CRIDE Install

Install requirements and directions:

For the software component report to the web page
http://web.pdx.edu/~lukacm/projects .

It is required to have Ant (Apache-ant) if you desire to run CRIDE as
standalone application. The build file contains all class path of required libraries,
otherwise run the top of the tree as Eclipse project.

The robot behavior depends on multiple steps of settings. Each of them
can be during testing phase.

Preparation Phase:

The project requires one project directory and one library directory ../lib.
If you are using Eclipse, the lib directory can be located inside of the workspace
directory. This will contain all installed and locally available libraries.

JDK – Java 1.5 and > is supported and required. To run the robot, the SUN
JDK is required.

ALICE - binaries for Program-D v4.5 are included in the tree of the build
for convenience of the release. Soon to be moved to the lib/ directory. Alice
module depends on .aiml scripts and starts a server for local usage as the main
sentence generator. For aiml compatibility consult the Alice Foundation web
site. The settings or the Alice server are in the CoL/alice/conf directory and in
the CoL/alice. Check mainly the server.properties as it defines the most global
settings for the alice module. To properly install the alice module edit the file
CoL/alice/messages.properties and set up the absolute path to the alice module.

JMF – install it into a directory under the lib tree and initialize it using
jmfregistry. This utility will detect if available plugged-in usb cameras and allow
JVM using it system wide. To allow your webcam to be run using java, edit the
video.properties file in the CoL directory and specify your web cam. To get the
proper name of your webcam, run the jmstudio. (all these binaries are available
in the bin/ folder under your JMF installation directory.

JAI – Java Advanced Imaging, allows to speed up various processes by
running them natively using the HW graphic acceleration. Either install it to the
JAVA tree or install it locally in which case you will have to modify your shell
environmental variables appropriately..

LightDev – Libraries for music playing mp3. Download both the Music analyzer and the Pleditor. Include all libraries from the analyzer fist, then add all libraries from the pleditor excluding the ones included in the music analyzer. Also for the robot to start you must adjust the path to at least one mp3 music file in: CoL/devs/devs/musicpackage/messages.properties

Jconnector – download the latest version of the MySQL Java interface and extract it to the lib/ folder. Include all jars.

Sphinx4 – the java based speech recognizer should be used and all jars properly included. Remember to include the speech model files.

RXTX – now a standalone application should be installed from sources. To install, unpack on some location and type ./configure, make and make install. However, prior to installing it verify that the $JAVA_HOME is pointing to the desired JVM.

The following components components are optional and are used only for development.

OpenCV – should have a local system install. For the face recognition module (development) the openCV 3.1 should be used as the code was tested with this version.

Once you have all packages installed, there are two way how to run CRIDE. For latest sources, connect to https://darklands.mine.nu/reposCOL using svn. The user/password are provided on request. Checkout (svn checkout) the project CoL (WCOL is now unmaintained windows port of CoL).

Eclipse
Then edit the class path file in the Project configuration and import all installed jars. The JRE that you should be using is the one that has installed the RXTX.

Ant
In the root directory of the project is build.xml file that allows to build CoL using the ant maker. Just edit the top-level directory in the first paragraph and it should be done. Then type ant. In most of the cases if it does not compile, then you have a missing dependency.

Running Cride:

The CRIDE Framework depends explicitly on certain initial settings. It is set to start up 16 servos, one speech Synthesizer and one speech recognizer. To run CRIDE, only the global settings are required.

According to your installation you will be either using the freeTTS JSAPI or a windows installation (CloudGarden - purchase required).

Be sure you can use the serial port by installing and configuring the COMM API, to set up javax.comm.properties.

After downloading the source package, go to the root directory of the unpacked project and type 'ant'. If everything goes well type 'ant run'; this will launch the CRIDE application.

