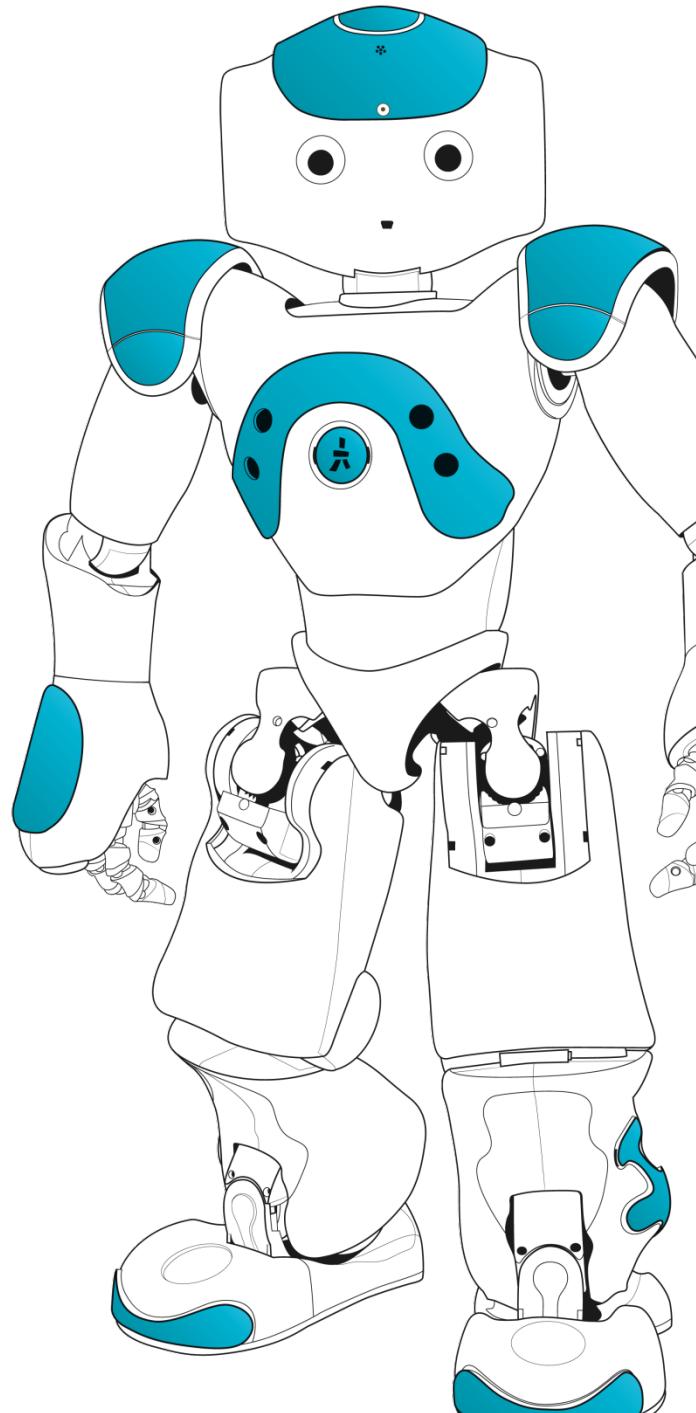


NAO

Choregraphe



Salah AMER
Studio Show Event



Choregraphe

Agenda

1. Robot presentation
2. Interface
3. Box libraries
4. Sensors
5. Voice Recognition
6. Vision Recognition
7. Face Recognition
8. Scripts
9. Animations



Interface

Tools bar



Behavior

- New
- Open
- Save
- Undo
- Redo

Connection

- Connect
- Disconnect
- Play
- Stop
- Errors
- Deployment State

Robot

- Volume
- Animation
- Stiffness
- Battery Level
- Redo

Interface

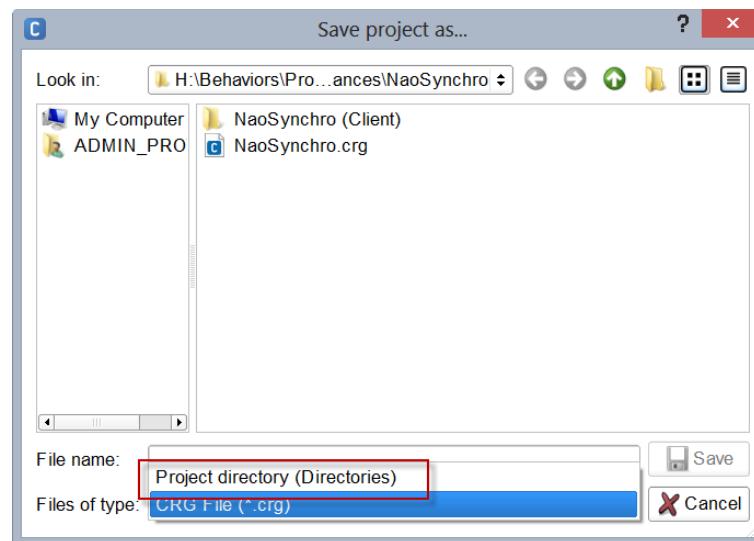
Save

Save as .crg

- Packaged in one file
- Can't update included file
- Only open with Choregraphe

Save as directory

- Non packaged
- You can modify, add or delete file in the folder without Choregraphe



Interface

Project content

The screenshot shows a software interface for managing project files. On the left is a tree view of the project structure:

- Aldebaran
 - choice_sentences.xml
- Commons
- Interfaces
 - IHandler.py
 - IServer.py
- applause1.wav
- behavior.xar
- roh1.wav
- surprise3.wav

On the right is a "Project content tool box" with the following icons and labels:

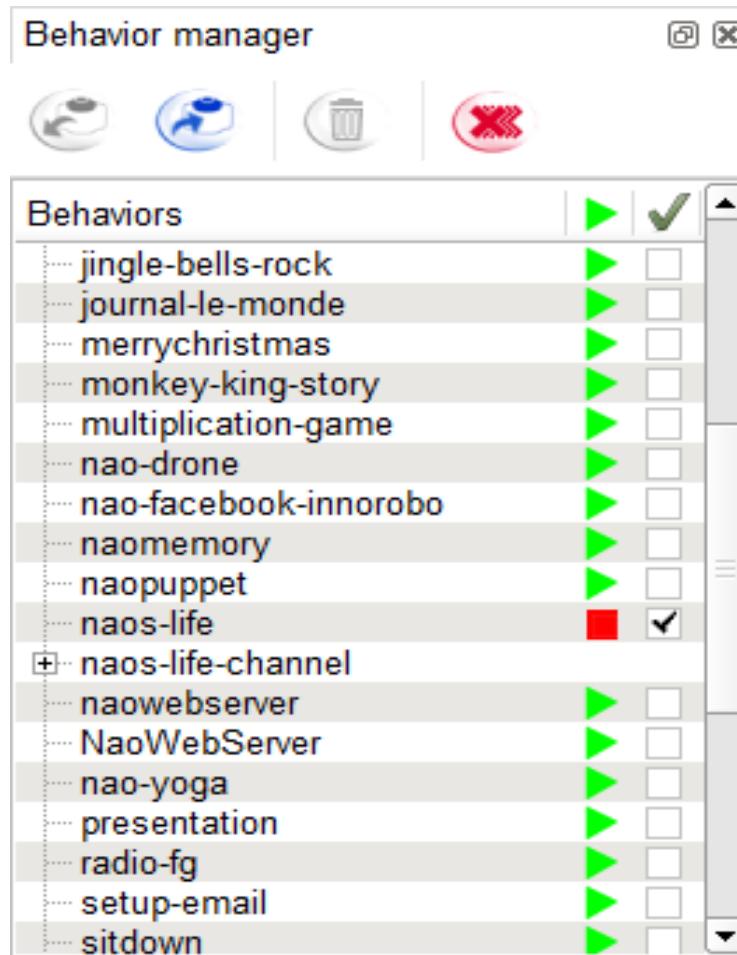
- Import
- Export
- Delete : Warning, when you delete the last file of directory, the directory will be destroyed too.
- Create folder
- File list

Annotations with arrows point from the labels to their corresponding icons or actions in the tool box:

- "Project content" points to the "File list" icon.
- "Import" points to the "Import" icon.
- "Export" points to the "Export" icon.
- "Delete" points to the "Delete" icon.
- "Create folder" points to the "Create folder" icon.
- "File list" points to the "File list" icon.

