

# Introduction to Cognitive Robotics

## Module 1: Overview of Cognitive Robotics

### Lecture 4: Installation of software development environment

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[www.vernon.eu](http://www.vernon.eu)

# Software Development Environment

Ubuntu 16.04

ROS Kinetic (includes OpenCV for optional Module 5 Robot Vision)

C++ (used in the Module 2 ROS and Module 4 Robot Manipulators and optional Module 3 Mobile Robots & optional Module 5 Robot Vision)

CRAM (used in Modules 8 – 12 on the Cognitive Robot Abstract Machine)

Common Lisp (used in Modules 8 – 12 on the Cognitive Robot Abstract Machine)

Repository of example software in C++ and Lisp

# Software Development Environment

There are **two** options

Option A: Install a VirtualBox Ubuntu 18.04 **virtual machine** with everything pre-installed

Option B: Install all the required tools and utilities directly on a computer running Ubuntu 18.04

The installation procedure for Option A is set out on this Wiki page:

[http://www.vernon.eu/wiki/Cognitive\\_Robotics\\_-\\_Software\\_Installation\\_Guide](http://www.vernon.eu/wiki/Cognitive_Robotics_-_Software_Installation_Guide)

There is an installation procedure for Option B but with Ubuntu 16.04 on this Wiki page:

[http://www.vernon.eu/wiki/Cognitive\\_Robotics\\_-\\_Software\\_Installation\\_Guide\\_16.04](http://www.vernon.eu/wiki/Cognitive_Robotics_-_Software_Installation_Guide_16.04)

# Exercise

Open a terminal (ctrl + alt + t) and enter

```
$ roscore
```

Open a second terminal (ctrl + shift + t) and enter

```
$ rosrunc turtlesim turtlesim_node
```

Open a third terminal (ctrl + shift + t) and enter

```
$ rosrunc turtlesim turtle_teleop_key
```

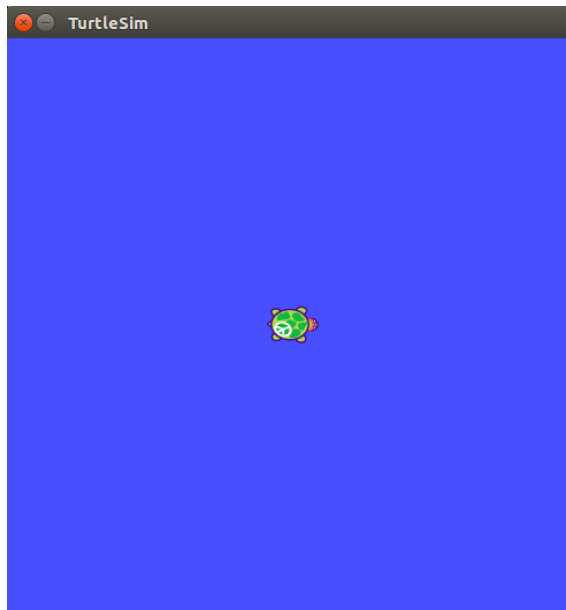
The separate terminals are intended to allow all three commands to execute simultaneously.

# Exercise

If everything works correctly, you should see a window similar to the one below

The appearance of your turtle may differ:

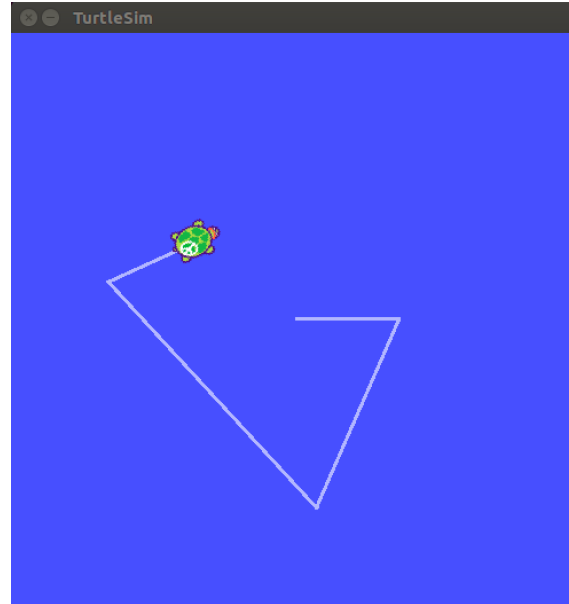
The simulator selects from a collection of mascot turtles for each of the historical distributions of ROS



# Exercise

Make sure your third terminal (the one executing the `turtle_teleop_key` command) is in focus (i.e. is selected)

Press the Up, Down, Left, or Right arrow key to move the turtle and leave a trail behind it



# Exercise

In Module 2, we will learn how to write C++ software in ROS to control the turtle and the trace it leaves as it moves

You will use this software in the first assignment