Panels & Commands

 – New – create a new robot
 – Scripting – is the main tool to control the robot
 – Vision Panel – the direct panel to the visual module
 – Speech panel – speech synthesis and (in the future) speech recognition
 – Networking Panel – the monitoring tool for the networking protocol – (client side)
 – Multitool – Server managing facility, for the Theater application
 – Editor – A simple text editor for modifying, robot scripts, behavioral scripts and other configs
 – Motor Panel = Allows to calibrate the servos
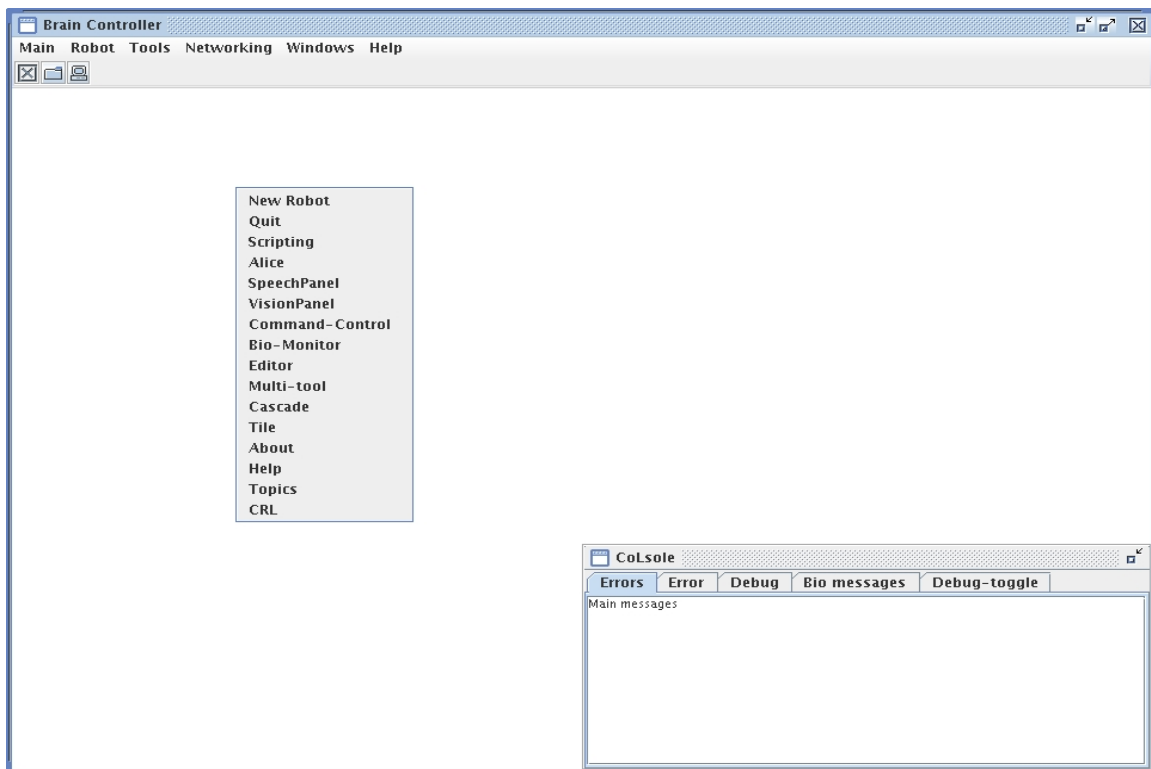
Other functions are being added daily.

<u>The Controls</u>

The interface to the robot in general follows theses steps:

1. Create a robot – this by clicking on SCRIPTING or RUN ROBOT.
2. Construct a robot – load a robot by reading a crl based robot constructor. This is actioned form the Scripting Interface
3. Configure the initial settings and verify the desired motion controlled by the software. The initial settings such as speed, acceleration and range can be configured or every single servo. This can be done from the Command Center Interface.
4. Configuration of the speech synthesizer and speech recognizer[1]
5. Launching the Alice module and loading of the appropriate files – this is done form the scripting interface.

To create the robot software structure either right-click for main menu or select from the Tab Robot one of the following options: "New Robot" - generate the robot but does not start the main interface, or "Scripting" - same as before but with the interface.

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1 The Currently Used Recognizer is Sphinx 4 configured at the startup.