Interface

Behavior manager



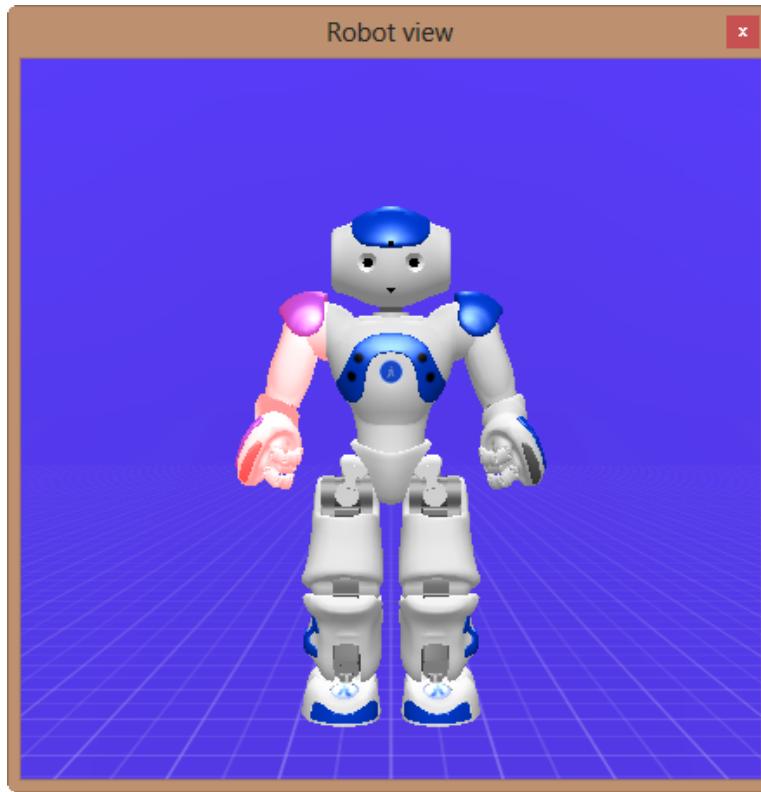
Behavior manager tool box

- Download
- Upload
- Delete
- Stop
- Play
- Stop
- Set as startup behavior

Interface

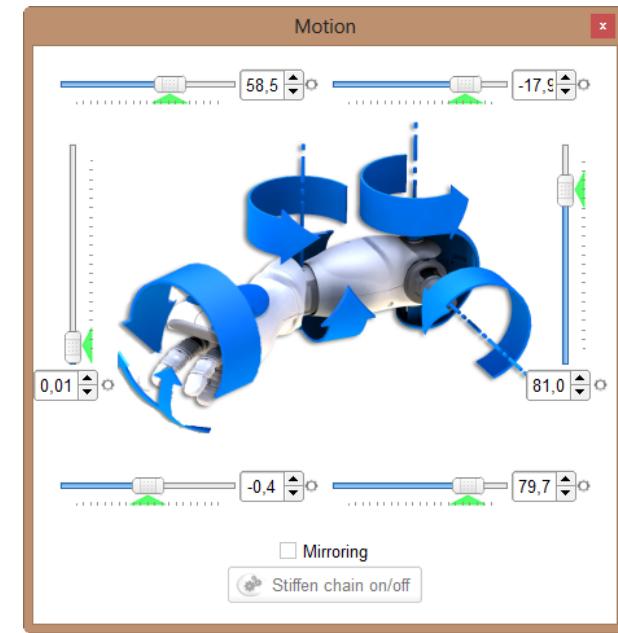
Robot Views

Robot representation



Motor values

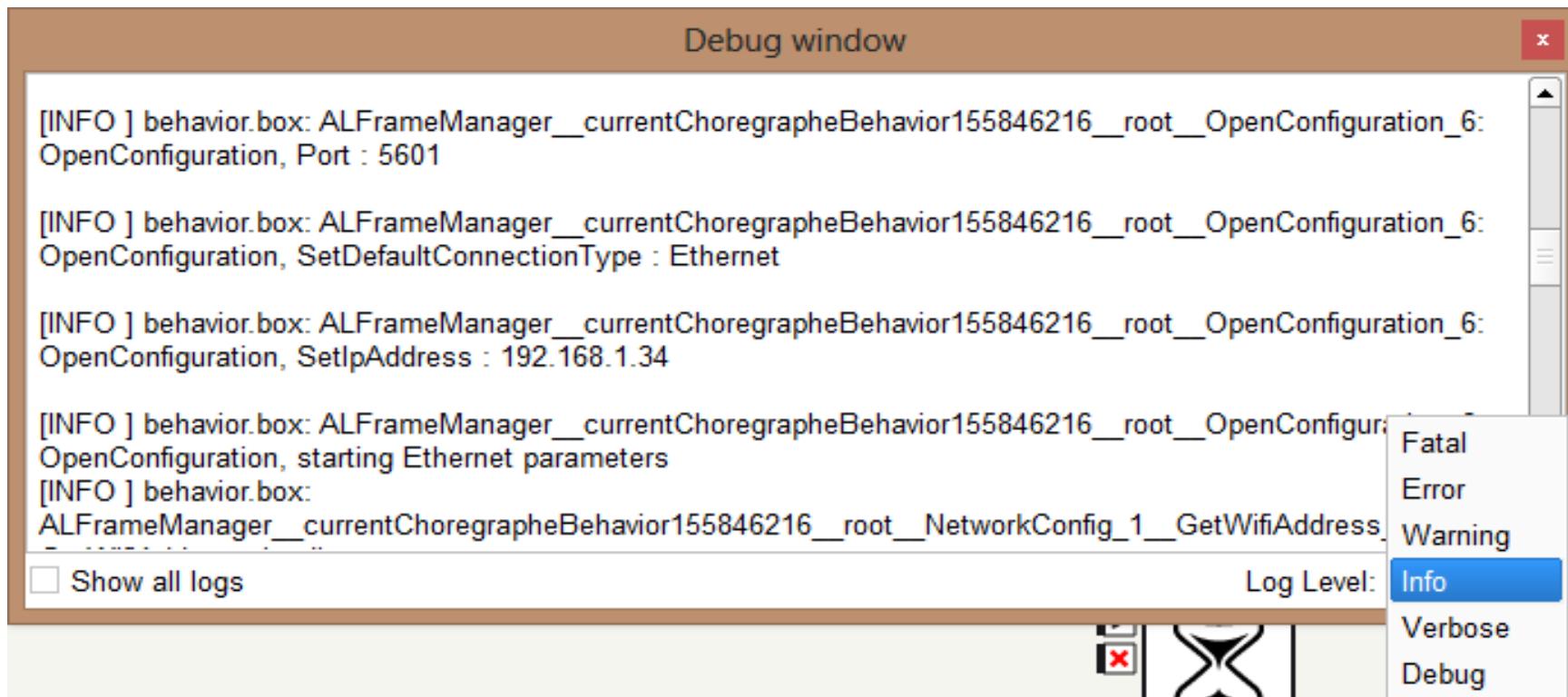
Warning if you are connected to a real robot, any modification on this window affect directly the robot !



Interface

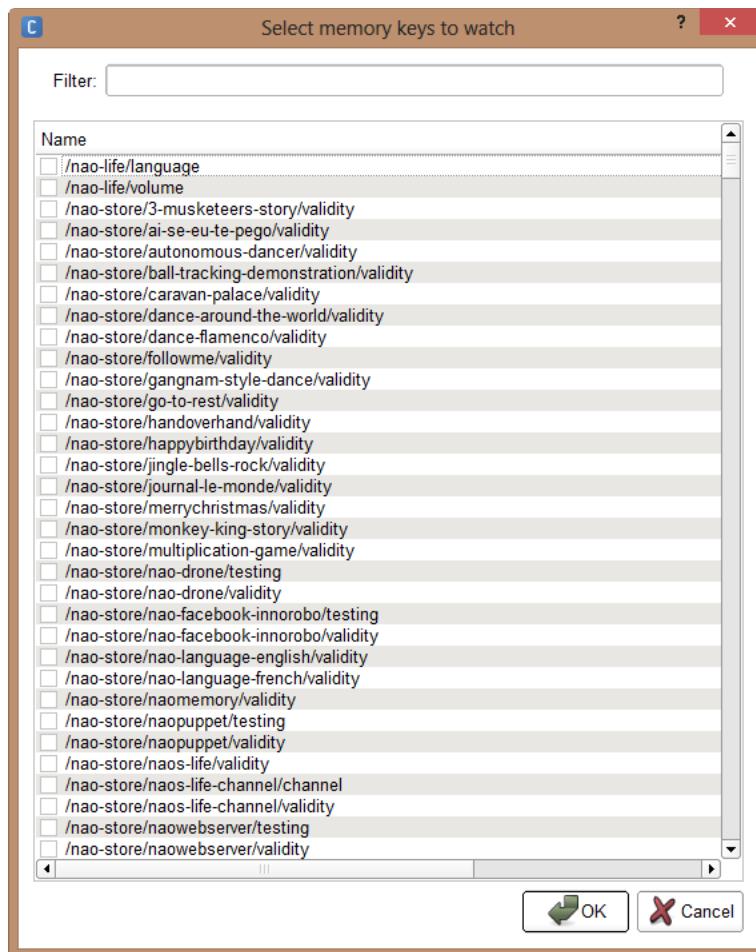
Debug window

- Get informations from robot
- Show warning and error log



Interface

Memory Watcher



The main window has a title bar 'Memory watcher' with a help (?) icon and a close (X) icon. It displays a table of memory keys with columns 'Name', 'Nature', and 'Value'. The table lists various FSR and KeyData entries with their current values. Below the table is a status bar with 'Period: 1,00 s' and a 'Start Recording' button. The window title bar also shows the same table header.

