

The iCub repository

- Material from:
http://eris.liralab.it/wiki/Better_Repository

Repository Organization

- *admin*: contains scripts for maintenance, of no interest for most developers
- *tutorials*: some tutorials on the software
- *pc104*: pc104 startup scripts
- *license*: keep information about licensing
- *app*: stores applications scripts and configuration files
- Code is now contained in two different directories **main** and **contrib**.
- *contrib* stores modules that can be compiled individually. This is a good place to upload new modules that are still under test. No automatic tests are executed on these directories.
- *main* this is the directory that contains the main build. This structure contains code that respects iCub standards (dependencies, supported operating systems and compilers, etc.). To avoid causing troubles to other users place here only modules you are reasonably confident will compile correctly. To help you check this automatic tests run periodically on this build.

main

- *main/conf* contains cmake helper code, including Find* scripts
- *main/src* contains source code.
 - *examples,*
 - *libraries,*
 - *simulators*
 - *tools*
 - *modules*
 - *core*

Compiling the *main* build

- Dependencies: and environment variables
 - Section 6.1: prepare your system
- Compiling and getting YARP
- Getting the iCub software
 - compile the iCub software
 - remember the difference between ICUB_ROOT and ICUB_DIR

CMake Options

- Optional modules:
 - `ENABLE_icubmod_*`: optional devices mostly for controlling the hardware (pc104)
- `CMAKE_INSTALL_PREFIX`
- `CMAKE_BUILD_TYPE = "Release"`
- Dependencies:
 - `ICUB_HAS_<package>`: read only
 - `ICUB_USE_<package>`: this variable can be enabled or disabled if we want to use a certain package or not

List of dependencies

- [http://eris.liralab.it/wiki/List of iCub dependencies as package names](http://eris.liralab.it/wiki/List_of_iCub_dependencies_as_package_names)
- Inside cmake:
 - <package>_INCLUDE_DIRS include directories
 - <package>_LIBRARIES libraries
 - <package>_FOUND true/false (redundant with ICUB_HAS_<package>)

Check out our dashboard

- automatic tests
- iCub and YARP:
 - <http://dashboard.icub.org>
- Continuous and Nightly builds
 - YARP: compilation and regression tests
 - iCub: only compilation

Using the software

- The iCub package provides
 - modules
 - libraries
 - cmake files to find packages

Using the software: modules

- Modules are just executables that end up in `$ICUB_DIR/bin`, it is enough to add this directory to your path
- check the documentation:
<http://eris.liralab.it/iCub/main/dox/html/>

Using the software: libraries

- Libraries are compiled within the build
- They also end up in `$ICUB_DIR/lib`
- But you need certain instructions for using them:
 - library to link
 - header files to add to the compiler
 - linker flags

Using the software: libraries

`find_package(ICUB)`

It defines:

`ICUB_INCLUDE_DIRS`: a list of directories that contain all include files

`ICUB_LINK_FLAGS`: linker flags (if any)

`ICUB_LIBRARIES`: all libraries exported in the build

`ICUB_MODULE_PATH`: cmake scripts (Find*)

individual libraries are also available for linking:

`ctrlLib`

`iKin`

`iDyn`

`iCubVis`

...

Find scripts

- scripts available in In YARP_DIR/conf (use YARP_MODULE_PATH)
 - FindAtlas
 - FindGtkPlus
 - FindGThread
 - FindACE
 - FindBoost
 - FindOpenCV
 - FindPortAudio
- scripts available in ICUB_DIR/conf (use ICUB_MODULE_PATH)
 - FindGtkMM
 - FindODE
 - FindIPP
 - FindIPOPT
 - FindESDCANAPI FindCFW2CANAPI FinPLXCANAPI

How are libraries organized

- We define C++ namespaces
 - iCub
 - iCub::contrib
 - iCub::mylib
- How header files are organized like namespaces:
`#include <iCub/mylib/header-file.h>`

Full template:

- Modules:

[http://eris.liralab.it/wiki/Simple template for modules in contrib](http://eris.liralab.it/wiki/Simple_template_for_modules_in_contrib)

- Libraries:

[http://eris.liralab.it/wiki/Simple template for libraries in contrib](http://eris.liralab.it/wiki/Simple_template_for_libraries_in_contrib)

See the tutorials:

- <http://eris.liralab.it/wiki/Manual> --> Section 9.9
- or, directly:
http://eris.liralab.it/iCub/dox/html/icub_tutorials.html