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Brain Controller                                                    ⬚ ⬚ ⊠
Main  Robot  Tools  Networking  Windows  Help
⊠ ⬚ ⬚

                    New Robot
                    Quit
                    Scripting
                    Alice
                    SpeechPanel
                    VisionPanel
                    Command-Control
                    Bio-Monitor
                    Editor
                    Multi-tool
                    Cascade
                    Tile
                    About
                    Help
                    Topics
                    CRL

                                    CoLsole                            ⬚
                                    Errors  Error  Debug  Bio messages  Debug-toggle
                                    Main messages
```

The scripting window has Three main parts. The top left window is the command generation dump screen. The window bellow is the interface to Alice bot, and the bottom window is the network interface. The right hand-side Control window allows to load a robot from a crl file and prepares the robot for motor responses generation (Load and Build buttons). The Robot starters filed is the control part of the CRL scripting. Any script in CRL can be loaded and the robot will execute it. The Command button allows to write commands directly to the robot in the parsed MNS language. The speak button activates Alice bot and also allows to directly interact with it. The output of Alice will be seen on the Top window screen.

The speech recognizer toggle button turns on and off the speech recognition and the motion sensor enables and disables the motion tracking. The bottom window left is the network interface used for scripting while a group behavior is required.
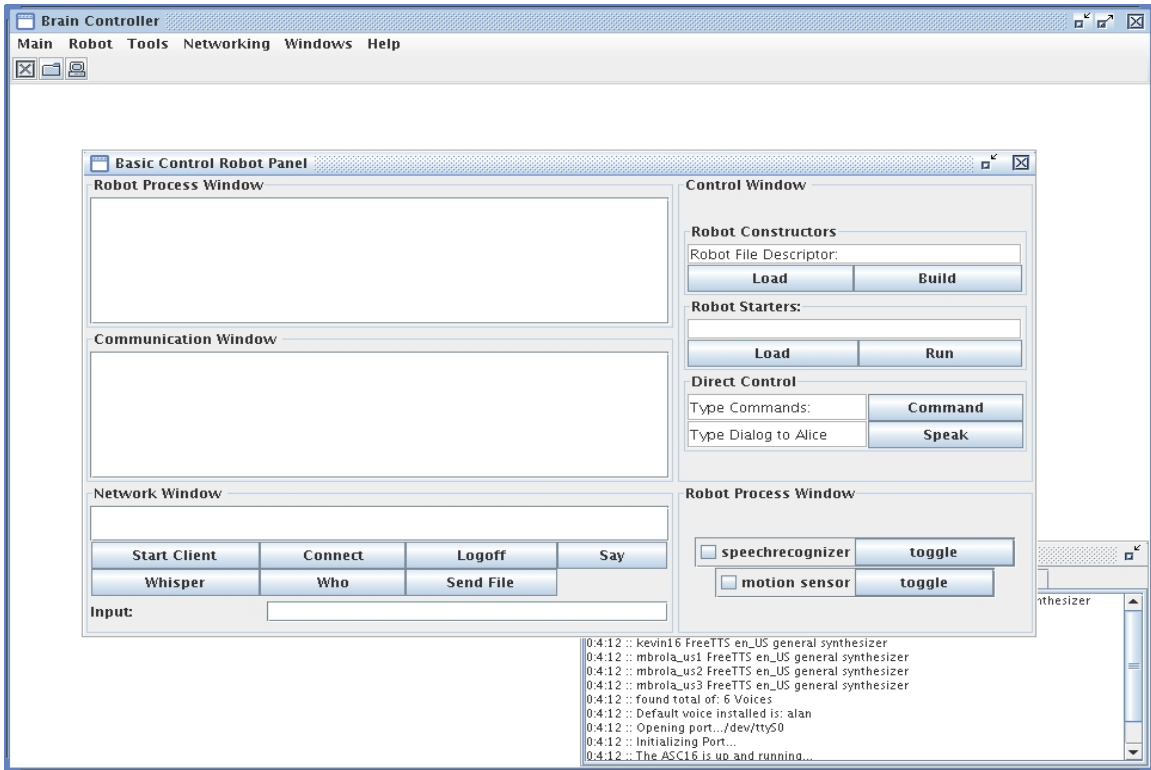
The robot construction using a crl script results in a carcass of the humanoid robot already in a individual mood state.
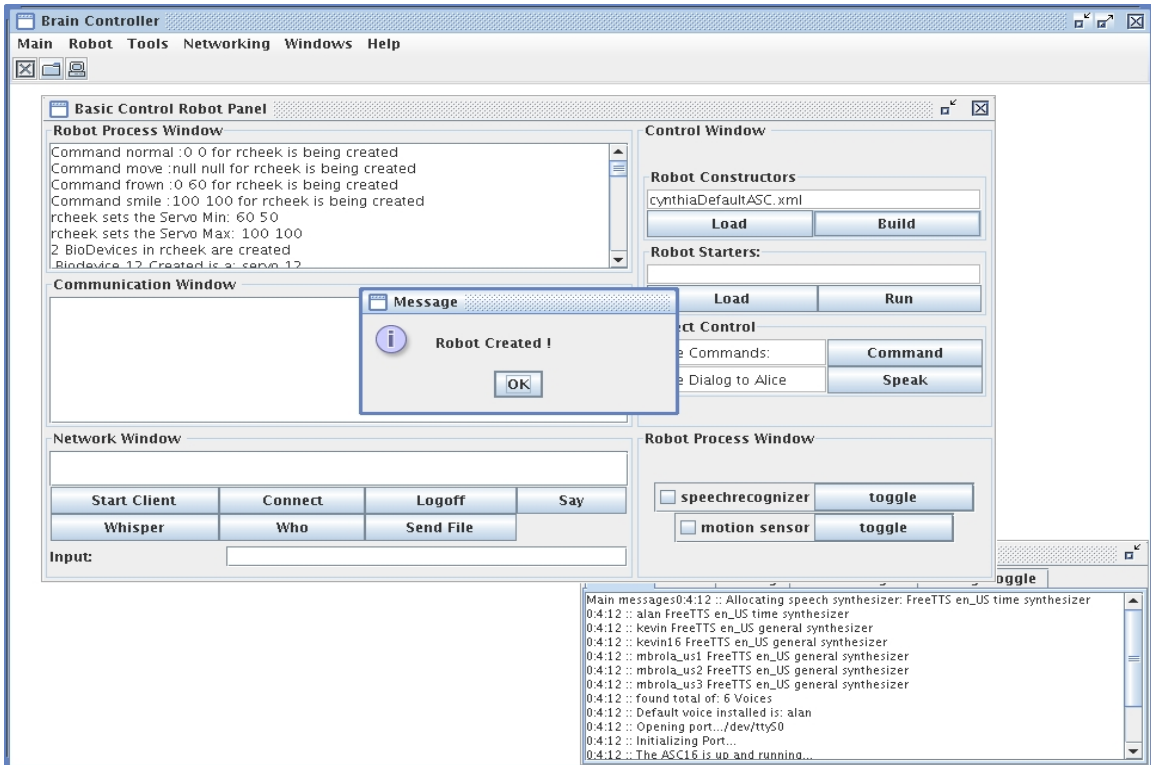
The Motor control center is important tool to calibrate humanoid robotic head. It allows to calibrate and test every single servo for the face mimics . Also allows to set the correct ranges for the servos .