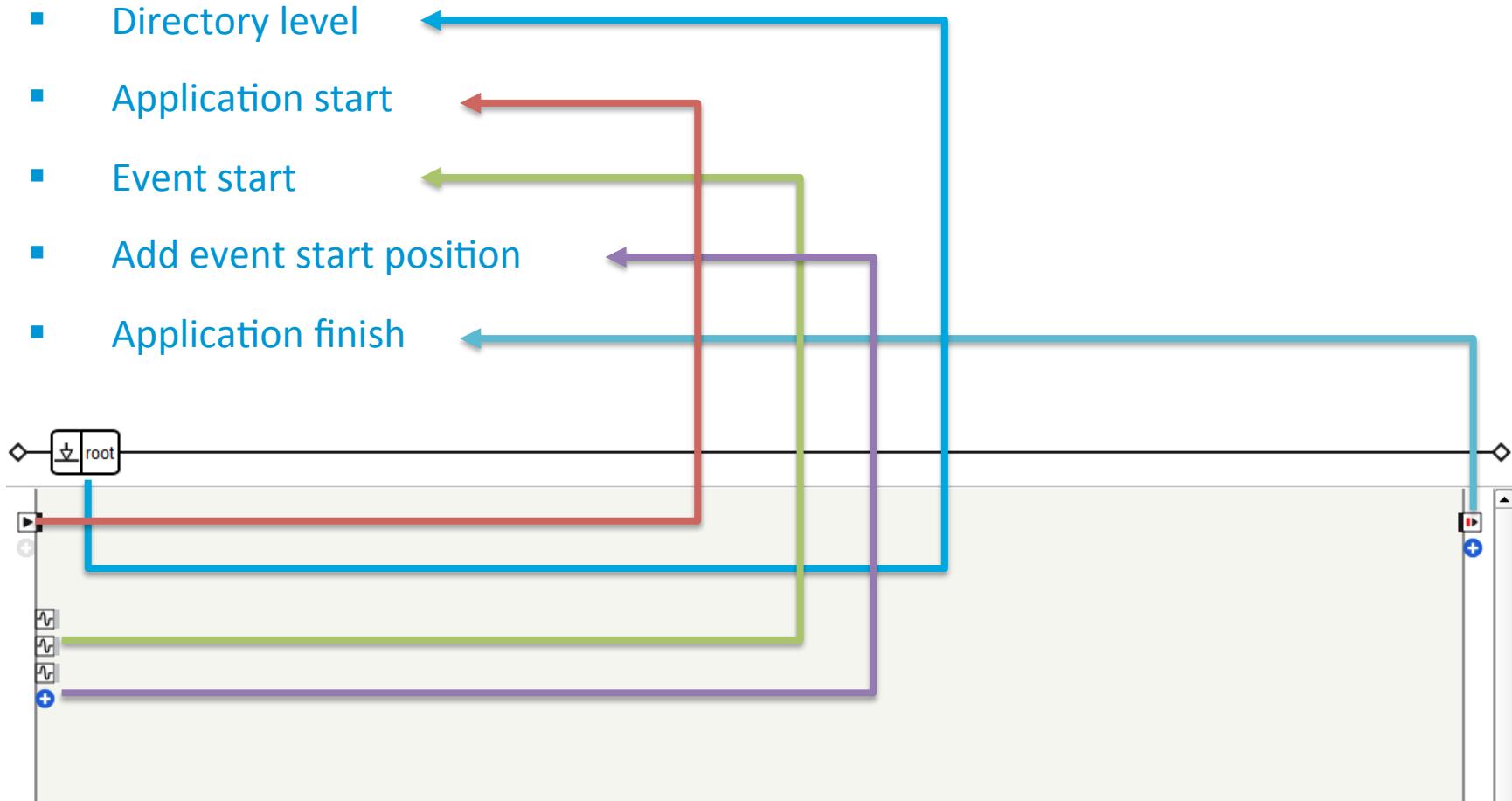
Name	Nature	Value
...Device/SubDeviceList/LFoot/FSR/...	DATA	-0.104694
...Device/SubDeviceList/LFoot/FSR/...	DATA	0.0756869
...Device/SubDeviceList/LFoot/FSR/...	DATA	0.00220508
...Device/SubDeviceList/LFoot/FSR/...	DATA	0
...Device/SubDeviceList/LFoot/FSR/...	DATA	2.89883
...Device/SubDeviceList/LFoot/FSR/...	DATA	0.578741
...Device/SubDeviceList/LFoot/FSR/...	DATA	3.47977
...Device/SubDeviceList/RFoot/FSR/...	DATA	0.372141
...Device/SubDeviceList/RFoot/FSR/...	DATA	-0.0861934
...Device/SubDeviceList/RFoot/FSR/...	DATA	1.77345
...Device/SubDeviceList/RFoot/FSR/...	DATA	3.74027
...Device/SubDeviceList/RFoot/FSR/...	DATA	0
...Device/SubDeviceList/RFoot/FSR/...	DATA	0.512573
...Device/SubDeviceList/RFoot/FSR/...	DATA	6.02629
KeyData	UNKNOWN	

- Get real value from memory of the robot
- Record data

Interface

Workspace

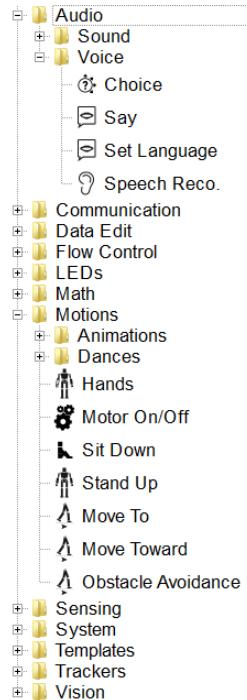
- Directory level
- Application start
- Event start
- Add event start position
- Application finish



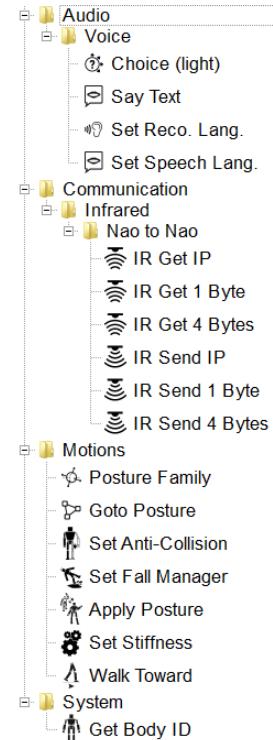
Box Libraries

Existing libraries

Standard



Advanced



Box Libraries

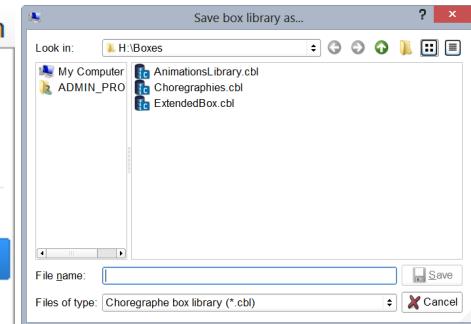
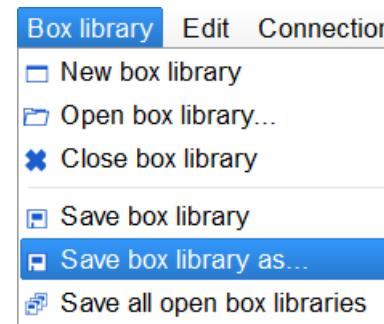
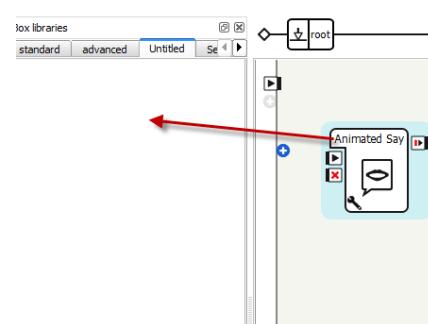
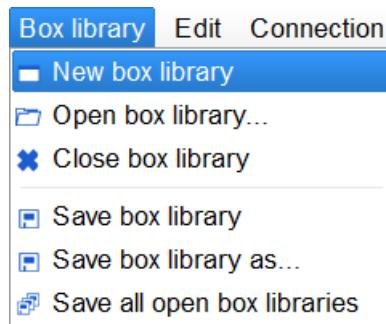
Manage

New libraries

- Menu
- Box
- New box...

