ROS+Gazebo+PX4 Installation

blogpost-style

aayushi e-Yantra Staff Oct '21

Environment Setup

Follow the following steps to install ROS1, Gazebo and PX4 Firmware, that collectively form the whole environment.

1. General Dependencies

To use all provided utilities, there are some packages we need to install first, you can copy these commands as it is, but it is recommended to learn and understand w Skip to main content and software does:

```
sudo apt install -y \
    ninja-build \
    exiftool \
    python3-empy \
    python3-toml \
    python3-numpy \
    python3-yaml \
    python3-dev \
    python3-pip \
    ninja-build \
    protobuf-compiler \
    libeigen3-dev \
    genromfs \
    libignition-rendering3 \
    libgstreamer-plugins-base1.0-dev \
    gstreamer1.0-plugins-bad \
    gstreamer1.0-plugins-base \
    gstreamer1.0-plugins-good \
    gstreamer1.0-plugins-ugly


pip install \
    pandas \
    jinja2 \
    pyserial \
    cerberus \
    pyulog \
    numpy \
    toml \
    pyquaternion \
    kconfiglib \
    --user packaging
    --user jsonschema
```

2. ROS-Neotic Installation

Step 1. Configure your Ubuntu repositories

Configure your Ubuntu repositories to allow “restricted,” “universe,” and “multiverse.” You can **follow the Ubuntu guide** for instructions on doing this.

Step 2. Setup your sources.list

Setup your computer to accept software from **packages.ros.org** .

```
sudo sh -c 'echo "deb http://packages.ros.org/ros/ubuntu $(ls
```

Step 3. Set up your keys

```
sudo apt install curl # if you haven't already installed curl
curl -s https://raw.githubusercontent.com/ros/rosdistro/maste
```

Step 4. Installation

```
sudo apt update
sudo apt install ros-noetic-desktop-full
```

Step 5. Environment Setup

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

It can be convenient to automatically source this script every time a new shell is launched. These commands will do that for you.

```
echo "source /opt/ros/noetic/setup.bash" >> ~/.bashrc
source ~/.bashrc
```

Step 6. Dependencies for building packages

```
sudo apt install python3-rosdep python3-rosinstall python3-rc
sudo apt install python3-rosdep
sudo rosdep init
rosdep update
```

3. MAVROS Installation

Skip to main content

MAVROS is a communication node based on MAVLink for ROS that is specially designed for communication between the drone and the companion computer. To install it, follow the following instructions:

```
sudo apt install python3-catkin-tools python3-rosinstall-gene
```

Step 1. Create the workspace:

```
mkdir -p ~/catkin_ws/src
cd ~/catkin_ws
catkin init
wstool init src
```

Step 2. Install MAVLink: we use the Kinetic reference for all ROS distros as it's not distro-specific and up to date

```
rosinstall_generator --rosdistro kinetic mavlink | tee /tmp/m
```

Step 3. Install MAVROS: get source (upstream - released)

```
rosinstall_generator --upstream mavros | tee -a /tmp/mavros.r
```

alternative

```
rosinstall_generator --upstream-development mavros | tee -a /
```

Step 4. Create workspace & deps

```
wstool merge -t src /tmp/mavros.rosinstall
wstool update -t src -j4
rosdep install --from-paths src --ignore-src -y
```

Step 5. Install GeographicLib datasets:

```
vros/scripts/install_geographiclib_datasets.sh
```

Skip to main content

Step 6. Build source

```
catkin build
```

Step 7. Make sure that you use setup.bash

```
source devel/setup.bash
```

4. PX4 Firmware Installation

```
cd ~/catkin_ws/src
git clone https://github.com/PX4/PX4-Autopilot.git --recursiv
cd PX4-Autopilot/
make px4_sitl_default gazebo
```

Now you should see a window pop out (Figure 1) and a drone is centered in the middle of the environment.

