SSH into Jetson Nano and Setup VNC

For ConstructionCI

Step 1:

Connect the Jetson Nano to your computer using the MicroUSB port

Power on the Jetson Nano using a Type-C cable

Step 2 (Setup):

Download PuTTY from PuTTY.org

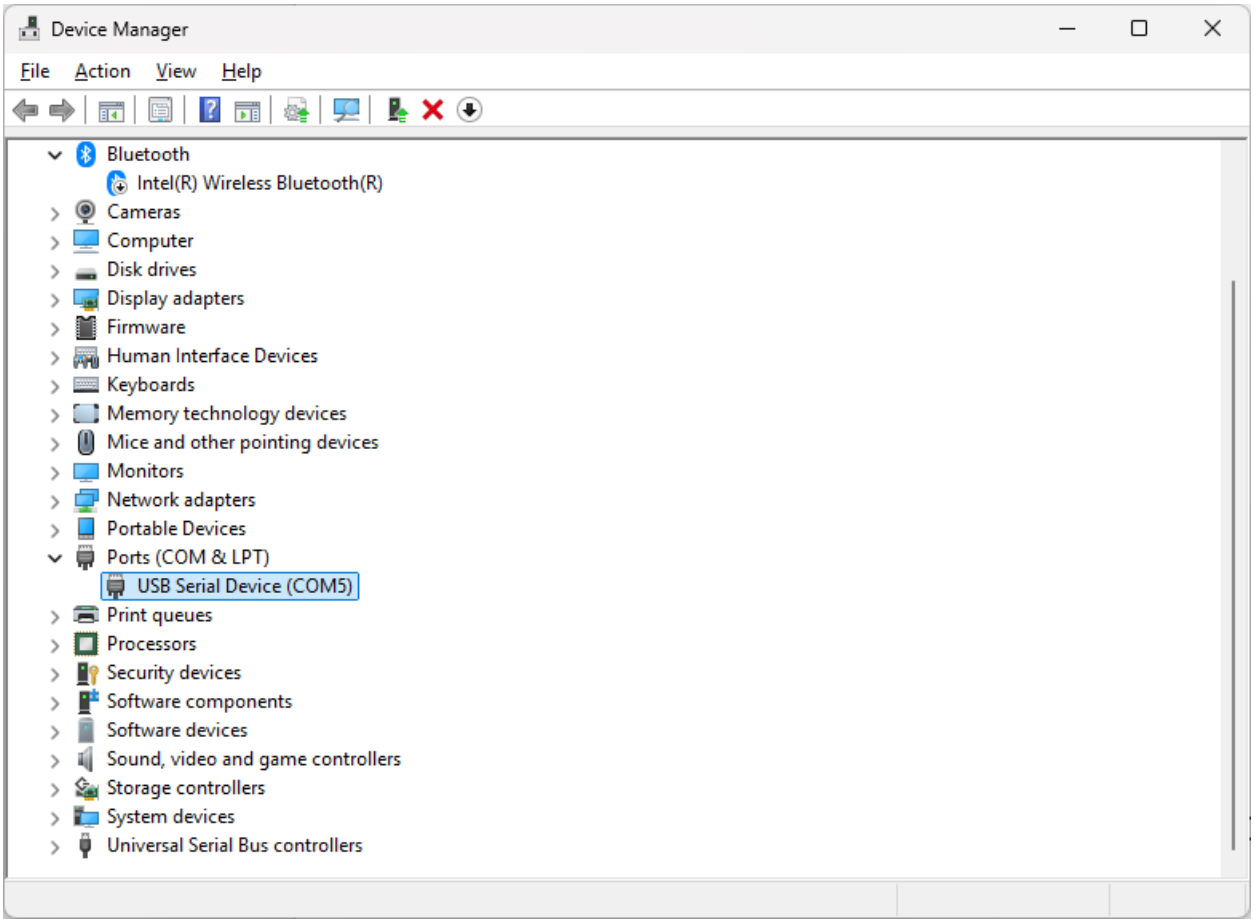
Mac users don’t need to download PuTTY

Step 3 (Find the port and connect):