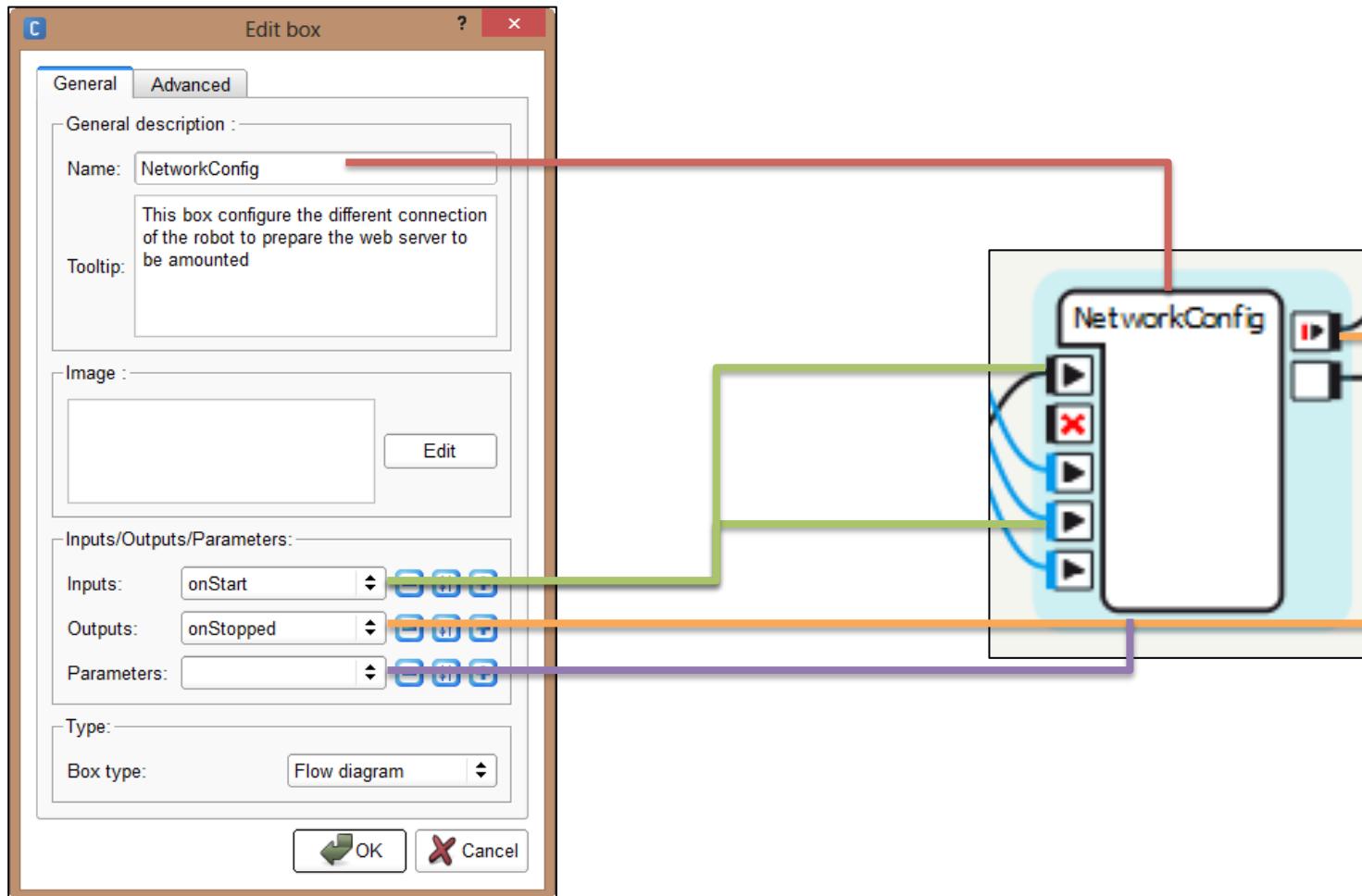
Save Libraries

- Menu
- Box
- Save as



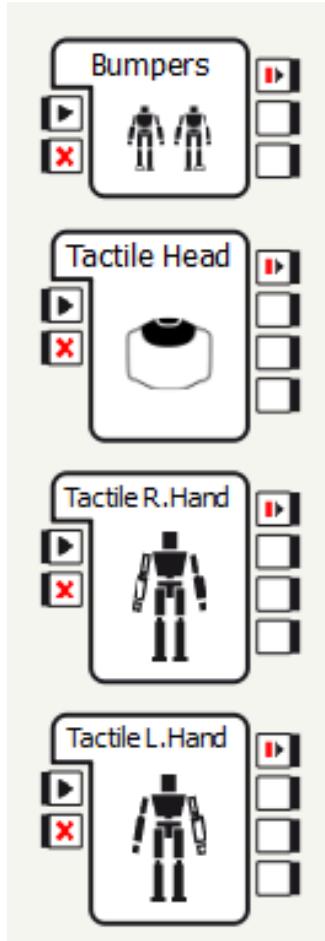
Box Libraries

Create a custom box



Sensors

Tactiles



Bumpers

- Left bumper
- Right bumper

Tactile Head

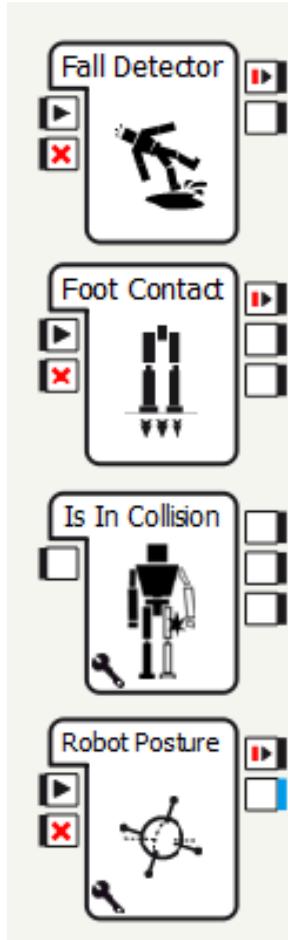
- Front
- Middle
- Rear

Tactile Right & Left Hand

- Left
- Back
- Right

Sensors

Positions



Fall detector

- HasFallen : When the robot fall down

Foot contact

- OnContact : When the robot is in the floor
- LostContact : When the robot is in air

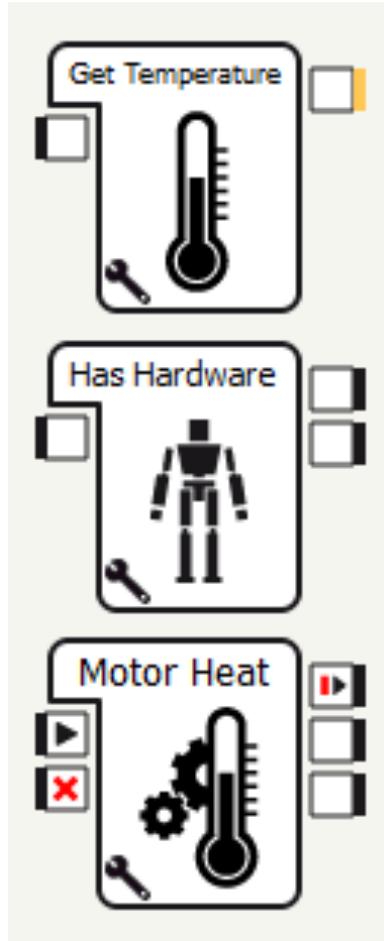
Is in collision

- None :
- Near :
- Collision :

Robot posture : Standing, Sitting, LyingBack, LyingBelly, LyingLeft, LyingRight, Back, Belly, Left, Right, UpSideDown, Lifted, Unknown

Sensors

Temperature



Get Temperature

- OnData : Get temperature of selected item in parameters.

Has Hardware

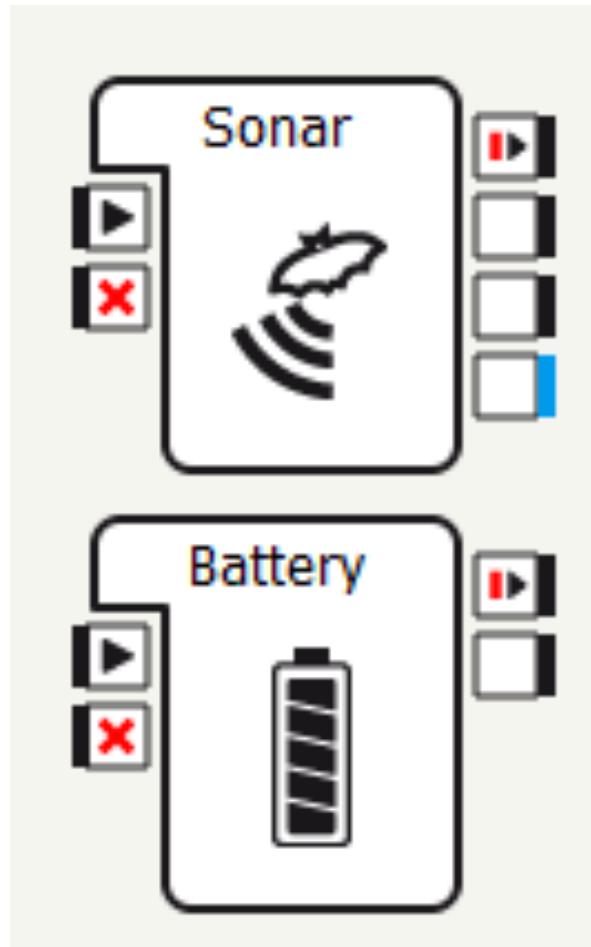
- True : Ask if the item in parameter exist in the robot.
- False : Ask if the item in parameter exist in the robot.

Motor Heat

- OnHot : Handled, when a part of robot is hot.
- OnCold : Handled, when a part of robot is cold

Sensors

Others



Sonar

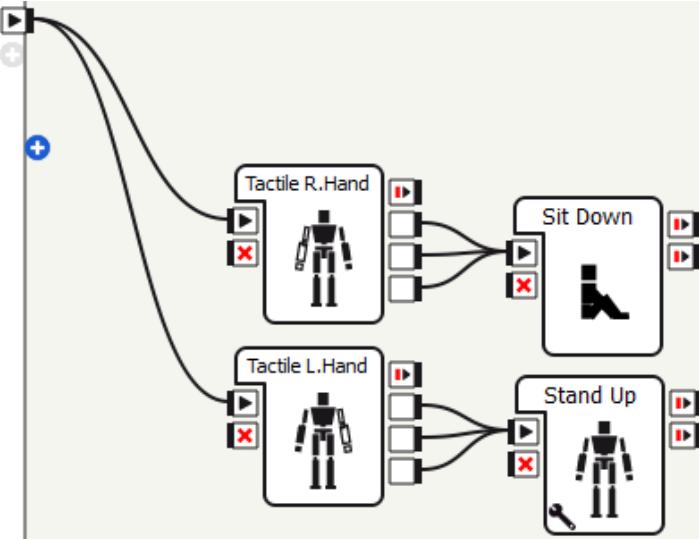
- OnNothingLeft : No obstacle on the left
- OnNothingRight : No obstacle on the right
- OnObstacle : Left or Right

Battery

- OnLow : Sent when the robot detect low battery level.

Sensors

Exercice



Stand up and Sit down

When the right hand of the robot has been touch, the robot must be sit down and if the other one touch the robot must stand up.

