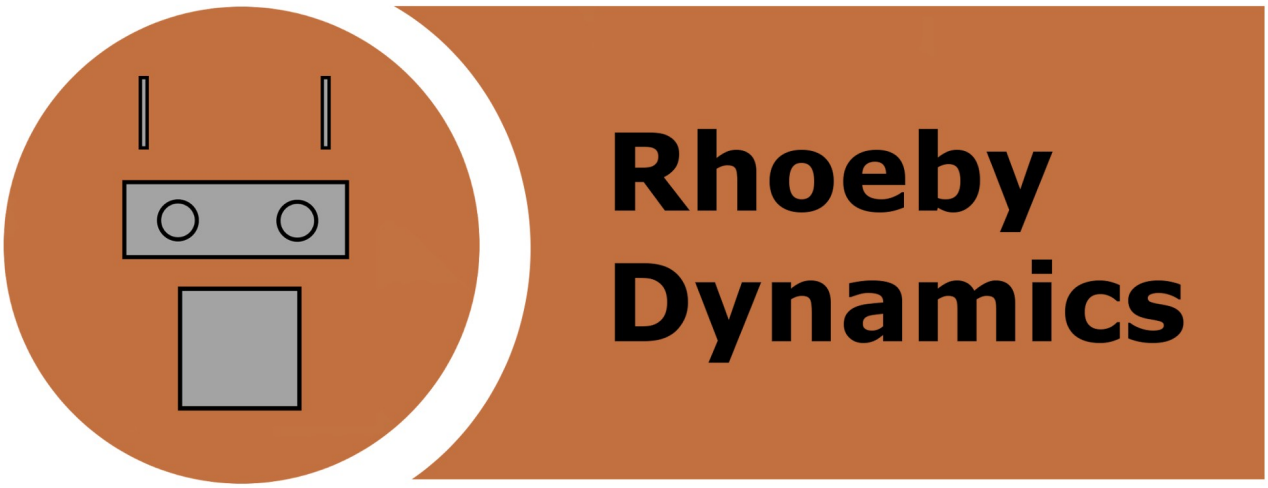

Cerebrum – Getting Started – V1.0

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Rhoeby Dynamics LLC, P.O. Box 3806, Santa Cruz, CA, 95063, USA.
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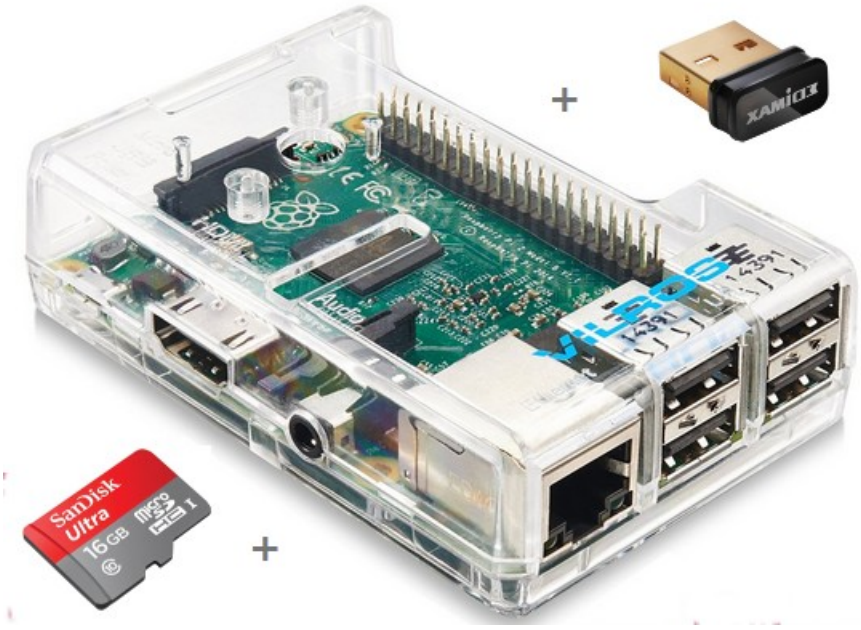
Rhoeby Dynamics – Cerebrum – Getting Started



Getting Started with the Rhoeby Cerebrum

Thank you for your purchase. Welcome to Rhoeby Dynamics products! This document provides a quick overview of the steps required to run the Rhoeby Cerebrum.

