



EduRob

Educational Robotics
for Students with Learning Disabilities



NOTTINGHAM
TRENT UNIVERSITY

EduRob Technical User Guide

Andy Burton, Nottingham Trent University

Technical advice on setup of your robots, installation of behaviours, and connection and use of the Edurob NAO Controller App

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Robot Versions

- NAO
 - Use of NAO with the Edurob app requires update to latest firmware (therefore not compatible with Maria's old software developed prior to the project) Old firmware no longer supported by Aldebaran.
- Update NAO to supported versions of firmware and get latest Choregraphe software
- Full NAO Upgrade Instructions:
 - Available at <http://doc.aldebaran.com/2-1/embedded/upgrade.html>
 - Should use NAOQI OS - 2.1.4 atom system image
 - Available at <https://community.aldebaran.com/en/resources/software>
- Choregraphe 2.1.4
 - Available at <https://community.aldebaran.com/en/resources/software/language/en-gb>
 - Do install Bonjour if option given as it allows easier connection to the robot's web page.

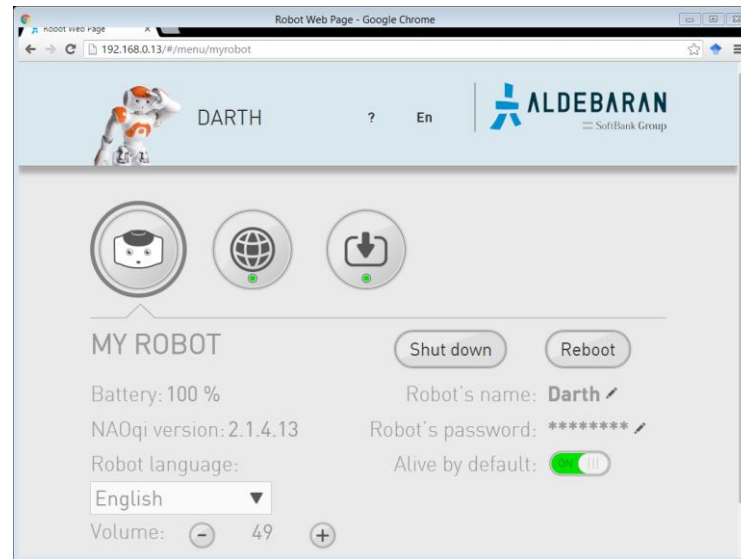
NAO Communications setup.

- Communications

- NAO (WiFi)

- Required software Nao Communication Server
 - <https://play.google.com/store/apps/details?id=de.robotik.nao.communicator>
 - Install software on your android device (from play store)

- Ensure your robot can be connected to your phone via WiFi and has an internet connection.
 - On the robot's web page you should see the following with 2 green lights on the web and download pages.



Set up of the robot comms server

- **Method 1 (where you have direct access to an internet router)**

- Wire your robot to your internet router.
- Connect to your laptop wirelessly to the router.

- **Method 2 - At NTU we use a hosted Network to enable this:**

1. Download the batch files in the zip and extract them on your machine.
<http://software.isrg.org.uk/Edurob/HostedNetworkBatchFiles.zip>
2. Run the 'start tethered network' batch file as administrator (from the right click dropdown).
3. Connect the robot to your machine via Ethernet cable and boot the robot.
4. Get the robot's IP address (press his chest button)
5. At the robot's webpage (type the ip address of the robot into your browser bar)
6. Set the robot to use your tethered WiFi network.
7. Disconnect the wired robot connection and connect your machine to the network via a wired connection.
8. In your network settings share your wired connectivity with the tethered network (in right click/properties/sharing tab).
9. Your robot should now have network connectivity and you can connect to it through the hosted network.