Voice recognition

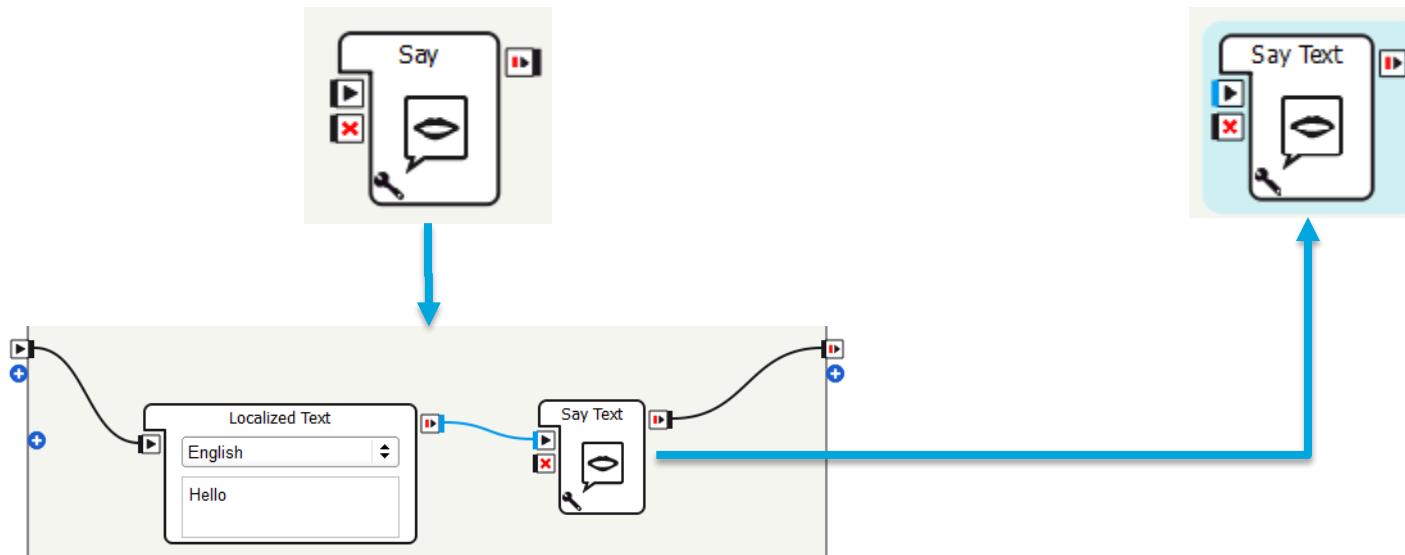
Voice synthesizer

Say

- Standard, Audio, Voice, Say
- Support localization

Say Text

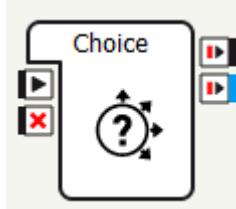
- Advanced, Audio, Voice, Say Text



Voice recognition

Vocal recognition

Choice



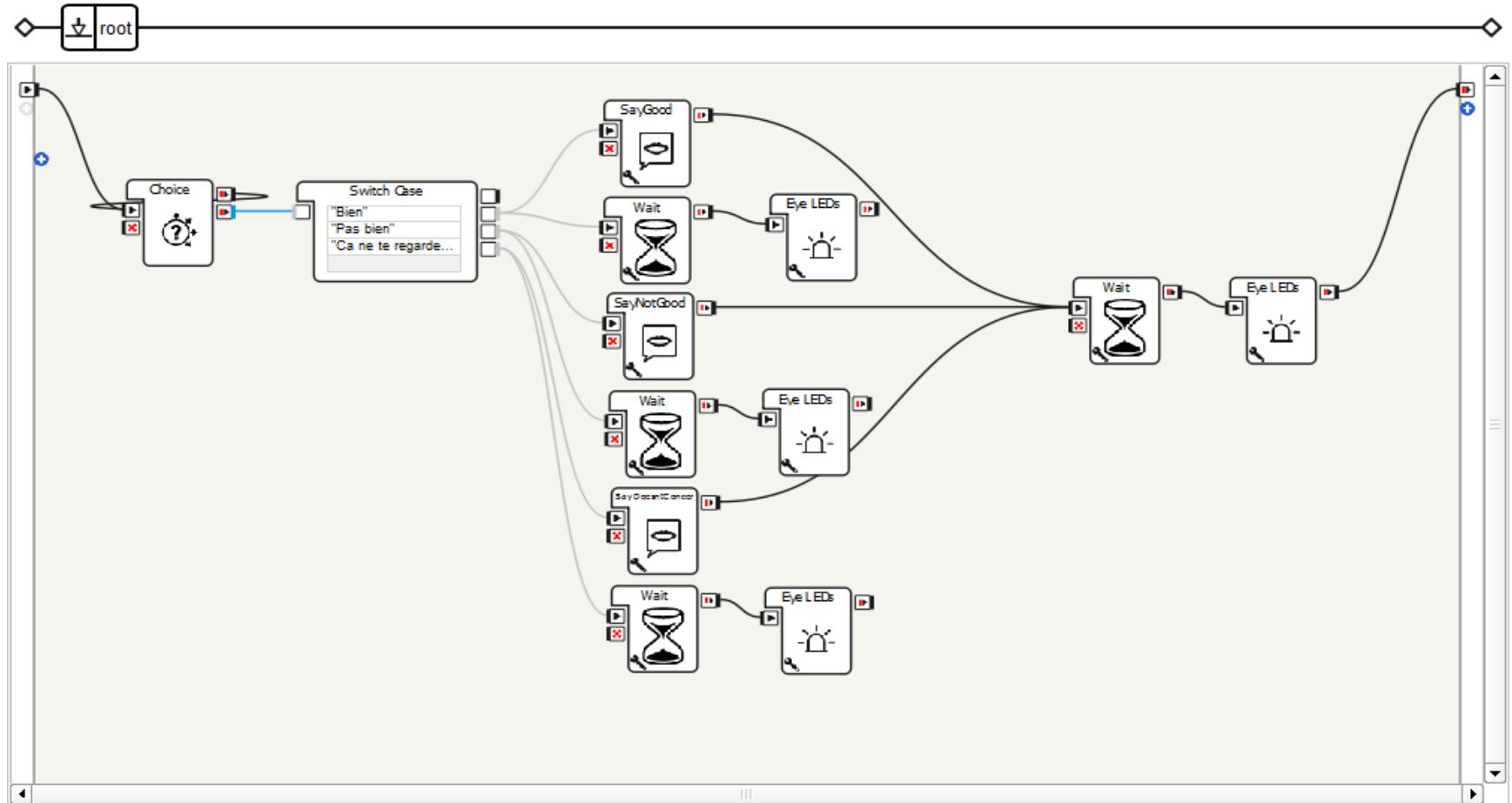
Speech Reco.



- Support localization
- Manage the repetition
- Include question
- Include some movements
- One Choice box include more 90 boxes

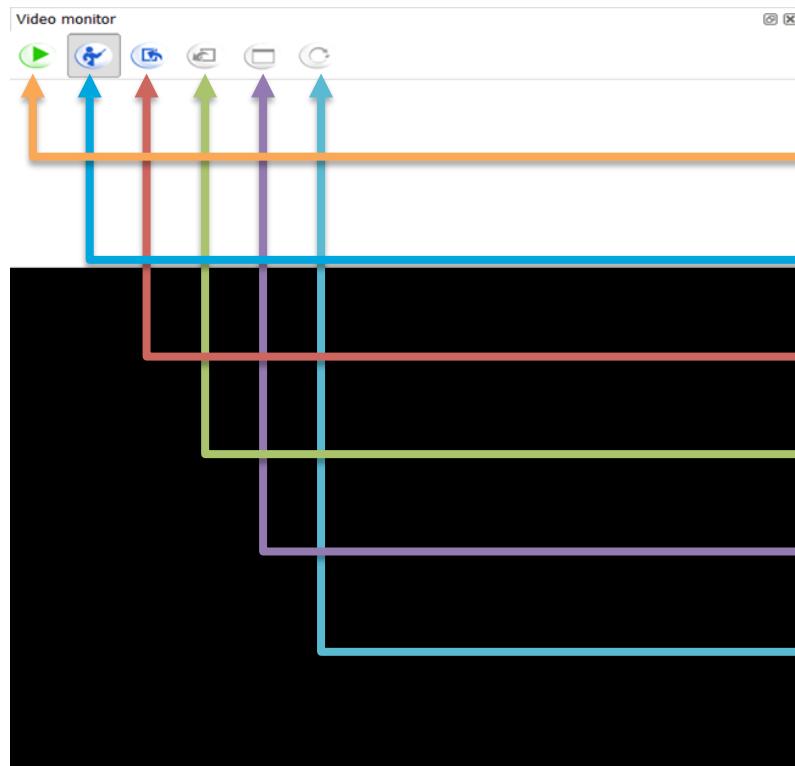
Voice recognition

Exercice



Vision Recognition

Video monitor



Control bar

— Activation camera

■ Learn

■ Import data

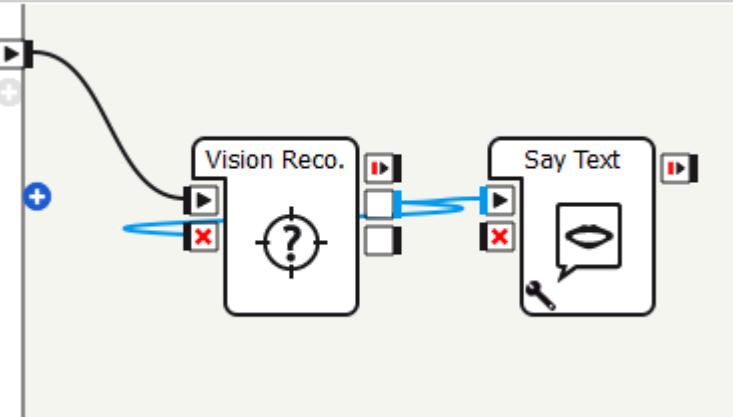
■ Export data

■ Create new database

■ Send database to robot

Vision Recognition

Exercice



Recognize any object

Follow steps, First save item in new database using the learn button. Set the information about the object. Save database into your computer and deploy it to robot.

Face Recognition

Vision



Face detection

Get how many face the robot detect.

Face Reco.

Extract the name of person who's recognized by the robot.

Learn Face

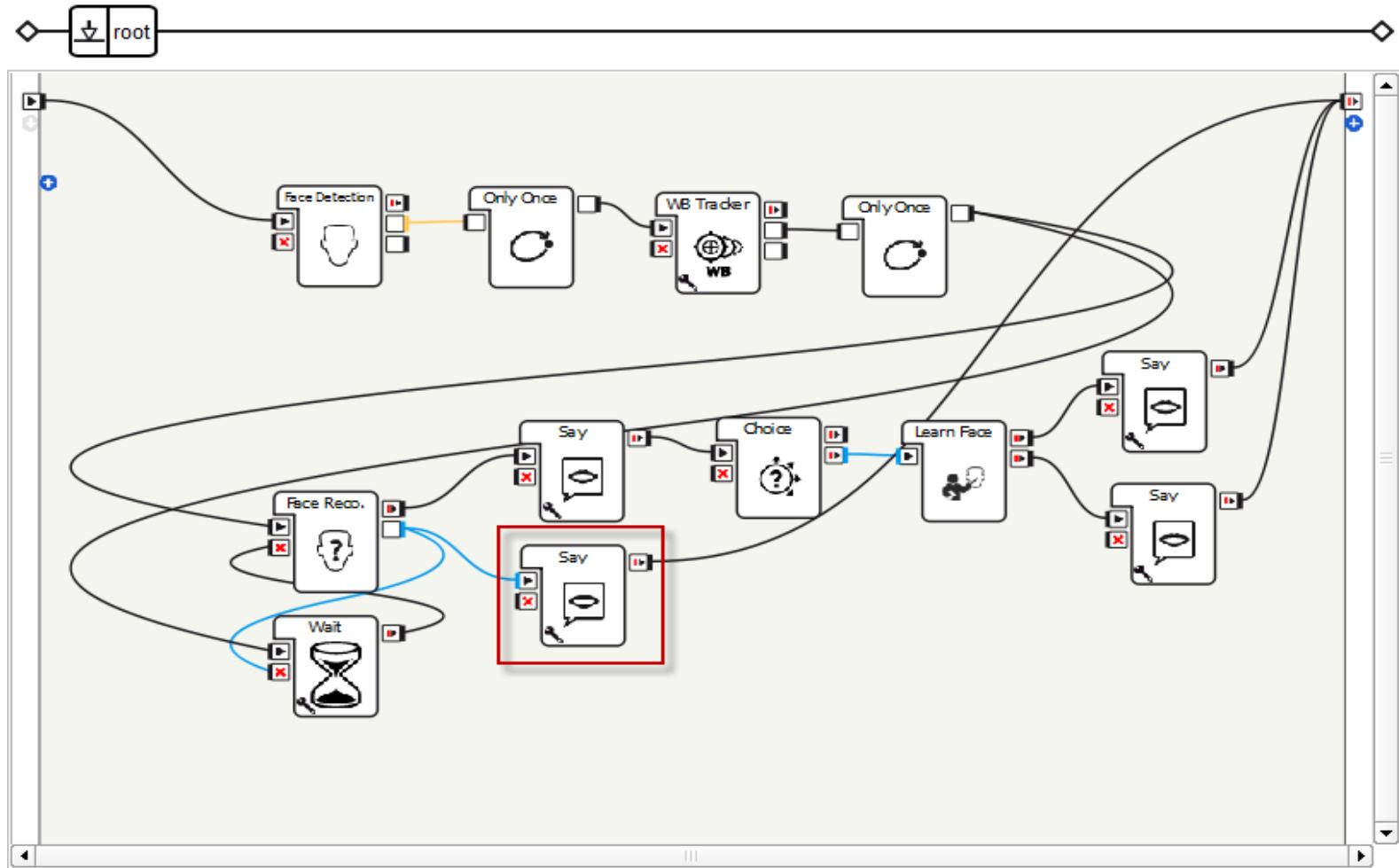
Save face in the robot database using the parameter in input.