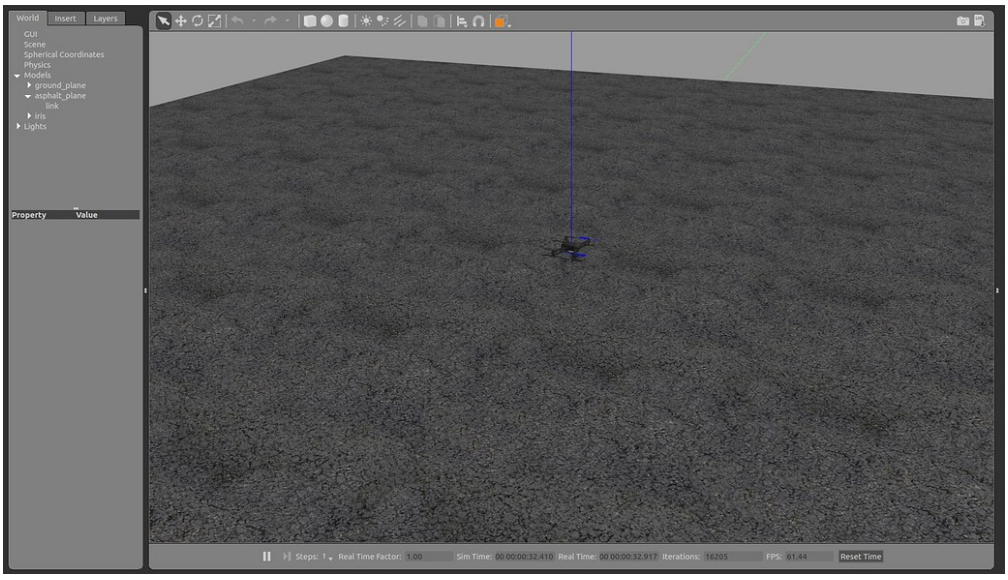


Figure 1: Gazebo environment

Modifying your ‘bashrc’ so that your environment remains the same every time you open a new terminal:

```
source ~/catkin_ws/devel/setup.bash
s                                  _ws/src/PX4-Autopilot/Tools/setup_gazebo.bash
export ROS_PACKAGE_PATH=$ROS_PACKAGE_PATH:~/catkin_ws/src/PX4
```

Skip to main content

```
export ROS_PACKAGE_PATH=$ROS_PACKAGE_PATH:~/catkin_ws/src/PX4
```

Solved by **sudeshgowdaj** in **post #7**

> I ran this command and the error didn't show up sudo apt install libignition-rendering3

Task 0: Instructions

Facing a problem in Task 0

Error when running python3 waypoint_mission.py

Skip to main content

Skip to main content

Skip to main content

sudeshgowdaj Participant **Oct '21**

I ran this command and the error didn't show up
sudo apt install libignition-rendering3

Kazip Participant **Oct '21**

sudo apt install libignition-rendering3

It worked for me too

mani13jha1999 Participant **Oct '21**

Even after running this command. It's still showing the same error

anish.natekar.20031 Participant **Oct '21**

The error is coming from a file named Makefile and at line number 255 (below i have given a code snippet of the block starting from line 255) can someone make sense of this and point out the error?

px4fmu_firmware:
check_px4_io-v2_default
check_px4_fmu-v2_default
check_px4_fmu-v3_default
check_px4_fmu-v4_default
Skip to main content ɔro_default
check_px4_fmu-v5_default

check_px4_fmu-v5x_default
sizes

---

anish.natekar.20031 Participant **Oct '21**

I am also getting the same error after running that command

---

aayushi **e-Yantra Staff** **Oct '21**

Running these commands might solve your problem.

```
sudo apt-get update
sudo apt-get -y install wget lsb-release gnupg

sudo sh -c 'echo "deb http://packages.osrfoundation.org/gazebo/ubunt

wget http://packages.osrfoundation.org/gazebo.key -O - | sudo apt-ke

sudo apt-get update
sudo apt install libignition-rendering3
```

This is the first time Oalpha has posted — let's welcome them to our community!