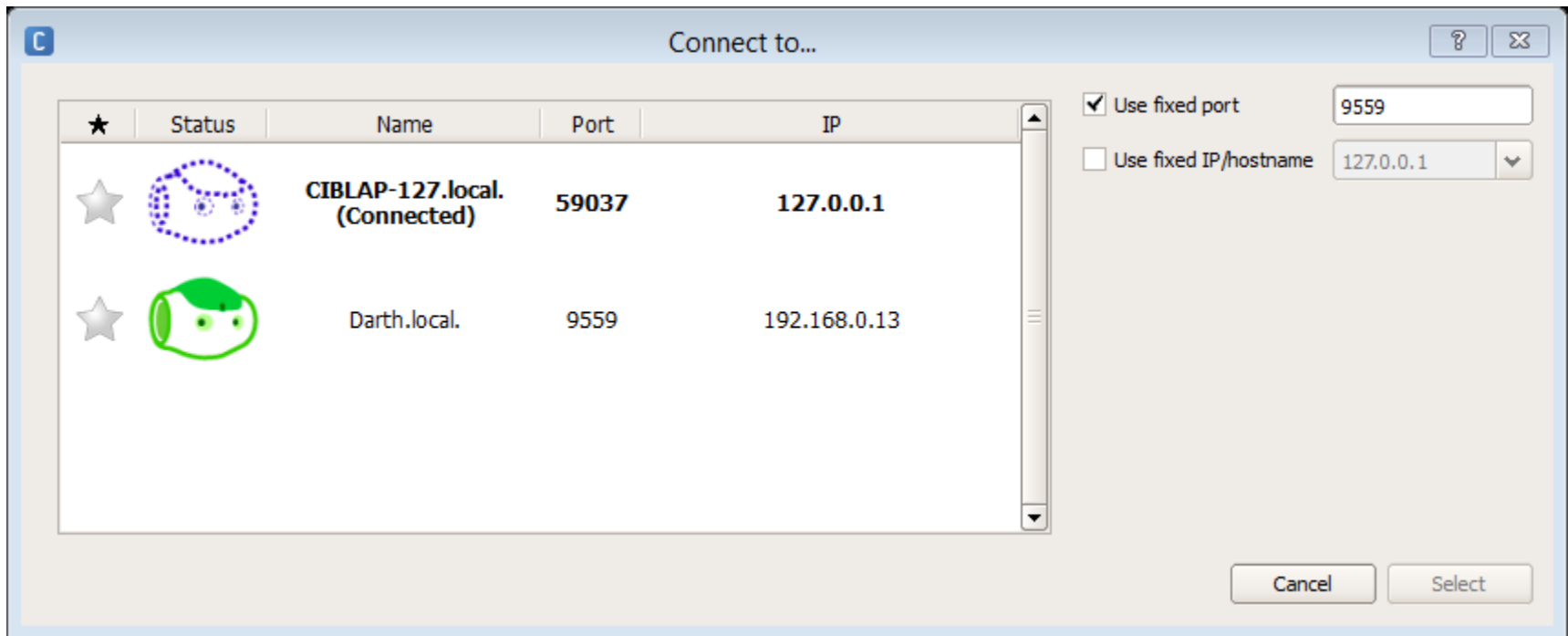
Set up of the robot comms server

- Install the NAO COM software.
 - Run the NAO Communicator app on your android device
 - Add the robot's IP address to the list if it is not automatically detected.
 - Long press on the robot IP in the list.
 - An option should appear at the top of the screen to install the server software.
 - Press this and install the communication server to the robot.
 - Restart the robot.

- Test connecting and sending commands to the robot.

