

Connecting Python to an R process

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Using some *clients*, users can run R code from within the IPython Notebook. In a nutshell, we can evaluate an expression in R and convert the returned value to a Python object. Two possible client frameworks are:

- rpy2.
- pyRserve.

It is providing a low-level interface to R, a proposed high-level interface, including wrappers to graphical libraries, as well as R-like structures and functions. Among other things it has:

- use R's Rserve.
- C-level interface between Python and R (R running as an embedded process).
- R objects exposed to Python without the need to copy the data over.
- Conversely, Python's numpy arrays can be exposed to R without making a copy.
- In-place modification for vectors and arrays possible.
- R callback functions can be implemented in Python.

pyRserve is a library for connecting Python to an R process running Rserve as a RPC connection gateway. In contrast to rpy2 the R process does not have to run on the same machine, it can run on a remote machine and all variable access and function calls will be delegated there through the network. Among other things it has:

- native Python code.
- use R's Rserve.
- advantages and inconveniences linked to remote computation and to Rserve.
- all data structures will automatically be converted from native R to native Python and numpy types and back.

The client is nothing without server, therefore we have developed the Rserve. It listens for any incoming connections and processes incoming requests. The easiest way to install Rserve is to install it from CRAN, simply use:

```
>install.packages("Rserve")
```

Rserve comes now as an R package, so one way to start Rserve is from within R, just type:

```
>library(Rserve)
```

```
>Rserve(args = " --no --save")
```

After initialization Rserve daemonizes itself to work as a server (it will wait until all existing connections are finished).

IPython is an interactive shell to facilitate interactive computing, especially for code editing, mathematical expressions, plots, code/data visualization, and parallel computing. Among other things it has:

- A browser-based notebook with support for code, text, mathematical expressions, inline plots and other rich media.
- Support for interactive data visualization.
- Easy to use, high performance tools for parallel computing.