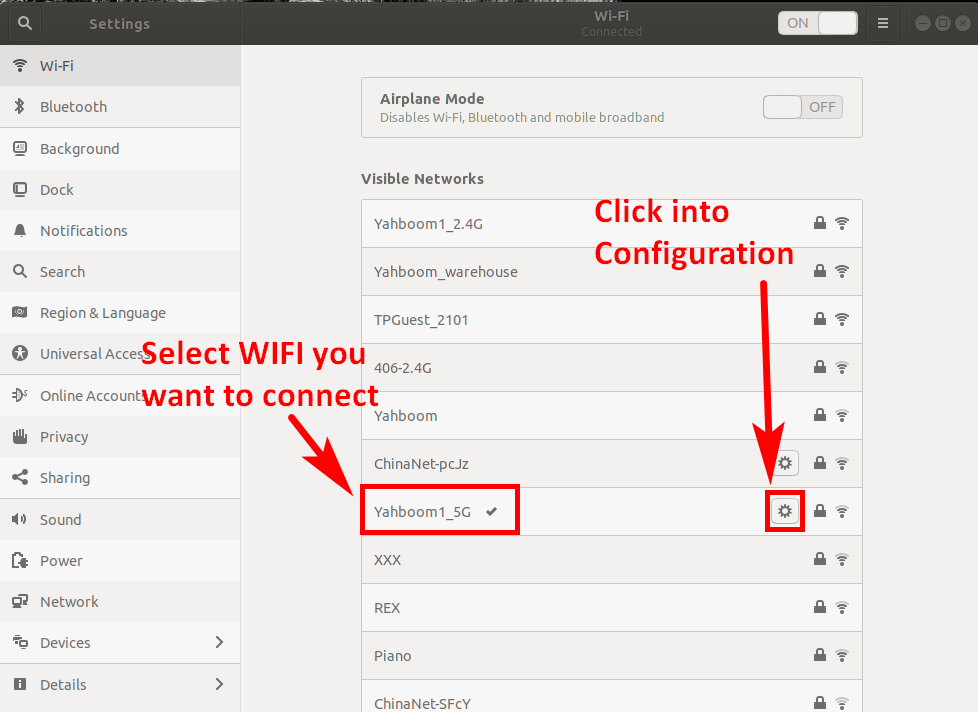


Because it is a third-party desktop, you need to enter a password when operating key information such as wifi configuration.

1. After entering the password, we can go to the wifi icon in the upper right corner to configure the wifi.

**Set static IP:**

Enter the connected wifi to setting:

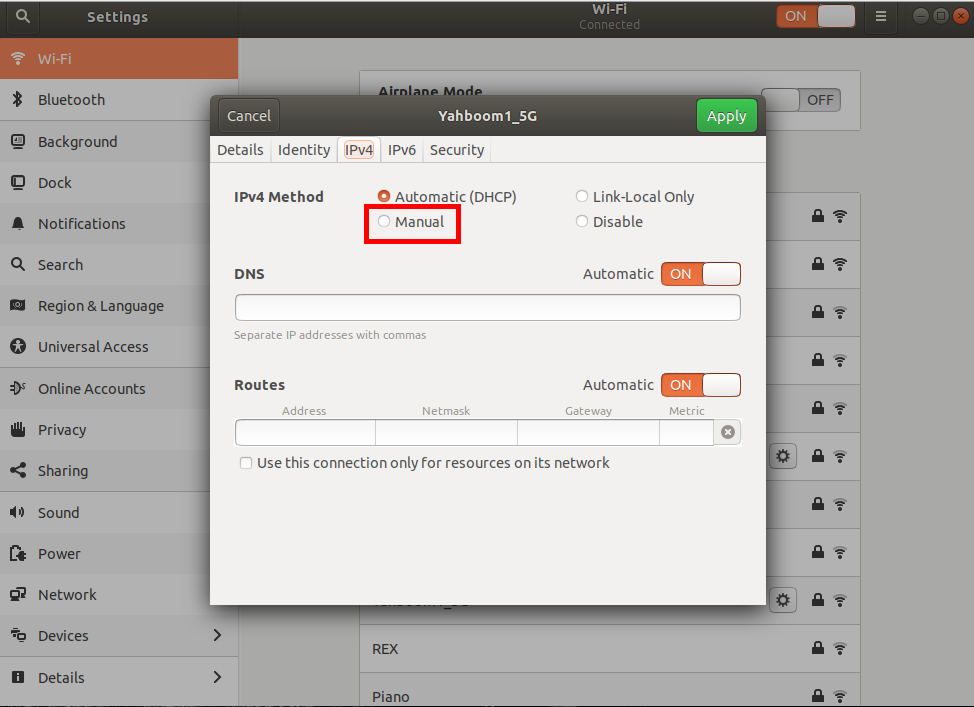


1. Set the IP address you need to set.

**!Note: This IP address should not be occupied by other devices.**

1. Enter the subnet mask, the default is 255.255.255.0.
2. Enter the gateway, which is usually 192.168.1.1.

The above gateway and subnet mask are subject to your actual network environment, and only the reference is provided above.



### 

1. **Update software package**

Input this command to updatesoftware source：

sudo apt-get update

Input this command to updatesoftware package installed：

sudo apt-get full-upgrade

1. **Configuring power mode**

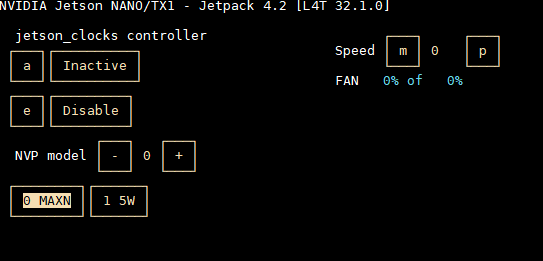
Jetbot has two power modes: 5W mode and MAXN mode.

We can see the current power mode in Jtop by the section 2.1:

The current power mode can be seen in the second interface --- GPU.



Or you can see the current power mode in the third interface -- CTRL.



The biggest difference between the two power modes is:

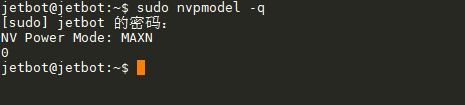
When in the m0-MAXN mode, the four cores CPU1, CPU2, CPU3, and CPU4 are all turned on; **(High-Performance mode)**

When in the m1-5W mode, only CPU1 and CPU2 of the four core CPU1, CPU2, CPU3, and CPU4 will run, and CPU3 and CPU4 will sleep. At this time, only the CPU performs data processing. **(Low power consumption mode)**

So when it is in 5W power mode, it will be much slower than m0-MAXN mode. If you don't pursue long battery life, it is recommended to use MAXN mode to enjoy the high performance brought by Jetbot.

We can also use the following command line to view the current power consumption mode.

sudo nvpmodel -q



Input this command to switch mo-MAXN mode:

sudo nvpmodel -m0

Input this command to switch m1-5W mode:

sudo nvpmodel -m1

(Especially when we train the AI model, switching to high performance mode can improve computing performance.)