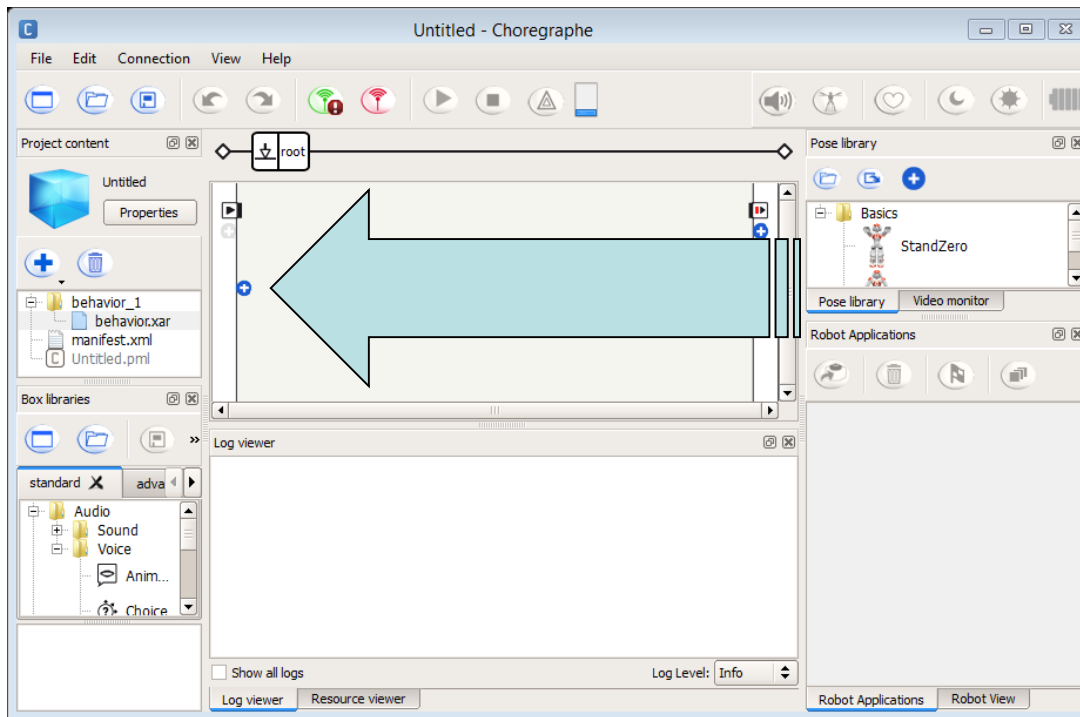
Creating Choregraphe files for EduRob

- Install Choregraphe 2.1.4
- Connect to your robot using this button.
- Select your robot from the list



