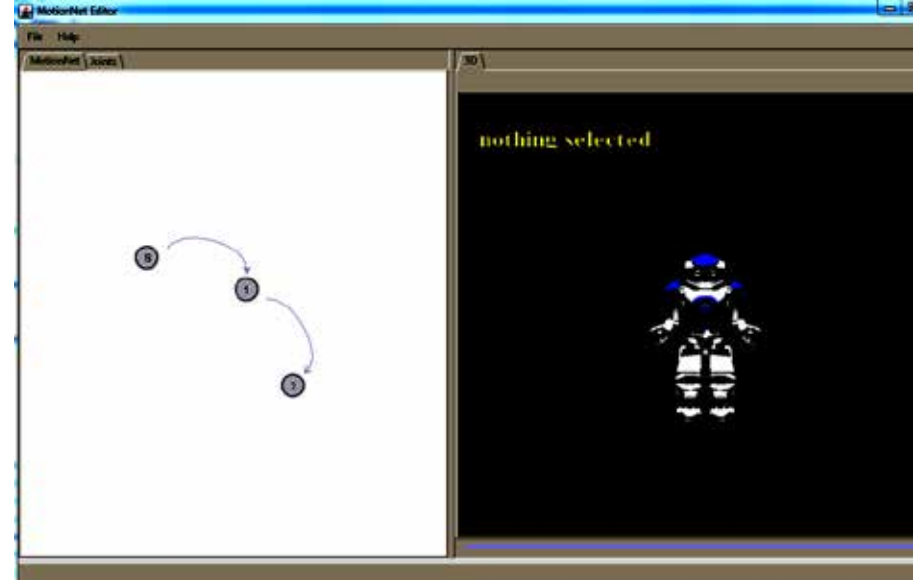# Development of Keyframe Motions:

- Construct a "motion net" with the MotionEditor
- Modify keyframes
- Testing Keyframe Motions
- Modify existing keyframes files
- Using keyframes in RoboNewbie
- Problems during installation?

Construct a motion net with MotionEditor

(the net is actually only a linear sequence of connected keyframe nodes, no branches, no loops)
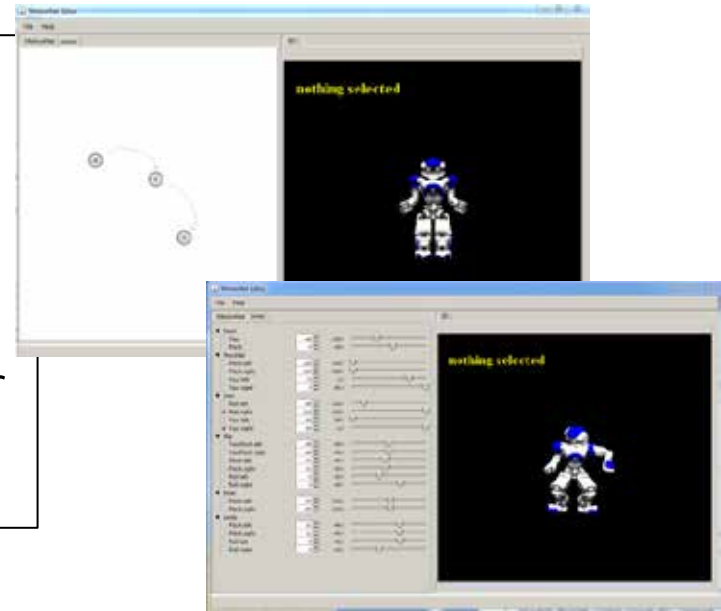

Left Window, button "MotionNet" (left upper corner):

- Create new keyframe nodes:

  right mouse klick, select "keyframe"

- Create transitions:

  select source node, right mouse click, select "transition", connect with target node.

- Define transition time:

  Select transition arc, select button "joints" (left upper corner), Specify duration in milliseconds

Modify keyframes

By creation, keyframes are in an initial pose.

Starting keyframe "S" is only placeholder for unknown starting pose (don't modify).

Left Window, button "MotionNet" (left upper corner):

- Select keyframe node by left mouse click (becomes lighted)

Go to Right Window:

- Select body part, left mouse click, move to desired position.
- You can rotate the whole robot using left mouse click in free space.

Go to Left Window, select button "joints" (left upper corner):

- You can change numerical values and see results on the right.

Testing Keyframe Motions

- Save your keyframes under the fixed name "**test.txt**"
  in the directory: „[RoboNewbie-root]/keyframes"
- Run Agent_KeyframeDeveloper
  from package examples. agentKeyframeDeveloper.
  Then the agent performs the implemented motion.

Agent_KeyframeDeveloper performs the
keyframe motion of the file "**test.txt**" repeatedly:
  - It stands up after falling down
    and continues with the motion.
  - Whenever you save new keyframes to "**test.txt**",
    it switches to the new version
    (no need to start the program again).

Modify existing keyframes files

You can modify existing keyframe files:

- Open a keyframe file from directory: „[RoboNewbie-root]/keyframes" in the MotionEditor.
- The keyframe net appears on the left side.
- You can change as described before (create, copy, delete, modify keyframes and transitions).
- Write back the changed file.

 You can also modify keyframe files by common text editors, e.g. to modify transition times.

A left/right symmetric copy of a keyframe file can be generated by examples.agentKeyframeDeveloper.OtherSideGenerator.java

Using keyframes in RoboNewbie

- Save your keyframes from motion editor as a file "<name>.txt"
  in the directory: „[RoboNewbie-root]/keyframes".
- Make it available by extending class KeyframeMotion in package keyframeMotion.
  Extension must be done at three places similar to existing keyframes
  (compare e.g. occurences of WALK_FORWARD_SEQUENCE):
  1. Define a name for your KeyframeSequence
  2. Connect the name to your file "<name>.txt"
  3. Define a setter function to run the motion

- Then you can call it in your program by your new setter-function
  (as it can be seen e.g. in agent_SimpleSoccer).

Problems during installation?

For the installation of the MotionEditor (ME) you need Java3D .
We have used version 1.5.1 from https://java3d.java.net/binary-builds-old.html
(The newer version 1.5.2 from https://java3d.java.net/binary-builds.html
was not tested up to now.)

Sometimes the installer of java3D does not place the files to the correct places in the jre.
When calling the ME you get some error message and its right screen remains empty.

In this case you can download the files for 64 resp. 32 bit versions from
http://download.java.net/media/java3d/builds/release/1.5.1/java3d-1_5_1-windows-amd64.zip
http://download.java.net/media/java3d/builds/release/1.5.1/java3d-1_5_1-windows-i586.zip

After unpacking you can move the files to the correct locations:
    j3dcore.jar, j3dutils.jar, vecmath.jar   should be in   "c:\Program Files\Java\jreXXX\lib\ext"
   the ddl-files   should be in: "c:\Program Files\Java\jreXXX\bin"
       (actually only j3dcore-ogl.dll   for 64 bit,   some more dll-files for 32bit versions)
Be sure that you move the files to the java-installation that is used by the motion editor.