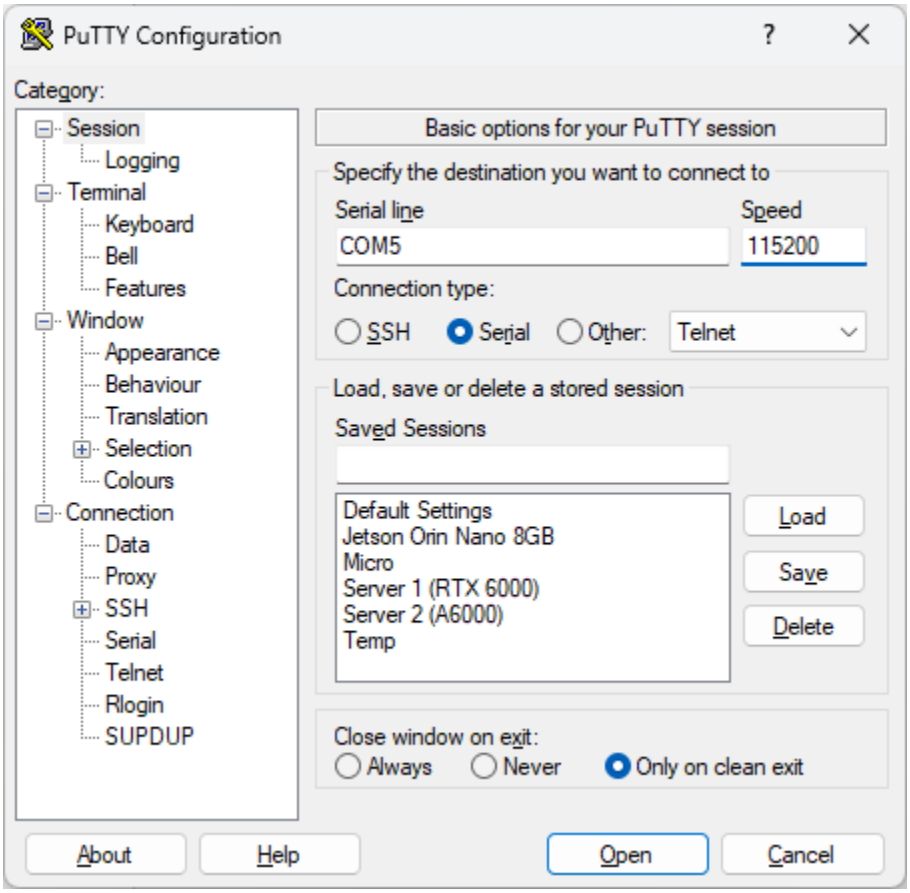
Windows:

Right click on Start and Open Device Manager and find the Port of the Jetson Nano

Should look something like this:



Open PuTTY, click “Serial”, enter your COM port number and 115200 as the baud rate and click connect as follows:



Mac users run the following commands:

*ls /dev/tty.**

It should return something like :

/dev/tty.usbserial-1420

Use screen command to connect to this device:

screen /dev/tty.usbserial-1420 115200

115200 is the baud rate, leave it unchanged. Only change the '/dev/tty.usbserial-1420' part

In case you want to exit the screen session:

1. Press Ctrl-A
2. Then press K (for kill)
3. Confirm with y

Step 4 : Login and use Linux commands

Login using the username and password “jetson”

The password will not show as you type as an extra layer of security.

Here you can use Linux commands.

Once you are connected, the Jetson Nano 2GB will also show up as an extra drive to your laptop, like a USB drive. Here you can find some tutorials.

Complete the WiFi connection tutorial first

WiFi Username: Jetson

WiFi Password: jetson@123

Once connected to WiFi, run the following command:

sudo apt-get install nano

This will install the Nano Text editor for Terminal.

Next, complete the VNC tutorial

Before you use the sudo reboot command in the VNC tutorial, run the following commands:

sudo nano /etc/gdm3/custom.conf

Edit this text file and uncomment the following lines (remove the #):

AutomaticLoginEnable=true

AutomaticLogin=user1 **(Make sure you rename user1 to jetson here)**

Ctrl + O to save, followed by Ctrl + X to exit

Then run the command:
sudo nano /etc/lightdm/lightdm.conf.d/50-nvidia.conf

Add the following lines:

autologin-user=jetson

autologin-user-timeout=0

Ctrl + O to save, followed by Ctrl + X to exit

After this you can do the '*sudo reboot*' and continue with the VNC tutorial

Once you finish the tutorial, download a VNC viewer, I use the one by RealVNC shown below:

https://www.realvnc.com/en/connect/download/viewer/

Click on File -> New Connection

Find the IP address of your Jetson Nano using the 'ifconfig' command in terminal, it should be inside 'wlan0' and something like:

inet 192.168.1.147

Copy on the IP address (192.168.1.147) and paste it inside your VNC viewer New Connection and click Ok.

Double click this new connection to connect to it and use the password you used when setting up the VNC server in the tutorial.

You should now be able to control your Jetson Nano using your laptop

Disconnect from the VNC connection for now (just close it). Step 5 can be done via the PuTTY terminal. We will reconnect to VNC in Step 6

Step 5 (Installing TensorFlow):

Run the following command to install NumPy:

pip3 install numpy==1.19.4

Follow the instructions on this page for **Python 3.6 + JetPack 4.6.3 (Don't copy the $ sign at the beginning of the commands, run them one by one)**

https://forums.developer.nvidia.com/t/official-tensorflow-for-jetson-nano/71770

The Keras version should match the TensorFlow version so run the following command:

pip3 install keras==2.7.0

Step 6 (Running YOLOv3-tiny):

Connect to your VNC connection and open the terminal app, it should be on the desktop and do the following steps:

Clone this repository:
git clone https://github.com/nitishpat/constructionCIYOLO

Cd (change directory into it):

cd constructionCIYOLO

Download the YOLOv3-tiny model:
wget https://files.catbox.moe/1pginn.h5

Rename the model:

mv 1pginn.h5 YOLOv3-tiny.h5

Run the following commands to download required libraries:

pip3 install Pillow

pip3 install opencv-python -U

sudo apt-get install python3-opencv

Run this command to load the parallel computing library:

export LD_PRELOAD=/usr/lib/aarch64-linux-gnu/libgomp.so.1

Run YOLOv3-tiny:

python3 tiny.py