

SAI: Simulation and Active Interfaces

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This project is aimed at creating a common software framework for teams working on manipulation, robotics, robotic simulation and associated areas. The Simulation & Active Interfaces software environment combines rigid object simulation, 3D graphics rendering, and robotic controllers to produce an environment for simulating and interacting in real time with complex robots and sophisticated environments. It is being developed and maintained by the [Stanford Robotics Laboratory](#). The project is currently supported on Linux and OSX. Windows support is currently under development.

Modules Overview:

The project contains three modules: dynamics simulation, graphic rendering and control interfaces.

Dynamics simulation includes integration of real world physical models of robots and their environments, along with multi-point articulated body collisions and contacts. This feature is closed-source and provided as a binary, but will be open-source in future.

Graphic rendering allows articulated body models to be visualized in real-time along with graphically modelled environments. This capability is enabled using [Chai3d](#), an open source graphic and haptic rendering tool kit.

Control interfaces include a library of algorithms commonly used in robotic manipulation, such as dynamic model generation, whole-body control framework and general linear algebra. This set of libraries is called the [Standard Control Library](#) and is available as a separate open-source project. Support for linear algebraic operations is provided using [Eigen](#).

In addition to the above modules, there is a set of starter applications provided as a template to write new robotic applications. Each module is meant to work independently of other modules. And this is shown through the `sai_redis_multi_app` demo project under `applications/sai_redis_multi_app`. See `applications/sai_redis_multi_app/README.md` for more details.

Installation:

1. Install 3rdparty libraries. Follow instructions under `3rdparty/Installing3rdparty.md`
2. Compile scl
 - `$ cd ../applications/scl_lib`
 - `$ sh make_all.sh`
3. Compile an app
 - `$ cd ../applications/sai_redis_multi_app`
 - `$ mkdir -p build`
 - `$ cd build`
 - `$ cmake ..`

- \$ make

License:

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Support:

Contact manips.sai@gmail.com for questions regarding the SAI framework or to report issues.