Unlearn & Unlearn all Faces

Unlearn specific face or all faces in the robot database.

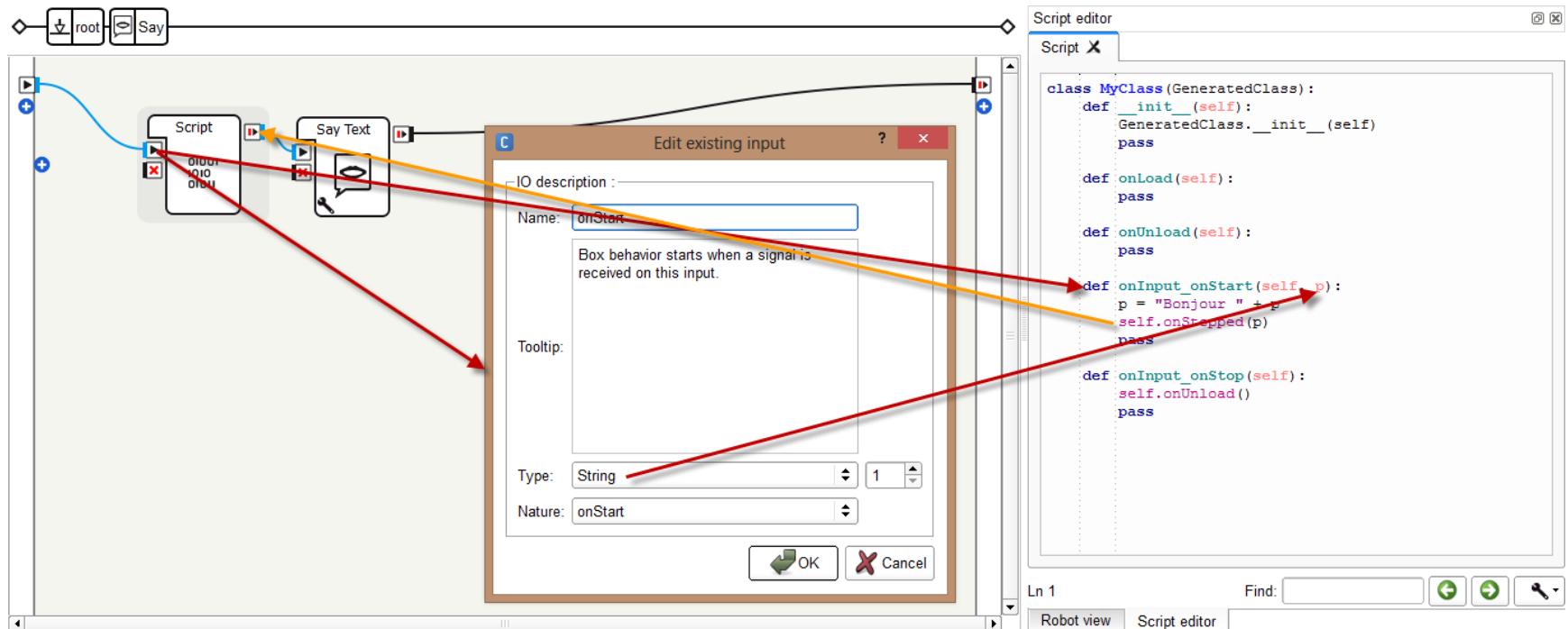
Face Recognition

Exercice



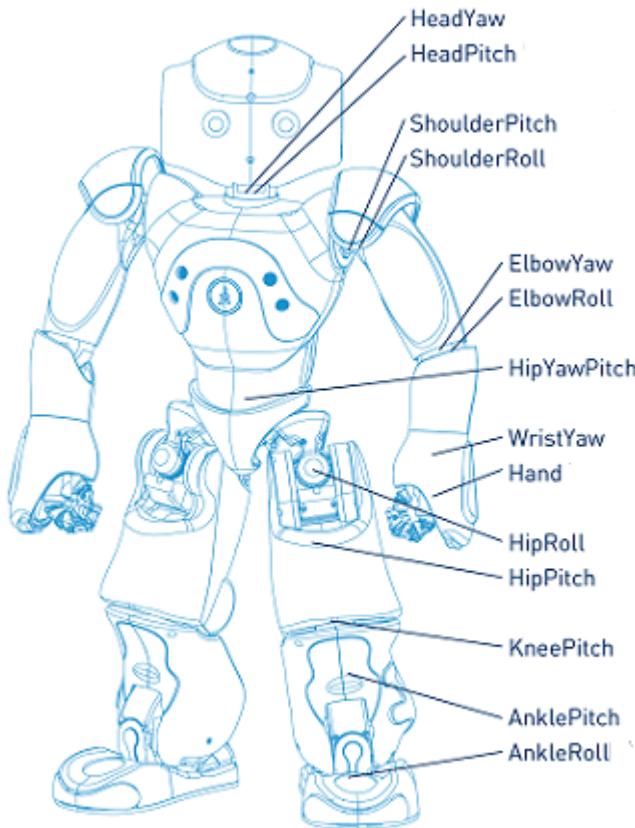
Script

Python code



Animations

Motions

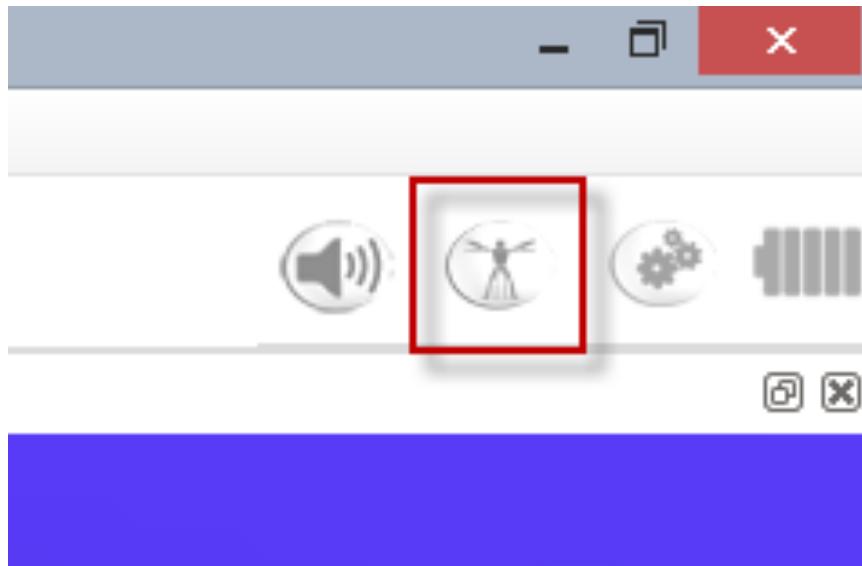


Motors position in Robot

- Head yaw and pitch
- Shoulder pitch and roll
- Elbow yaw and roll
- Hip yaw pitch
- Wrist yaw
- Hand
- Hip roll and pitch
- Knee pitch
- Ankle pitch and roll

Animations

Animation mode



Animation mode



Head and both arms



Head



Left arms



Nothing



Head and right arms

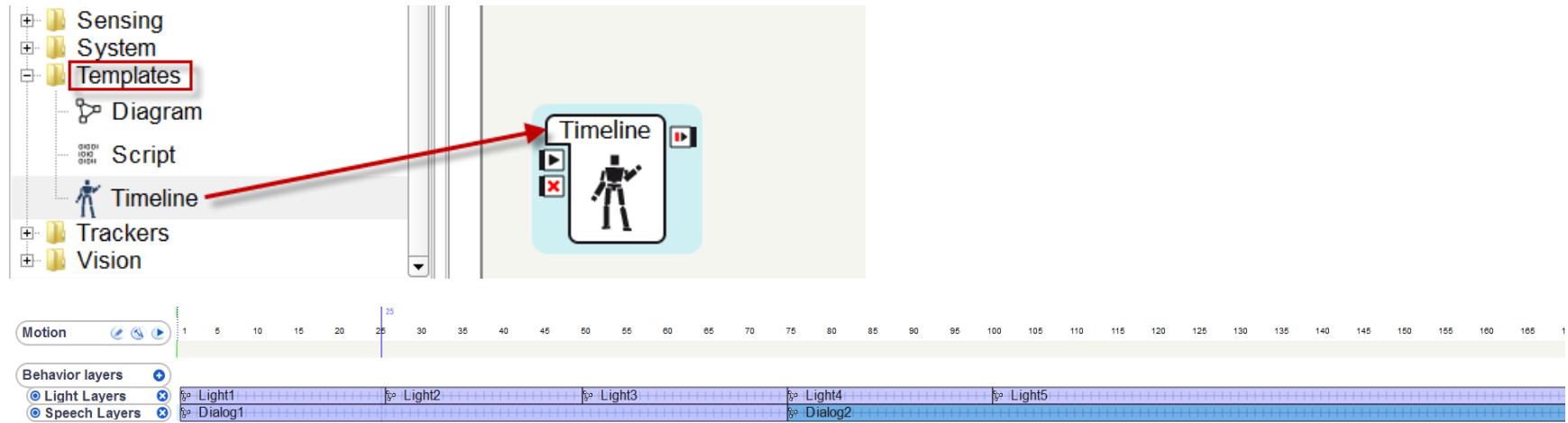


Right arms

- Click to animation button
- Move joint of the robot
- You can store position saying "Store"

