

GIRI Home

GIRI (Generic integration of R into i2b2)

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Short Description

The project follows a similar goal as the "R Engine Cell" of the University of Pavia and [rgate \(HERON\)](#) of the University of Kansas: To make arbitrary R functions available within i2b2. In contrast to these approaches, it is very simple to add new statistical functionality with GIRI. To do so, it is sufficient to write an R script and an optional XML configuration file to add what is known as a "Scriptlet" (a kind of an addon) that comprises one or more R functions. In particular, it is not necessary to implement an i2b2 webclient plugin for every newly added scriptlet individually. The end user simply selects the desired scriptlet from a drop down list from a generic i2b2 webclient plugin and has then several options to customize the input data (e.g. drag and drop patient sets / concepts). Afterwards, he clicks on "View Results" to start computations. The following results page can - depending on the scriptlet - consist of numerical / textual values, tables and plots. Additionally, all data can be exported as files.

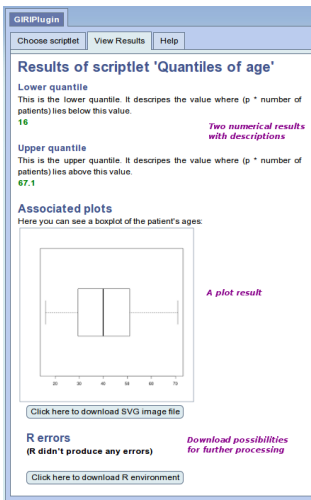
Examples

A simple scriptlet could compute two quantiles of age from a previously selected patient set. The end user can define the p values. Here is a step-by-step guide to using the scriptlet:

Specify the input data:

The screenshot shows the GIRIPlugin web interface. At the top, there are tabs for "Choose scriptlet", "View Results", and "Help". Below the tabs, a dropdown menu is open, showing "Quantiles of age" selected. To the right of the dropdown, there is a note: "Choose between several previously written scriptlets". Below the dropdown, the title "Quantiles of age" is displayed. Underneath, there is a prompt: "Please select a patient set and fill in two values for p." The "Drag and drop fields:" section contains a red button labeled "Click here to clear fields" and a note: "Define input data by dragging and dropping patient sets and concepts". There are two draggable boxes: "Circula-Male@18:51:46 [4]" and "Concept 1". Below these, there is a "Patient Set 2" box. The "Additional input settings" section has a note: "Type in additional parameters to customize the computation". It includes two input fields: "p for lower quantile" with a value of "0.02" and "p for upper quantile" with a value of "0.98".

Afterwards click on "View Results" to start the computation:



The scriptlet consists of two files that have to be stored on the server where the GIRI Cell is running. The first one is the R script including the following R code:

mainscript.r

```
GIRI.output["Lower quantile"] <- quantile(GIRI.patients[[1]]$age_in_years_num, as.numeric(GIRI.input[["p for lower quantile"]]))
GIRI.output["Upper quantile"] <- quantile(GIRI.patients[[1]]$age_in_years_num, as.numeric(GIRI.input[["p for upper quantile"]]))
boxplot(GIRI.patients[[1]]$age_in_years_num, horizontal=T)
```

Accessing input and output is possible by using special naming conventions (GIRI.patients, GIRI.input, GIRI.output...). Plots are always displayed.

The second file configures the R scriptlet through XML code:

config.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<giriconf:Rscriptlet xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:giriconf="http://www.i2b2.org/xsd/cell/giriconf/1.0/">
  <settings>
    <title>Quantiles of age</title>
    <description>Please select a patient set and fill in two values for p.</description>
    <passROutput>false</passROutput>
    <passRErrors>true</passRErrors>
    <plotDescription>Here you can see a boxplot of the patient's ages:</plotDescription>
  </settings>
  <additionalInputs>
    <input>
      <name>p for lower quantile</name>
      <description>Fill in a numeric value between 0.0 and 1.0, e.g. 0.05</description>
      <type>text</type>
      <lines>1</lines>
    </input>
    <input>
      <name>p for upper quantile</name>
      <description>Fill in a numeric value between 0.0 and 1.0, e.g. 0.95</description>
      <type>text</type>
      <lines>1</lines>
    </input>
  </additionalInputs>
  <customOutputs>
    <output>
      <name>Lower quantile</name>
      <description>This is the lower quantile. It describes the value where (p * number of
patients) lies below this value.</description>
    </output>
    <output>
      <name>Upper quantile</name>
      <description>This is the upper quantile. It describes the value where (p * number of
patients) lies above this value.</description>
    </output>
  </customOutputs>
</giriconf:Rscriptlet>
```

Settings, input variables and outputs are defined in this configuration file. For more information about creating scriptlets see the [notes for scriptlet developers](#).

The following slide show depicts a scriptlet that computes a Kaplan Meier plot:

Kaplan Meier Example