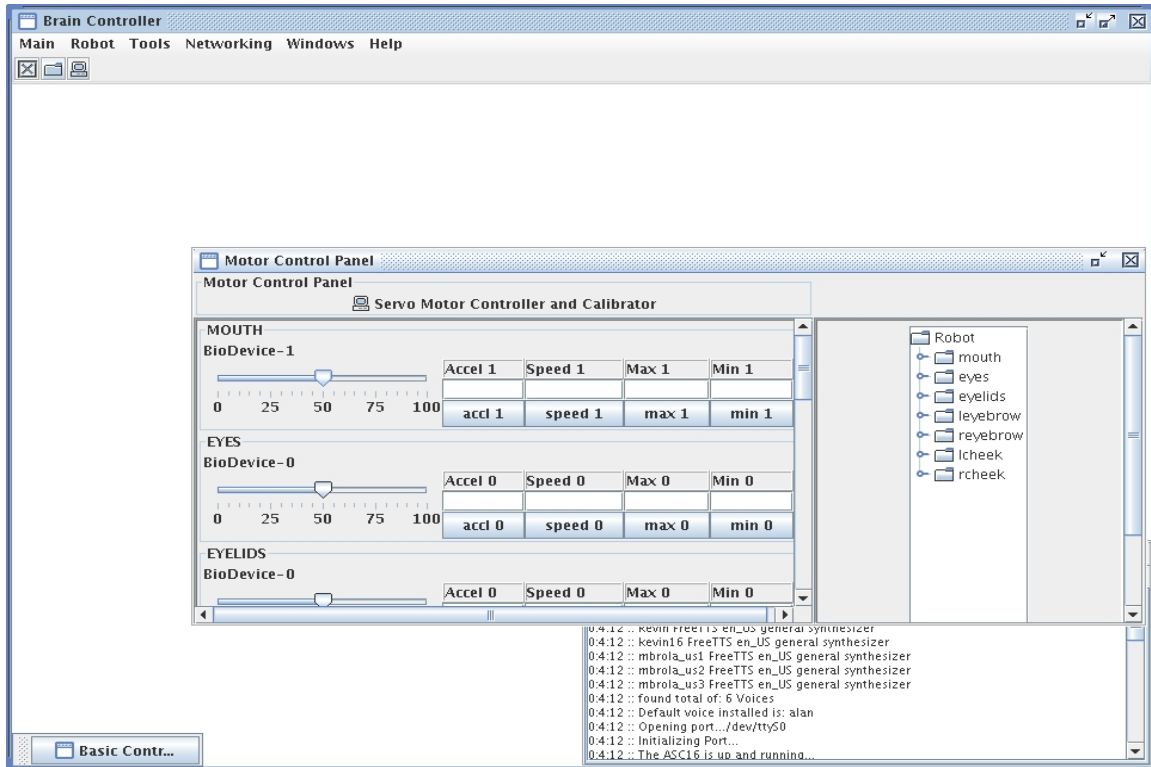

The speech panel allows to test all voices, set the speed of voice and test various pitch/speed combinations. The right hand side allows to follow the speech recognizer results.
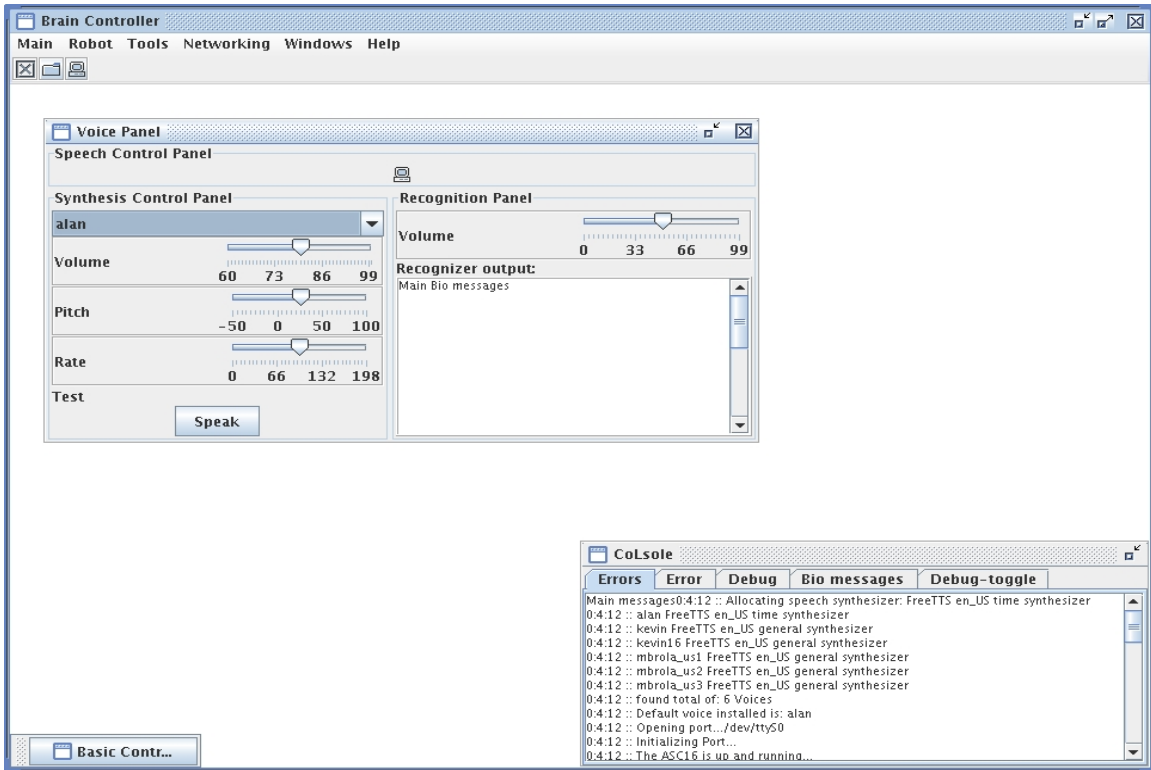
The vision window allows to activate the camera and the motion following mechanism.
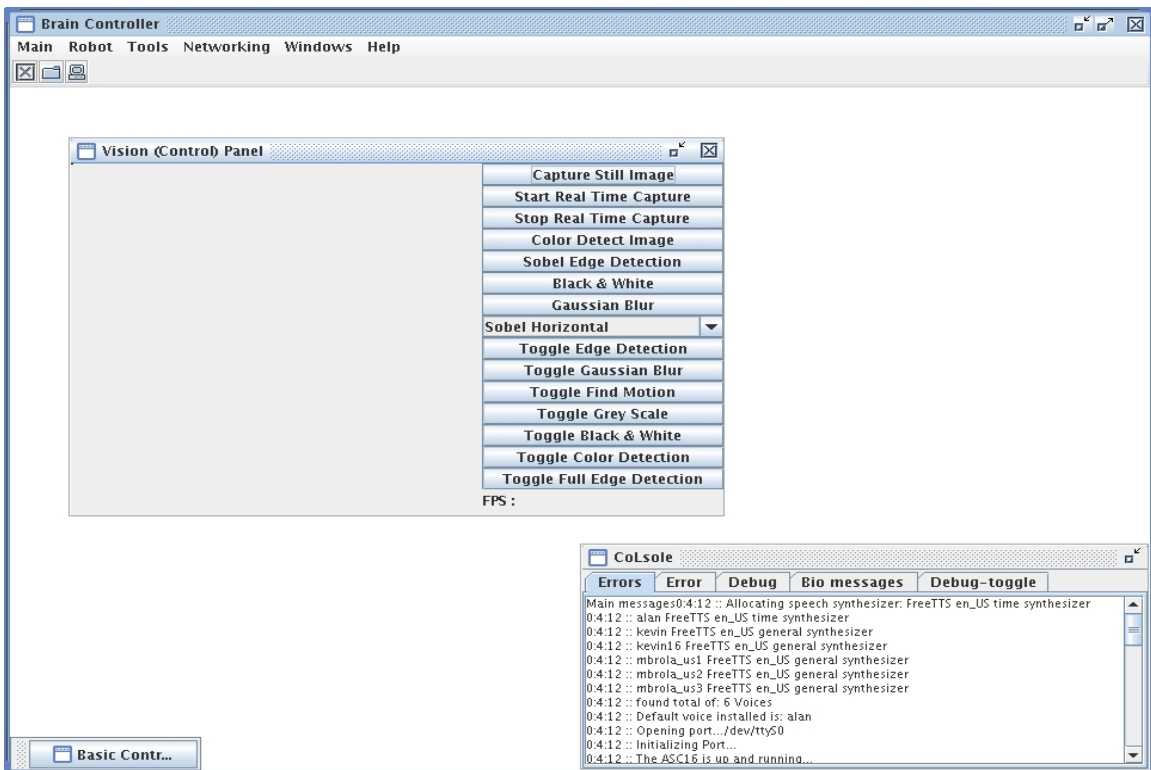
Bio monitor allows to set different moods of the robot . The middle panel shows the current robot state and the buttons allows to increase or decrease the energy level in the robot.
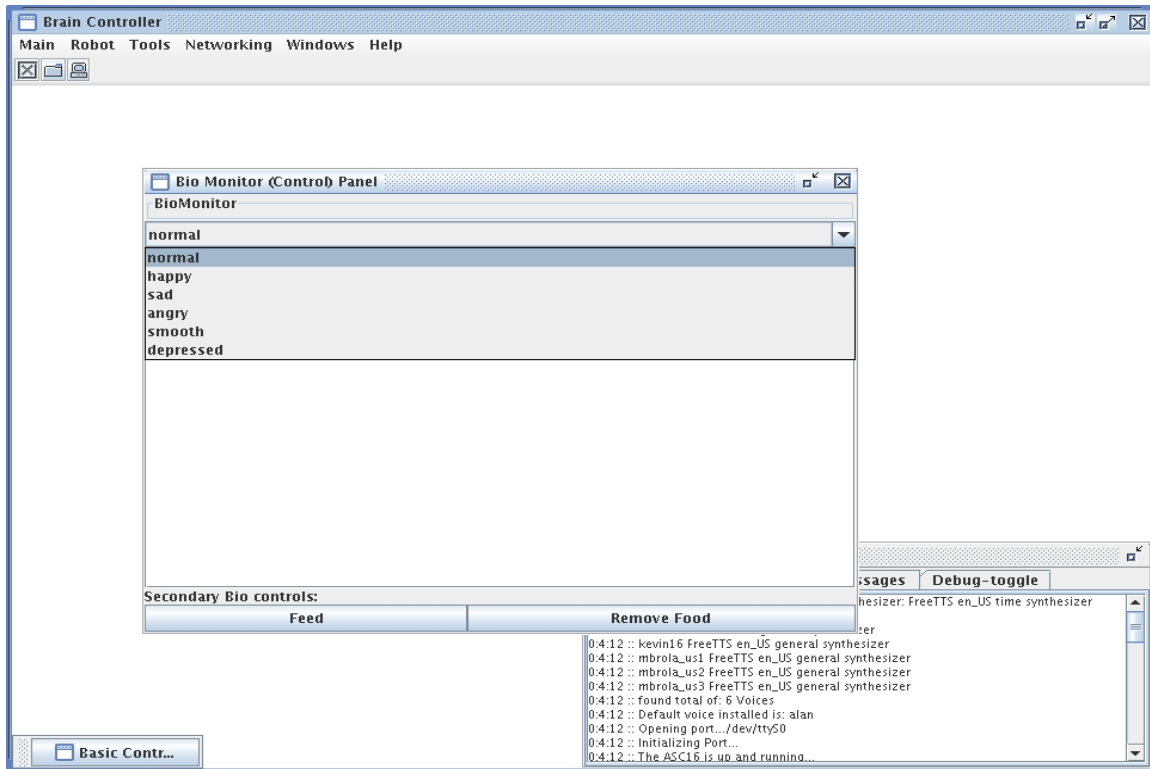
The robot using the Speech Recognition and the Vision together are consuming a lot of resources. The tested version is evaluated on a Single CPU Pentium 4, 2.8GHZ with 1 GIG of RAM. It is advised to use a better machine. The cluster version of robot is coming soon.

Add Ons

Some of the available software/hardware components are the following:

Vision Module

integrated motion detection, and motion tracking. Requires JMF and JAI, so as a decent USB camera.

Proximity Mapping sensor – Using a Milford5120 sensor board, this driver

allows to connect such a device and use it to obtain space information.

Dance Interface

requires litDev and pleditor from www.lightdev.com

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Quantum simulator

using Quark2 (quasi) the java quantum simulator, the robot's moods are now controlled by a quantum circuit.