xplain Cheat Sheet

Important Links

xplain package on CRAN xplain web tutorial xplain cheat sheet xplain on GitHub

https://cran.r-project.org/web/packages/xplain/index.html http://www.zuckarelli.de/xplain/index.html http://www.zuckarelli.de/xplain/xplain_cheatsheet.pdf https://www.github.com/isugarelli/xplain

Purpose & Application

- xplain allows to write interpretation/explanation texts for statistical functions in the form of XML files.
- The user of the functions can read these explanations while working on his/her specific problems.
- xplain explanations can react to the user's results and provide meaningful insights related to the user's problem.
- For this, the xplain XML files can contain R code and can work with the return object of the user's function call.
- > xplain("lm(education ~ young + income + urban)")
- > Your R^2 is 0.11 which is quite low. There is a serious risk your model is misspecified. You should reconsider the selection of variables included in your model.

xplain XML files

<xplain>

Any valid xplain XML must be enclosed in an <xplain> block. Multiple <xplain> blocks per XML file are possible.

<package>

A <package> block combines all functions from the same package.

<function>

Within a <function> block, explanations/interpretations for the function as such or for specific elements of the return object can be provided.

<result>

Packages explanations/ interpretations related to one element of the function's return object.

Main attributes: Overview

name Name of the element (package, function, result).

lang Language (ISO code) of the explanation (e.g. "EN").

level Complexity level; integer number; cumulative, i.e. level=1 explanations will also be presented when level=2 or level=3 are called.

1 <xplain> 2 <package name = "stats"> 3 <function name = "lm"> 4 <title>This is about lm</title> 5 <text>...</text> 6 <result name = "coefficients"> 4 <title>...<title> 5 <text>...</text> 4 <title>... 5 <text>... 6 7 7 7 8 6 6 7 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 8 7 8 7 8 8 7 8 8 7 8 8 8 9 9 Not case-sensitive

<title>

Structures explanations with headers.

<text>

The actual explanations/interpretations. Can include R code with references to the function's return object.

Attributes: Inheritance and necessity

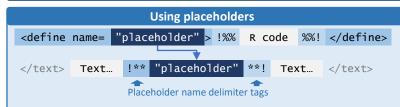
- Elements inherit attributes from higher-level elements;
 e.g., if only one language, definition on <xplain> level suffices. Lower-level attributes overrule higher-level.
- name attribute required for <package>, <function> and <result> elements.
- All levels shown, if no level is given to xplain().

Including R code

R code can be easily integrated into <text></text> elements:

Access the explained function's (<function name="...">) return object:

- Access the full return object with @. Example: summary (@).
- Access the current <result name="..."> item of the return object with ##.
 Example: mean(##).



Example: <define name="s">!%% summary(@) %%!</define>
<text>And here is the summary !**s**! for your model</text>

Iterating through (items of) the return object

- To apply a <text> element to a whole matrix, data frame, vector or list, use the **foreach** attribute.
- Value of foreach defines what is iterated over and (for 2D structures) in which sequence; items is for lists.
- "columns"
 "rows, columns"
 "columns, rows"

foreach =

"rows"

- \$ is a placeholder for the index of the current element. "items"
- Example (shows all 1st column elements of the coefficient matrix): <text foreach="rows">!% @\$coefficients[\$,1] %!</text>

Calling xplain()



call Call of the explained function as string
xml Path of the XML file providing the explanations

lang
Language of the explanations to be shown (default means English)

Complexity level of the explanations (cumulative! Default means "all")

2

Wrapper function with xplain.getcall()

Im.xplain <- function(formula, data, subset, weights, na.action,
method = "qr", model = TRUE, x = FALSE, y = FALSE, qr = TRUE,
singular.ok = TRUE, contrasts = NULL, offset, ...) {
 call<-xplain.getcall("lm")
 xplain(call, xml="http://www.zuckarelli.de/example_lm.xml")
}</pre>

Joachim Zuckarelli 2018 Licensed under the Create Commons 4.0 License

isugarelli

joachim@zuckarelli.de