Pre-requisites

To proceed, you will need the following items:

- A ROS enabled PC (for setup, and running the ROS application RViz)
- An HDMI monitor, USB keyboard and mouse (for robot setup)
- Basic Linux and ROS skills for file editing, network configuration, etc
- Your ROS Navigation-capable Cerebrum device

Instructions

1. Plug in the following items to the Cerebrum:

- HDMI monitor
- USB keyboard
- USB mouse

2. Plug in the power supply

3. Wait for Linux to boot, and the login prompt to appear on the monitor

4. Login with the following:

- user name: ubuntu

- password: ubuntu

5. Add your WiFi network credentials

$ sudo vi /etc/network/interfaces

Modify these lines to match your network:

iface wlan0 inet dhcp

wpa-ssid "Your Network SSID"

wpa-psk "Your Password"

Note: retain the quotes (""), eg if your WiFI network is called NETGEAR101, and your password is mypassword, the file entries would look like this:

iface wlan0 inet dhcp

wpa-ssid "NETGEAR101"

wpa-psk "mypassword"

6. Reboot the robot

$ sudo reboot

7. On the ROS-enabled PC, 'ssh' into the robot (default robot name is: pi2-ubuntu):

$ ssh -l ubuntu pi2-ubuntu

8. At the prompt, verify you can run roscore:

$ roscore &

9. Unplug HDMI, keyboard and mouse.

IMPORTANT: These next steps depend on how you will use your Rhoeby Cerebrum. If you are using the Kobuki base with R2D LiDAR, you can follow them exactly. If not, you will need to modify them to suit your robot platform.

10. At the ssh prompt, initialize the robot:

$./turty_init

11. Wait for initialization to complete, then initiate mapping

$./turty_mapping

12. On the ROS-enabled PC, setup your connection to the robot, by following these instructions:

http://wiki.ros.org/ROS/NetworkSetup

and

http://wiki.ros.org/ROS/Tutorials/MultipleMachines

Basically...

Set hostname (default is: pi2-ubuntu)

$ sudo vi /etc/hostname

$ sudo vi /etc/hosts

127.0.1.1 pi2-ubuntu

Add remote machine (where RViz will run)

$ sudo vi /etc/hosts (on the robot)

192.168.0.51 vm-ubuntu

$ sudo vi /etc/hosts (on the remote machine)

192.168.0.27 pi2-ubuntu

The above IP addresses are just examples, replace these with your own addresses.

13. Set environment variable (on remote machine):

$ export ROS_MASTER_URI=http://pi2-ubuntu:11311'

14. Run RViz (on the remote machine)

$ rosrun rviz rviz

15. In RViz display topic 'laser_data', you should now see the scanner output on screen (you may need to set the Fixed Frame appropriately)

16. In RViz display the topic '/map', you should now see a partial map being built

17. In another ssh session, tele-operate the robot using the following command:

$ roslaunch kobuki_keyop keyop.launch

18. Observe the map being built up

19. When enough map has been created, save the map using the following command:

$ rosrun map_server map_saver

20. To run the navigation suite, first close the mapping (press 'q', followed by Ctrl-C), then execute the following:

$ ./turty_nav.sh

(Note you will need to modify the path to the new map, as specified in turty_nav.sh, see the line:

'roslaunch turtlebot_navigation amcl_rd_demo.launch

map_file:=/home/ubuntu/robot/maps/map.yaml')

For further assistance, visit www.rhoeby.com, or send email to 'support@rhoeby.com'.