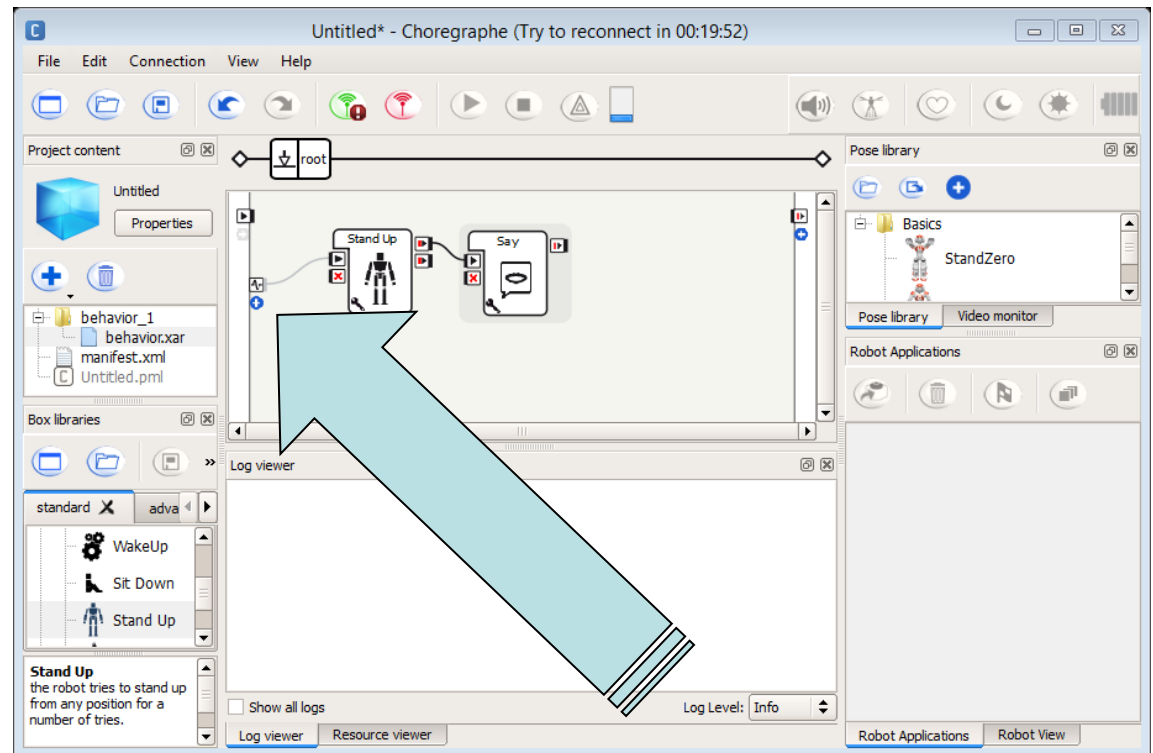
Creating Choregraphe files for Edurob

- You will most likely be used to connecting behaviours to the onStart arrow to make them run. We however now need to use NAOQI memory keys to make our behaviours run.
- Click the blue plus arrow at the left of the stage.



