Full Build Instructions

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Wade Filewich edited this page on 3 Nov 2017 · 27 revisions

Install Dev branch of GTK 3 for compilers

```
sudo apt-get install build-essential libgtk-3-dev
```

Setup your sources.list

```
sudo sh -c 'echo "deb http://packages.ros.org/ros/ubuntu $(lsb_release -sc) main" > /etc/apt/sources.list.d/ros-latest.list'
```

Set up your keys

```
sudo apt-key adv --keyserver hkp://ha.pool.sks-keyservers.net:80 --recv-key 421C365BD9FF1F717815A3895523BAEEB01FA116
```

```
sudo apt update && sudo apt upgrade
```

Optional:

```
sudo apt remove libreoffice*
```

VNC/remote ssh Setup:

```
sudo apt install vino ssh gedit
```

`vino-preferences`

Check:

- Allow other users to view your desktop
- Allow other users to control your desktop

Uncheck:

- You must confirm each access to this machine.

Disable require-encryption if your VNC client does not support it.

- Ubuntu:

```
gsettings set org.gnome.Vino require-encryption false
```

- Ubuntu Mate:

Add to startup group on Mate:

- System > Control Center > Startup Applications
- Click "Add" Button
- Name: Remote Desktop
- Command Path: /usr/lib/vino/vino-server

ROS Kinetic Dependencies & Install:

`sudo apt install git build-essential ros-kinetic-desktop`

`sudo rosdep init`

`rosdep update`

`apt-cache search ros-kinetic` (not actual dependency)

RealSense ROS Package Install:

- Prerequisites <-- Do method 1 listed in this website

`wget -O enable_kernel_sources.sh http://bit.ly/en_krnl_src`

`bash ./enable_kernel_sources.sh`

- Sensor package

`sudo apt install ros-kinetic-librealsense ros-kinetic-realsense-camera`

- Kernel 4.10 installation work-around

```
sudo apt-get install libglfw3-dev

cd ~

git clone https://github.com/IntelRealSense/librealsense.git

cd librealsense

mkdir build && cd build

cmake ../

make && sudo make install

cd ..

sudo cp config/99-realsense-libusb.rules /etc/udev/rules.d/

sudo udevadm control --reload-rules && udevadm trigger

./scripts/patch-realsense-ubuntu-xenial.sh
```

TurtleBot 2i ROS Package Install

```
sudo apt install ros-kinetic-turtlebot* libudev-dev ros-kinetic-find-object-2d ros-kinetic-rtabmap-ros ros-kinetic-moveit ros-kinetic-octomap-ros ros-kinetic-manipulation-msgs ros-kinetic-controller-manager python-wxgtk3.0
```

Setup TurtleBot2i Source Code & Catkin Environment

```
source /opt/ros/kinetic/setup.bash

cd ~

mkdir -p ~/turtlebot2i/src

cd ~/turtlebot2i/src

git clone https://github.com/Interbotix/turtlebot2i.git .

git clone https://github.com/Interbotix/arbotix_ros.git -b turtlebot2i

git clone https://github.com/Interbotix/phantomx_pincher_arm.git

git clone https://github.com/Interbotix/ros_astra_camera -b filterlibrary

git clone https://github.com/Interbotix/ros_astra_launch
```

```
cd ~/turtlebot2i

catkin_make
```

bashrc setup

- You will need to place the following at the bottom of your ~/.bashrc file
- Edit .bashrc with your choice of editor (gedit, nano, vi)
- Be sure to replace example.hostname with your computer's hostname

```
source /opt/ros/kinetic/setup.bash

alias goros='source devel/setup.sh' source ~/turtlebot2i/devel/setup.bash

export ROS_HOSTNAME=example.hostname

export TURTLEBOT_3D_SENSOR=astra

export TURTLEBOT_3D_SENSOR2=sr300

export TURTLEBOT_BATTERY=None

export TURTLEBOT_STACKS=interbotix

export TURTLEBOT_ARM=pincher
```

dialout permission

```
sudo usermod -a -G dialout turtlebot
```

udev rules

```
cd ~/turtlebot2i/

goros

rosrun kobuki_ftdi create_udev_rules

rosrun astra_camera create_udev_rules

cd ~/turtlebot2i/src/turtlebot2i_misc

gedit 99-turtlebot2i.rules
```

- At this point we need to execute a couple commands that will return the serial number for the ArbotiX and the Kobuki. Remove and/or Re-plug both the Arbotix and the Kobuki USB cables and ensure they are powered on before running these commands:

- `udevadm info -a -n /dev/ttyUSB0 | grep '{serial}' | head -n1`
- `udevadm info -a -n /dev/ttyUSB1 | grep '{serial}' | head -n1`
- The output from these commands are the serial numbers used to fill in the blanks of lines 6 and 7 of the 99-turtlebot2i.rules file.

```
sudo cp ./99-turtlebot2i.rules /etc/udev/rules.d/
```

References:

- http://wiki.ros.org/kinetic/Installation/Ubuntu
- http://ubuntuhandbook.org/index.php/2016/07/remote-access-ubuntu-16-04/

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FAQ & Troubleshooting

Full Build Instructions

ROS Commands CheatSheet

Setup ROS Monitoring Station

Clone this wiki locally

https://github.com/Interbotix/turtlebot2i.wiki.git