Oalpha Participant **Oct '21**

After running $ sudo apt-get update command, I get an error-
The repository '**Index of /gazebo/ubuntu-stable/** lsb_release Release' does not have a Release file.
How do I fix this?

---

aayushi **e-Yantra Staff** **Oct '21**

It seems like you have a wrong gazebo target.
Try this:

```
sudo sh -c 'echo "deb http://packages.osrfoundation.org/gazebo/ubunt
sudo sh -c 'echo "deb http://packages.osrfoundation.org/gazebo/ubunt
wget https://packages.osrfoundation.org/gazebo.key -O - | sudo apt-k
sudo apt-get update
```

Skip to main content

Oalpha Participant **Oct '21**

Works now. Thank you!

Oalpha Participant **Oct '21**

> aayushi:
>
> `sudo apt-get install libignition-rendering<#>-dev`

While running the last command, I get a syntax error-
syntax error near unexpected token `newline'

---

aayushi **e-Yantra Staff** **Oct '21**

there is a bug in command i guess…
try this

```
sudo apt install libignition-rendering3
```

Oalpha Participant **Oct '21**

> aayushi:
>
> `make px4_sitl_default gazebo`

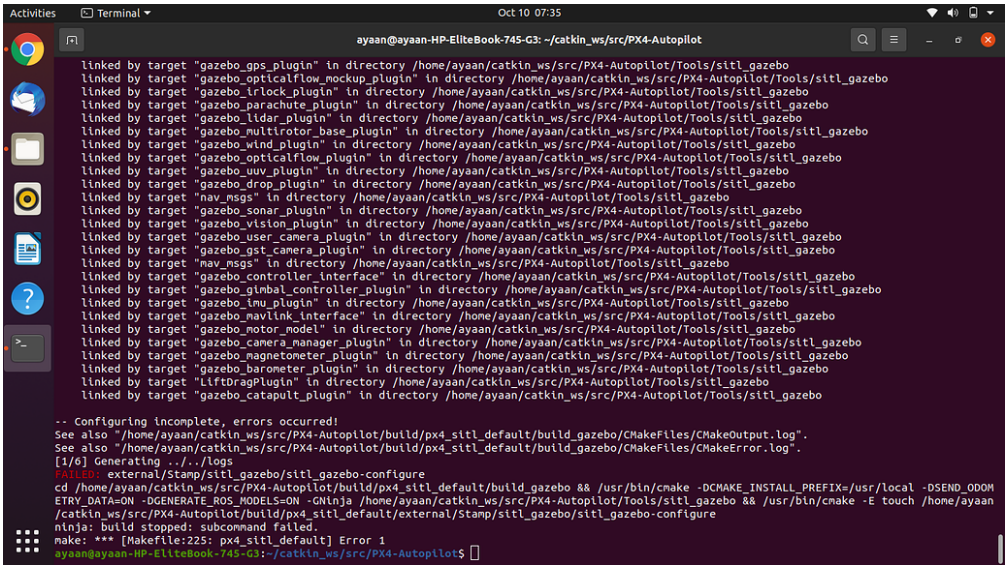
Worked, but I still get an error after running the last command-
make px4_sitl_default gazebo

This is the first time ayaan_2105 has posted — let's welcome them to our community!

---

ayaan_2105 Participant **Oct '21**

Skip to main content



I have tried all the above solutions but am still struck here . Can someone please point out what i am missing!! Thanks and Cheer!

This is the first time rohhiiiit has posted — let's welcome them to our community!

---

rohhiiiit Participant **Oct '21**

When ever i try to run any command given in the ROS installation part, i get the following error:
E: Unmet dependencies. Try 'apt --fix-broken install' with no packages (or specify a solution).
and after running 'apt --fix-broken install' i get :
E: Sub-process /usr/bin/dpkg returned an error code (1)

Environment Setup

1. General Dependencies
2. ROS-Neotic Installation
3. MAVROS Installation
4. PX4 Firmware Installation