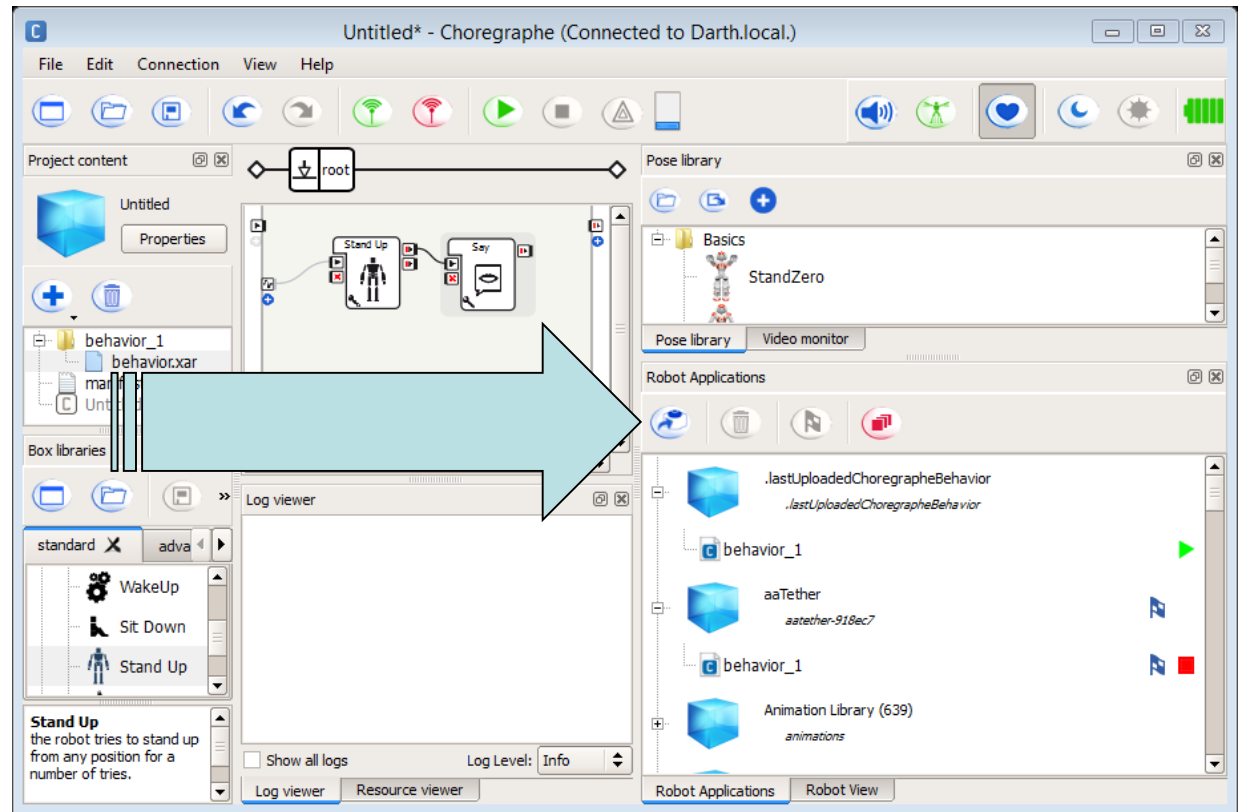
Creating Choregraphe files for EduRob

- Select Add a new key
- Create a key that describes your behaviour.
- Link your behavior to it.
- **Do not** link to the onStop output unless you want your behavior to become unrunnable after one run



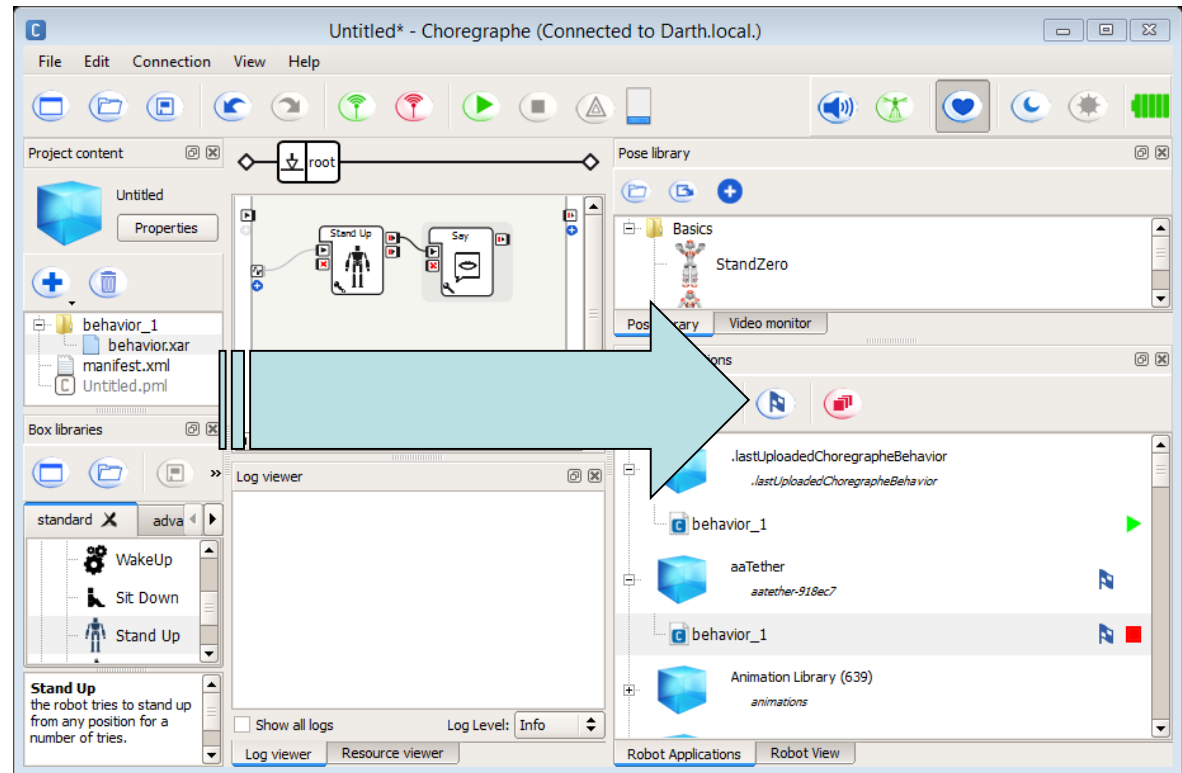
Creating Choregraphe files for Edurob

- Use the “Package and install current package to the robot” button to send your behavior to the robot.



