RoboTutor

User Guide

December 23, 2013

Anass Drif
Hans Gaiser
Jethro Tan
Pim Veldhuisen
Koen V. Hindriks

Delft University of Technology

TUDelft
Delft
University of
Technology

Challenge the future

Contents

Introduction

This document describes the actions required to use the robotutor presentation software. It is intended for end-users and hence does not go into detail on technical aspects.

Chapter 1

Required Hardware

Robotutor requires an Aldebaran NAO robot with an Intel CPU running software version 1.14. Other software versions might also work but are untested. A NAO with motorized fingers is recommended for added motion interaction.

To control the robot and run the presentation, a local computer is also needed. This can be any device running a recent version of Windows. It must be capable of audio playback and have Microsoft Powerpoint installed. Other presentation software will not work. If the Turning Point audience response system will be used in the presentation, version 5.1 of its software must also be installed.

Chapter 2

Installing Robotutor

2.1 Preparing the robot

Note: If a there is a NAO available which has the robotutor software already installed, preparing the NAO might not be necessary.

2.1.1 Connecting to the robot

To install the software on the robot we must first connect with it. Two types of connection are needed; file transfer and command transfer. There are serveral implementations available for this. For example, on Linux the scp and ssh commands can be used, on Windows WinSCP and PuTTY can be used. Using these methodes a connection should be made to the NAO. The IP address of the NAO can be found most easily by pressing it's chest button and listening to his response. Alternativly Choreographe or arpscan could be used. The default SSH user/password is nao/nao.

2.1.2 Installing software on the robot

Copy the distibuted files to the home directory(`/home/nao`) of the NAO (Using scp/WinSCP), then run the following command to give the executable sufficient permissions:(Using ssh/PuTTY)

chmod +x ./robotutor-server

Additionally, if you want to take pictures with the robot, these are stored in `/var/www`. This requires that this directory is writeable. If this if not yet the case, this can be achieved by running the following command as a superuser: Use `su` to become superuser. The default password can be `root` or `nao`. Then run the following command:

chmod -R 777 /var/www

2.2 Preparing the local computer

If you want to playback the NAO's voice and sound via the local computer instead of the NAO's interal loudspeakers, you will need to install pulse audio on the local computer. The robotutor .tar file contains pulse audio for the NAO. You will need to connect the NAO to the computer's pulse audio server. As said earlier, the computer must run Powerpoint 2007 and, if used, Turingpoint 5.1. Note that Turningpoint must be configured to start with PowerPoint. To ensure this happens, tick the checkbox during the installation of Turningpoint. The RoboTutor software can be used without installation, as long as the files are available on the presentation computer.

Chapter 3

Preparing A Presentation

The first step in creating a robotutor presentation is creating a regular slideshow in Microsoft PowerPoint. It can also include polling sildes made by the Turning Point software. The robot will later use this slideshow in his presentation. The next step is to create an presentation script. This is a text file in wich the robots behavior is described. Most importantly it contains the text that the robot will speak. Within this text commands can be embedded.

3.1 Commands

3.1.1 slide

The command "slide" can be used to control the slideshow. This command has 3 modes; it can be used without argument to go to the next slide, it can be used with a number to go to a specific slide, or it can be used with an +/- sign followed by a number to go to a slide relative to the current slide. See the following examples.

Command	Result
{slide}	Go to the next slide
{slide|1}	Go to slide 1
{slide|7}	Go to slide 7
{slide|+1}	Skip 1 slide ahead/Go to the next slide
{slide|+8}	Skip 8 slides ahead
{slide|-5}	Skip 5 slides backward

3.1.2 Behaviors

There are three types of behaviors that the Robotutor uses. The first type consists of special behaviours that are not meant to be used during the presentation, but to start or stop the robot. The second type consists of specific behaviours. These are behaviours that contain specific gestures that may be used in the presentation, such as point to the left or the right, the NAO introducing itself, and the NAO indicating the position of it's sensors. In the script, these behaviours can be exectuted as in the following example: "{behavior|robotutor/specific/Me}". The third and last type of behaviours are the generic ones. The are small body movements that can be exectuted randomly throughout the presentation to make the robot look more lively. The RoboTutor comes with a number of behaviors that can be used. Additonal behaviors can be created using Choregraphe. These behaviors must then be uploaded to the behaviors folder on the robot. After restarting the robot, the new behaviors can be used in the script. The same method can be used for third party behaviors.

The following behaviors are included with the RoboTutor.

- generic - Capisce
- generic - ConvergeHands
- generic - HandOverLeft
- generic - HandOverRight
- generic - PushAsideBoth
- generic - PushAsideLeft
- generic - PushAsideRight
- generic - SpreadBoth
- generic - SpreadLeft
- generic - SpreadRight
- special - MotorOn
- special - RaiseHandSitting
- special - SitDown
- special - SitDownAndDie
- special - Squat
- special - SquatAndDie

- special - StandUp
- specific - BodyBuilder
- specific - Bow
- specific - Dance
- specific - Facepalm
- specific - HelloEverybody
- specific - Me
- specific - PointForward
- specific - PointOutCameras
- specific - Quiet
- specific - Quiz
- specific - RandomNo
- specific - RandomYes
- specific - ShowBiceps
- specific - ShowLeft
- specific - ShowRight
- specific - SideStepRight
- specific - SoccerKick
- specific - Twinkle

3.1.3   Play a sound

The Robotutor can play wav files from it's internal memory using the command
 `{sound|file.mp3}`

3.1.4   Turning Point

Support for the Turning Point system is incorporated into the RoboTutor software. Two commands are used to implement it's usage. The first is the Turning Point Choice. The syntax is as follows:
 `{TurningPointChoice |branch 1 |branch 2 ... | branch n-1 | branch n | tie branch}`
The practical use of Turning Point in scripts is somewhat more complex due to the fact that the Turning Point Software is closed source and provides no way of interacting with it directly. Therefore, voting must be triggered through Powerpoint. The Turning Point commands then process the results. An example script is provided below.

```
Would you like me to do a dance or a soccer kick?

# Start timer
{slide}

# Wait for 10 seconds.
\pau=10000\

# Get results.
{slide}
\pau=2000\

Hum, let's see.
{turningpoint choice | Okay, I will do a soccer kick {behavior|robotutor/specific/SoccerKick}
```

```
| Okay, I will do a little dance {behavior|robotutor/specific/Dance}
| It seems you can't decide  }
```
. The second command that is available is the Turning Point Quiz. It is used for questions that have only one correct answer. It checks wheter the majority of the audience chose the right answer.
```
{TurningPointQuiz | <correct answer> | audience correct branch | audience incorrect branch>
```

3.1.5   Take an Image

It is possible to use the NAO's camera to take a picture. This is done using the command
```
 {show image}
```
A picture is then taken en inserted on a new slide. The slide command can then be used to view the image.

Chapter 4

Running A Presentation

When giving a presentation, firt put the robot in a standing position. If the robot does not attempt to do this when starting, the behavior Special/StandUp can be run from Choreographe. Next, connect to the NAO using PuTTY and run the RoboTutor server using the following command:

. .bashrc

./robotutor-server -a localhost

On the local computer, run the provided software. This provides you with a graphical interface to run the presentation. In the interface, simply enter the NAO's IP-adress, select the presentation script and start. The presentation can be interrupted when desired.