Animation

Timeline



➤ Motion

- The behavior timeline = 25 frame per second

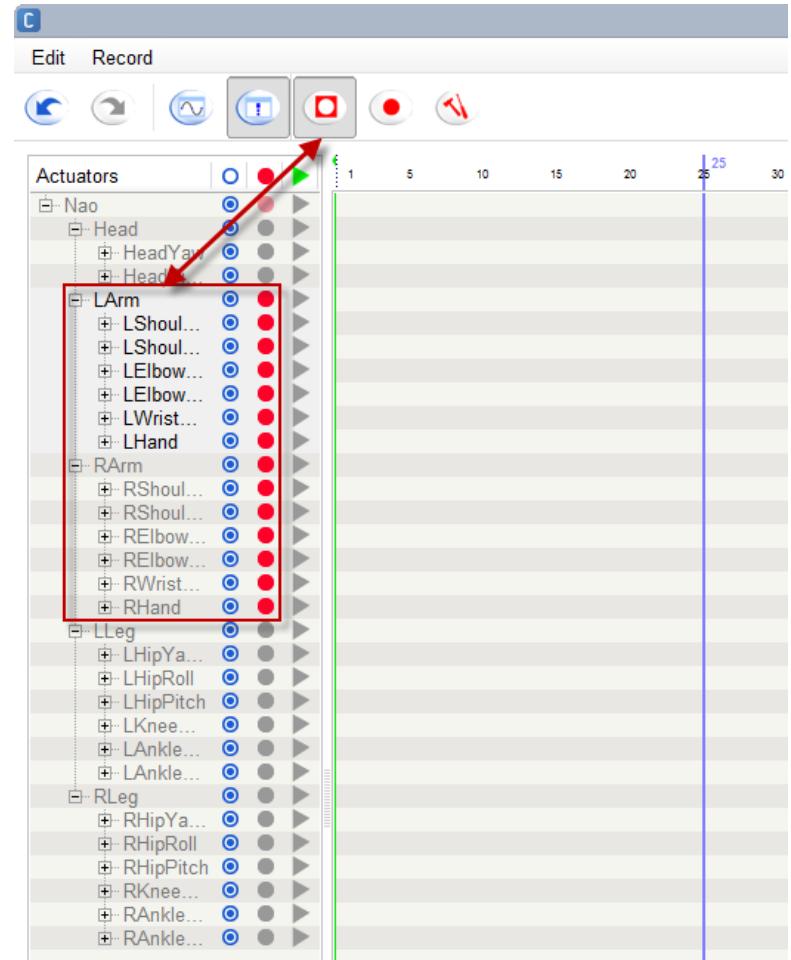
➤ Behavior layers

- Light
- Speech

Animation

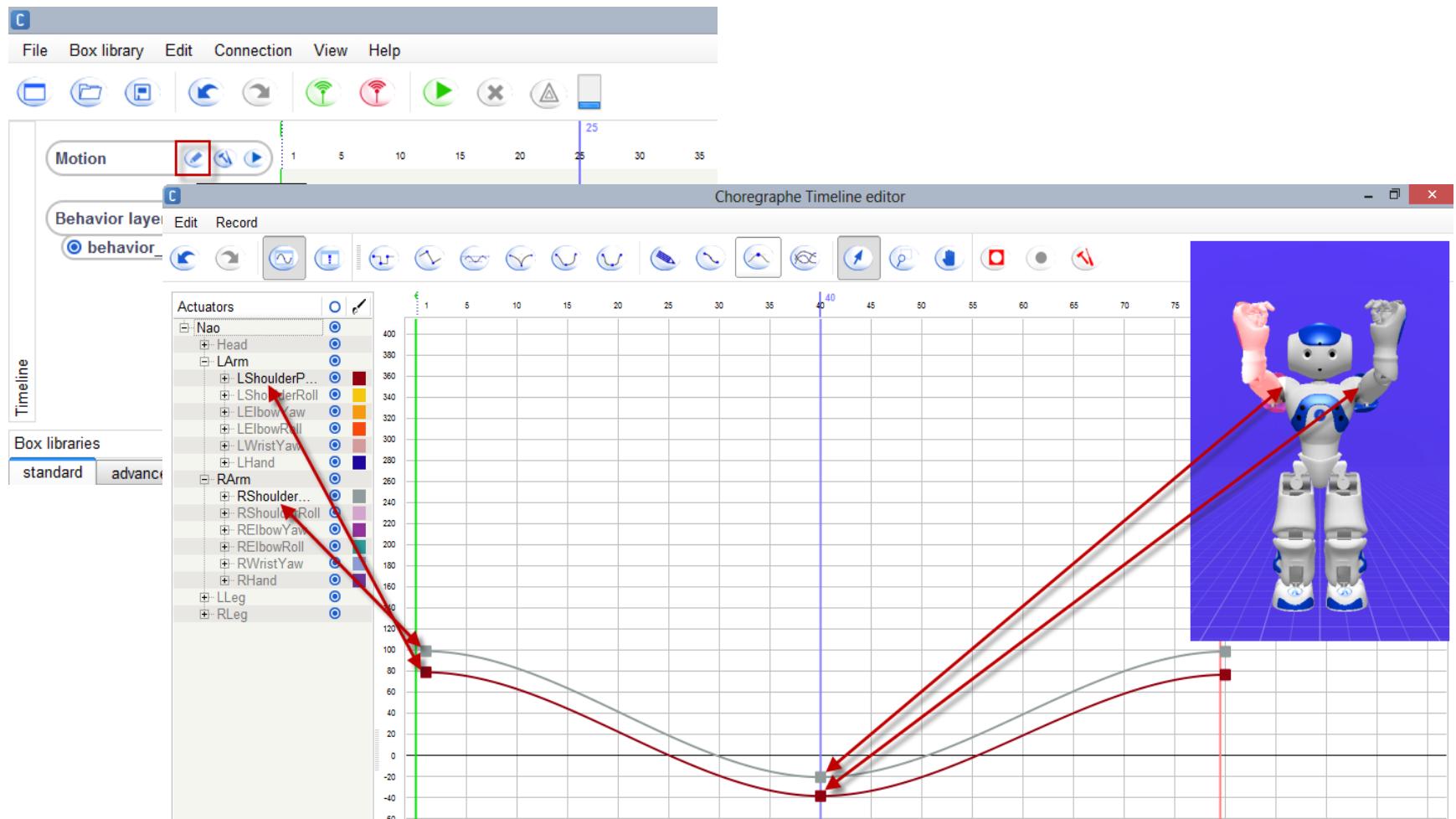
Record mode

- Switch to record mode
- Use red button to focus on specific engine
- Start recording