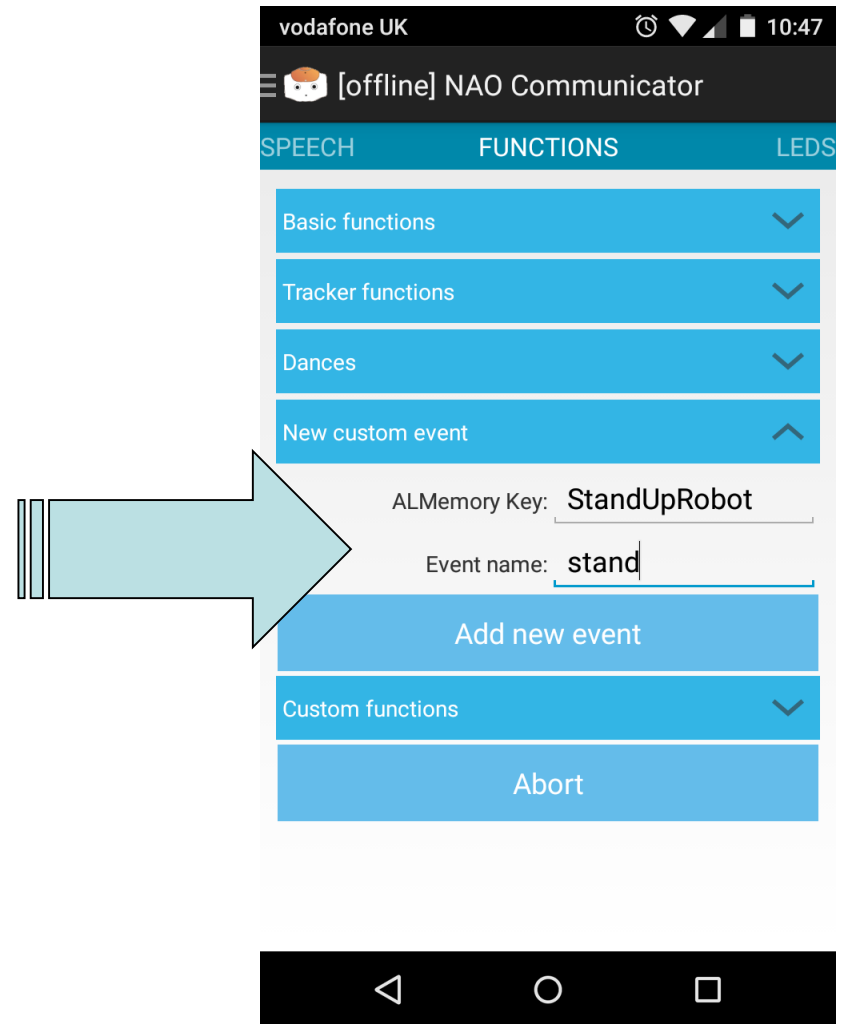
Creating Choregraphe files for EduRob

- Select the new behavior on the robot application list and set it as default by clicking the flag.
- This runs the behavior at robot startup.
- Now you can run your behavior by calling the Memory Key you set up from the app.



Creating Choregraphe files for Edurob

- To call a behaviour from the EduRob the behaviour must be running on the robot. It will then be awaiting the trigger memory key.
- In the app connect your robot (see next slide for easy Tether connection method)
- you can then call your behaviour using the ALMemoryKey you set up.
- Type it as shown on the right in the New Custom Event tab and click add new event.
- A button to run it will appear in the custom functions section below.



Using the Tether behaviour for easy NAO-Android connectivity

- By installing the 'aaTetherRN' Choregraphe behaviour on the robot you will be able to connect your android device directly to it quickly and easily. [aaTetherRN.zip ([Download](#))]
- Install to the robot as above and set as default to run it at startup.
- On booting the NAO will state "touch my front head button to start tethering".
- Doing this creates a Wi-Fi hotspot named after the robot.
- Connect to this in your device Wi-Fi settings.
- Enter the IP address stated by the robot (usually 192.168.0.1) in your app settings and the connection is made.



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