Getting Started with Coppeliasim

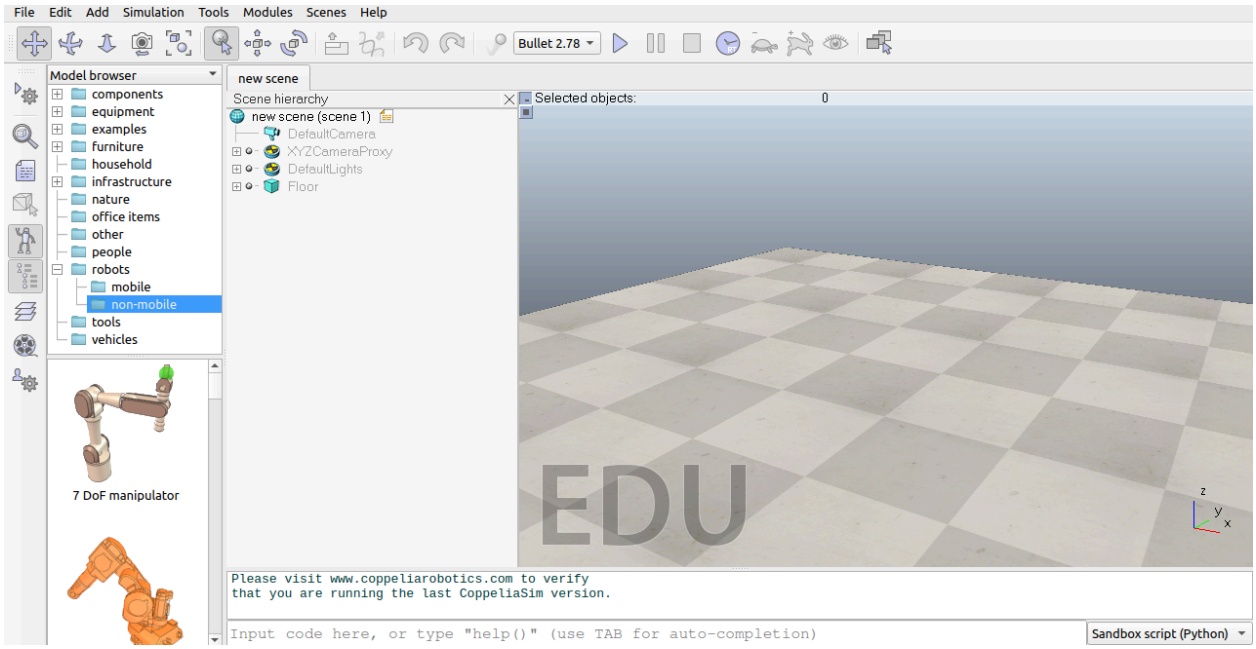
About

CoppeliaSim, formerly known as V-REP, is a versatile robot simulation software used for designing and testing robotic systems. It offers a wide range of features, including physics-based simulation, sensor integration, and support for various programming languages. Its modular and interactive interface makes it suitable for research, education, and industrial applications in robotics.

Installation

- Download the **Coppeliasim Edu** version from here.
  Note: For Windows, choose the platform as 'Windows (zip package without installer)'
  In case your web browser prompts you, saying that it is unsafe, choose the option 'keep it anyways'. (Don't worry, it's safe 😉)
- After the download is complete, move the .zip (or .tar.xz in case of Ubuntu) file to a preferable location and extract the contents.
- To launch the simulator,
  In Windows: Run the `coppeliaSim.exe` file, which can be found inside the extracted folder. (Windows might prompt you to allow public and private networks to access the app. Click 'Allow'.)
  In Ubuntu: Run the `coppeliaSim` executable file, which can be found inside the extracted folder. (If the executable opens up as a text file rather than being executed, right-click on the file > Properties > Permissions and enable the checkbox 'Allow executing file as program.')

On successfully installing and launching the simulator, you will have a window similar to this:



Python API for Coppeliasim

The robots simulated in coppeliasim can be programmed using Python via APIs provided by the `coppeliasim_zmqremoteapi_client` python library. The library can be easily installed using pip.

Open a command prompt (or terminal in case of Ubuntu) and run the following command:

```
pip install coppeliasim-zmqremoteapi-client
```

In Windows, you might get an error like the one below.

```
'pip' is not recognized as an internal or external command, operable
program or batch file.
```

This means that Python has not been added to your environment PATH variable. Add Python to the environment PATH variable and try again, or you could use the following command to install the library directly:

```
python -m pip install coppeliasim-zmqremoteapi-client
```

or

```
py -m pip install coppeliasim-zmqremoteapi-client
```

Documentation

To learn about Coppeliasim, refer to the Coppeliasim User Manual.
To learn about the usage of the Python API, refer to the Regular API Reference.

Demo Simulation

For testing the installation of coppeliasim, we have provided a demo simulation. This simulation can also be used as a reference. The simulation demonstrates a simple differential drive robot that randomly moves around in an arena. To use the simulation:

1. Download the simulation from here.
2. Extract the zip file to a location of your choice.
3. Open the `World.ttt` scene in coppeliasim.
4. Run the Python program `run.py` to see the robot in action.