

NAO

From IronLab Wiki

Contents

- 1 NAO account
- 2 Teleoperating NAO by Keyboard
 - 2.1 Software Installation
 - 2.2 Install NAO Drivers on Ubuntu
 - 2.3 Network Configuration
 - 2.4 NAO bring up
 - 2.5 Common Network Issues
 - 2.6 Quick Launch of Teleoperating NAO by Keyboard

NAO account

username: nao

password: nao

Teleoperating NAO by Keyboard

Software Installation

<http://wiki.ros.org/nao>

http://wiki.ros.org/nao_bringup

http://wiki.ros.org/teleop_twist_keyboard

<https://github.com/cu-ironlab/GestureRobotsMovements/issues/3>

Run the commands below on a terminal:

```
sudo apt-get install ros-.*-nao-robot  
sudo apt-get install ros-.*-nao-extras
```

Video: <https://youtu.be/h8hmTb66aQI>

Reference: wiki.ros.org/nao

Install NAO Drivers on Ubuntu

Run the command below:

```
sudo apt-get install ros-.*-naoqi-driver
```

and

```
mkdir -p ~/catkin_ws/src
cd ~/catkin_ws/src
git clone https://github.com/ros-naoqi/naoqi_driver.git
# make sure you get all the dependencies installed
rosdep install -i -y --from-paths ./naoqi_driver
# build
source /opt/ros/indigo/setup.sh
cd ../ && catkin_make
```

Video: <https://youtu.be/a5ZhRc6OWz8>

Reference: http://wiki.ros.org/nao_bringup http://wiki.ros.org/naoqi_bridge http://wiki.ros.org/naoqi_driver
http://wiki.ros.org/nao_description http://ros-naoqi.github.io/naoqi_driver/install.html

Network Configuration

Make sure both NAO and workstation are connected to the same Network (like “IronLab”).

The static IP address of NAO has been reserved, which is "192.168.0.120", you may also find it here :http://iron-lab.org/wiki/index.php?title=Lab_Router_and_Wi-Fi

Run this command on the Terminal/Terminator:

```
ifconfig
```

The output of my Terminal/Terminator is:

```
ironlab@ironlab-MS-7850:~$ ifconfig
eth0      Link encap:Ethernet  HWaddr d8:cb:8a:ca:11:63
          UP BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:4700 errors:0 dropped:0 overruns:0 frame:0
          TX packets:4700 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:1005775 (1.0 MB)  TX bytes:1005775 (1.0 MB)

wlan0     Link encap:Ethernet  HWaddr b4:75:0e:22:c4:cf
          inet addr:192.168.0.106  Bcast:192.168.0.255  Mask:255.255.255.0
          inet6 addr: fe80::b675:eff:fe22:c4cf/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:75400 errors:0 dropped:11677 overruns:0 frame:0
          TX packets:52768 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:70601161 (70.6 MB)  TX bytes:11264939 (11.2 MB)
```

So the ROS_HOSTNAME is "192.168.0.106", network_interface is "wlan0".

NAO bring up

Run this command on the Terminal/Terminator:

```
roslaunch nao_bringup nao_full_py.launch nao_ip:=<robot_ip> roscore_ip:=<roscore_ip>
```

```
roslaunch nao_bringup nao_full.launch nao_ip:=192.168.0.120 roscore_ip:=192.168.0.106 network_interface:=wlan0
```

Then run this command on a new Terminal/Terminator:

```
roslaunch teleop_twist_keyboard teleop_twist_keyboard.py
```

The output from my terminal is:

```
ironlab@ironlab-MS-7850:~$ roslaunch teleop_twist_keyboard teleop_twist_keyboard.py
```

```
Reading from the keyboard and Publishing to Twist!
```

```
-----
Moving around:
```

```
u   i   o
j   k   l
m   ,   .
```

```
For Holonomic mode (strafing), hold down the shift key:
```

```
-----
U   I   O
J   K   L
M   <   >
```

```
t : up (+z)
```

```
b : down (-z)
```

```
anything else : stop
```

```
q/z : increase/decrease max speeds by 10%
```

```
w/x : increase/decrease only linear speed by 10%
```

```
e/c : increase/decrease only angular speed by 10%
```

```
CTRL-C to quit
```

```
currently:      speed 0.5      turn 1
```

Now you can teleoperate NAO.

Common Network Issues

If your network environments have not been setup properly, you may encounter issue like:

```
Unable to contact my own server at [1] (http://192.168.0.102:55045/).
This usually means that the network is not configured properly.
```

```
A common cause is that the machine cannot ping itself. Please check
for errors by running:
```

```
ping 192.168.0.102
```

```
For more tips, please see http://www.ros.org/wiki/ROS/NetworkSetup
```

```
The traceback for the exception was written to the log file
```

This tutorial tells you how to setup network environments properly: http://iron-lab.org/wiki/index.php?title=Environments_Setup.

Issue: ERROR: unable to contact ROS master at [2] (<http://192.168.0.119:11311/>)

Type this on terminal:

```
sudo gedit .bashrc
```

delete, comment or change these two lines of:

```
export ROS_HOSTNAME=192.168.0.117
export ROS_MASTER_URI=http://192.168.0.119:11311/
```

into

```
export ROS_HOSTNAME=[ROS_HOSTNAME]
export ROS_MASTER_URI=[ROS_MASTER_URI]
```

Then type this command on terminal:

```
source .bashrc
```

Quick Launch of Teleoperating NAO by Keyboard

on Darren's workstation(Moved out from the lab from Fall 2017)

Terminal1:

```
roslaunch naoqi_driver naoqi_driver.launch nao_ip:=192.168.0.120 roscore_ip:=192.168.0.117 network_interface:=eth0
```

Terminal2:

```
roslaunch teleop_twist_keyboard teleop_twist_keyboard.py
```

on Michael L's workstation:

Terminal1:

```
roslaunch naoqi_driver naoqi_driver.launch nao_ip:=192.168.10.120 roscore_ip:=192.168.10.117 network_interface:=eth0
```

Terminal2:

```
roslaunch teleop_twist_keyboard teleop_twist_keyboard.py
```

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