Using R via PHP: R-php

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Introduction

R-php is an open-source project for the realization of a web-oriented statistical software.

A main feature of **R-php** is that exploits as "engine" the open-source statistical programming environment **R**.

Potential users of **R-php**:

- students either inside didactic facilities, such as computer laboratories, or at home through a simple Internet connection;
- users that are not expert about programming.

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R-php modules

R-php has two modules: *R-php base* and *R-php point-and-click*.

R-php base allows the input of **R** code in a text area.

R-php point-and-click is an interactive module that allows the following statistical analyses, so far:

- Descriptive Statistics
- Linear Regression
- Analysis of Variance
- Cluster Analysis
- Principal Component Analysis
- Metric Multidimensional Scaling
- Factor Analysis

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Software needed to install R-php

Apache: web server;

R: statistical language and environment;

PHP: *HTML-embedded* scripting language;

MySQL: relational database management system;

ImageMagick: collection of tools and libraries to manipulate an image;

htmldoc: generates indexed .html, Adobe PostScript, and .pdf files from .html "source" files.

Main features of R-php base

It has been implemented a control structure that does not allow the use of a set of **R** commands we think are dangerous for the safety of the server.

These commands are reported in a **MySQL** database, containing also a short description of what the banned command would do.

Besides the possibility to insert data directly through the **R** commands, there is the possibility to import data from a text file.

The output, with all the graphs, is visualized in a new window and can be saved in .pdf format.

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Main features of R-php point-and-click

The data input is done by loading an ASCII file from the user computer.

The file content is visualized in a new page as a "spreadsheet", managed by **MySQL**. In the "spreadsheet" it is possible to make some interactive operations.

After loading the data set, it is possible to choose a GUI among those proposed.

In the GUI are chosen the analysis options that the user wants to set up. These options are coded in **R** and this code is processed by the **R** programming environment.

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Description of R-php point-and-click

The output is visualized in a web page, containing the textual and graphical results of the performed analysis.

The output page allows other interesting operations, such as:

- the output saving, including graphs, in .pdf format;
- the saving of each single graph by means of a simple click.
- the saving of the used **R** code.

From a design point of view, the implemented code is formally the same for each GUI.

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Home page of the R-php site (http://dssm.unipa.it/R-php)