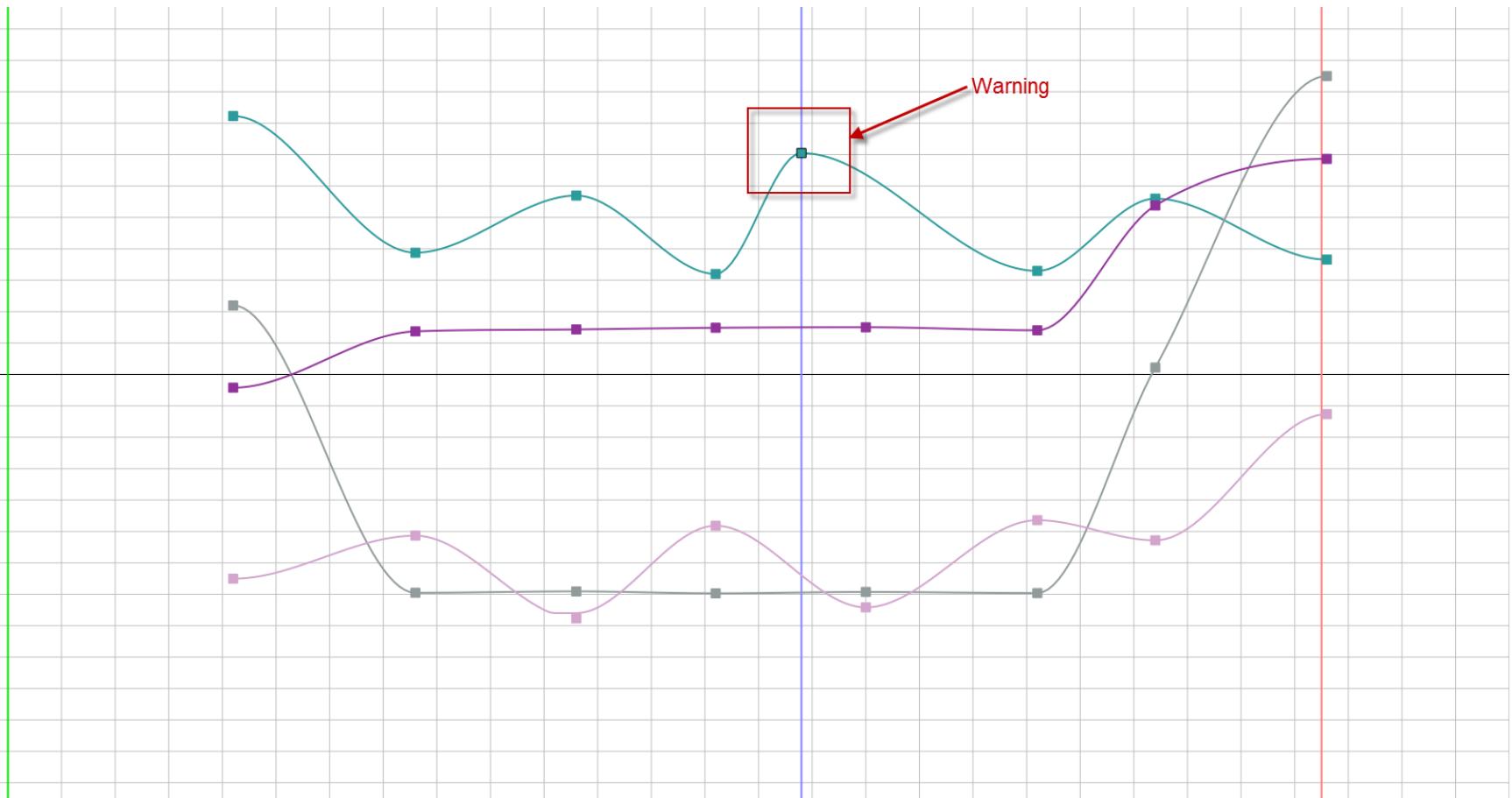
Animation

Curve



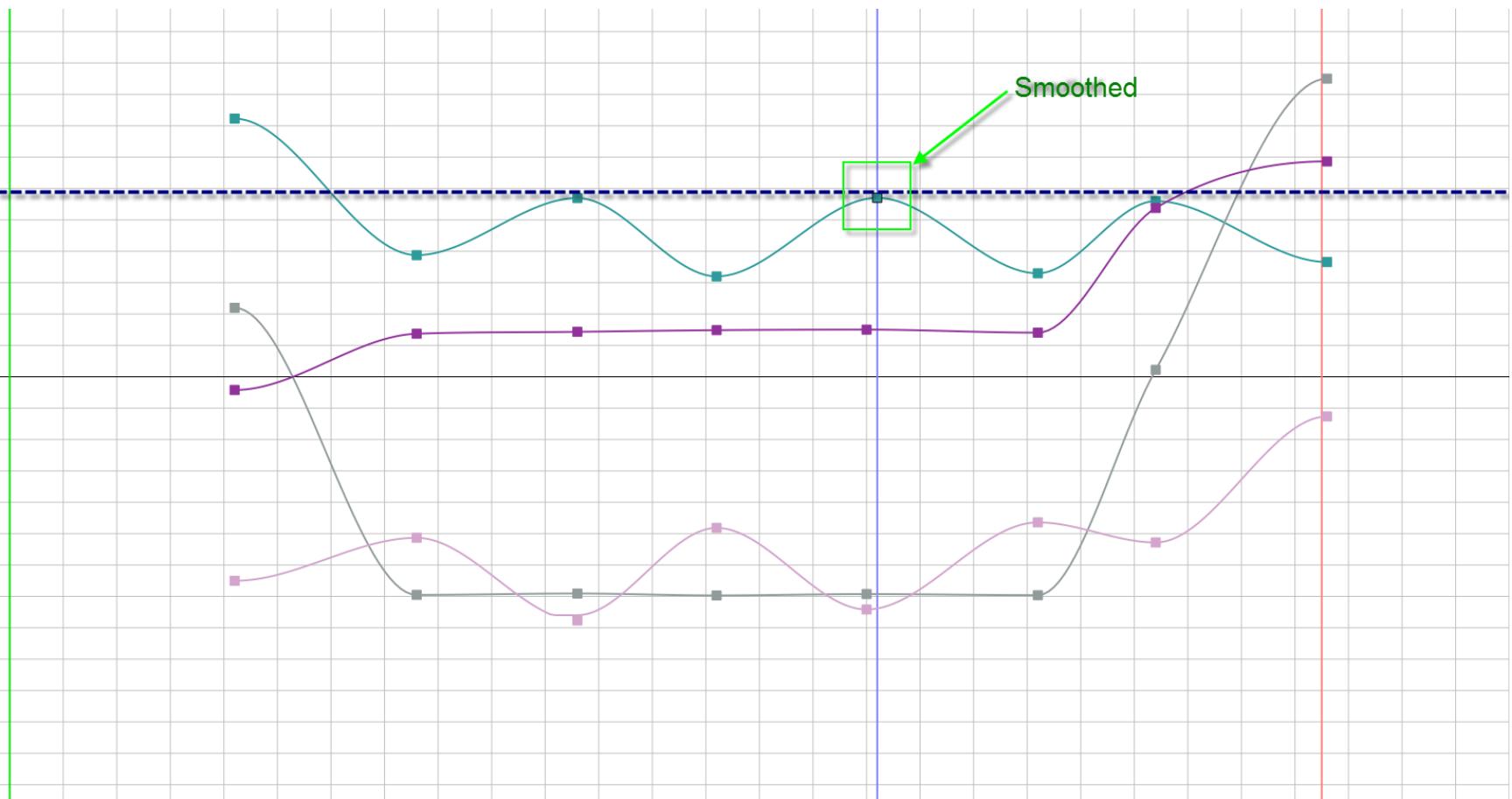
Animation

Smooth your movements



Animation

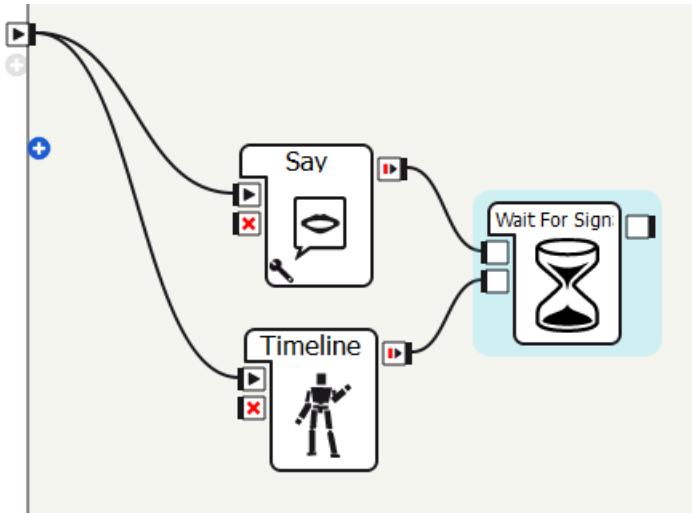
Smooth your movements



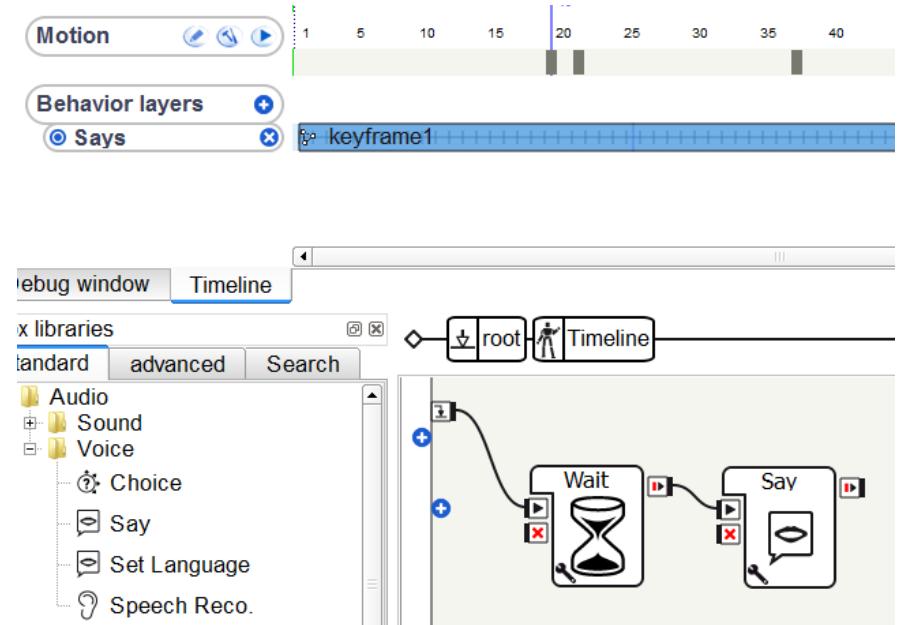
Animation

Sync your animation and your speech

With wait for signal box



With the timeline

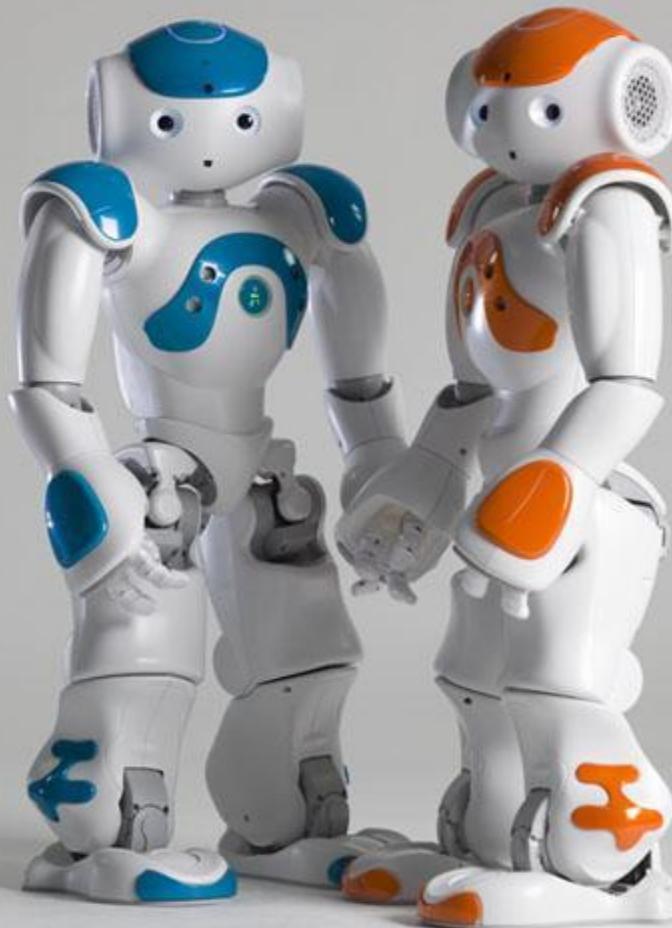


Animations

Exercice

Choregraphe

Questions



Thanks for your attention

For more info:

samer@aldebaran-robotics.com

