Package 'smarter'

January 29, 2025

Title A Collection of Modified R Functions to Make Basic Coding More
Convenient

Version 1.0.0

Date 2025-01-25

Description A collection of recycled and modified R functions to aid in file manipulation, data exploration, wrangling, optimization, and object manipulation. Other functions aid in convenient data visualization, loop progression, software packaging, and installation.

Encoding UTF-8

RoxygenNote 7.2.3

Imports devtools, RCurl, Rcpp, gplots, grDevices, stats, usethis,
rmarkdown

LinkingTo Rcpp, RcppArmadillo

License GPL (>= 3)

NeedsCompilation yes

Author Paul Little [aut, cre]

Maintainer Paul Little <pllittle321@gmail.com>

Repository CRAN

Date/Publication 2025-01-29 17:40:02 UTC

Contents

---

bin_cont_var   *bin_cont_var*

Description

Transform numeric vector into discrete bins

Usage

```
bin_cont_var(VAR, NUM_GROUPS, ROUND = 3, binNUM = FALSE)
```

Arguments

VAR	A numeric vector of values to bin
NUM_GROUPS	A positive integer for the number of bins
ROUND	A nonnegative integer for displaying bin labels through binned intervals
binNUM	Boolean set to TRUE to map bins to numbers. Otherwise, bins are characterized by intervals

Value

A character or integer vector of collapsed/binned values

---

calc_JK *calc_JK*

Description

calc_JK

Usage

```
calc_JK(EST, LOO_EST, alpha = 0.05)
```

Arguments

EST	A numeric vector of parameter estimates
LOO_EST	A numeric matrix of parameter estimates where columns correspond to each parameter and rows correspond to each leave one out estimate
alpha	A numeric value for constructing (1 - alpha) * 100% confidence intervals

Value

A list of numeric jackknife summary mean and confidence intervals

---

chkInst_PACK *chkInst_PACK*

Description

Check package is installed

Usage

```
chkInst_PACK(PACK)
```

Arguments

PACK	A character string for a package name

Value

Boolean for TRUE if package installed and FALSE if package is not installed or located

chk_threads	*chk_threads*

Description

chk_threads

Usage

```
chk_threads(NN, ncores)
```

Arguments

NN	A positive integer for total iterations to loop over
ncores	A positive integer for number of threads

Value

An integer for number of threads.

collapse_var	*collapse_var*

Description

Collapse a subset of values within a vector into a new value

Usage

```
collapse_var(ORIG_VAR, ORIG_VALUES, NEW_VALUE)
```

Arguments

ORIG_VAR	The input vector
ORIG_VALUES	A subset of values from the input vector to be collapsed
NEW_VALUE	The new value to replace ORIG_VALUES in ORIG_VAR

Value

A character or numeric vector

---

logSumExp   *logSumExp*

Description

Calculates the log(sum(exp(x))) in Rcpp

Usage

```
logSumExp(x)
```

Arguments

x   A numeric vector

Value

A numeric vector

---

make_dummy   *make_dummy*

Description

Construct a dummy-coded matrix for a single variable

Usage

```
make_dummy(x)
```

Arguments

x   A numeric or character vector to convert to a dummy matrix

Value

A binary indicator matrix of ones and zeros

---

make_menu   *make_menu*

Description

Constructs an interactive menu for the user

Usage

```
make_menu(PROMPT, OPTS, INDENT = "    ")
```

Arguments

PROMPT	A character string prompt to the user
OPTS	A character vector where elements contain a number, then a closing parentheses, then the option value
INDENT	A character string for the amount of indentation from the left margin

Value

Character string of user's response

---

name_change   *name_change*

Description

Substitute a column name of a matrix or data.frame with a new name

Usage

```
name_change(DATA, ORIG_NAME, NEW_NAME)
```

Arguments

DATA	A matrix or data.frame
ORIG_NAME	A single character column name to alter
NEW_NAME	A single character to replace ORIG_NAME

Value

An updated data.frame with renamed fields

print_latex_table *print_latex_table*

Description

print_latex_table

Usage

```
print_latex_table(
  DATA,
  repeat_VARS = NULL,
  my_align = NULL,
  add_table = FALSE,
  fontsize = NULL,
  caption = NULL,
  label = NULL,
  midrule1 = NULL,
  latex_comment = NULL,
  ...
)
```

Arguments

DATA	A matrix or data.frame to present as a latex table
repeat_VARS	A string vector of colnames to avoid repeating values within a column
my_align	A string containing letters "l", "r", or "c" for left, right, and center alignment
add_table	Boolean set to TRUE to enclose tabular environment with table environment
fontsize	Defaults to NULL to not specify a fontsize. Otherwise, possible values are "tiny", "footnotesize", "small", "normalsize", "large", "Large", "LARGE", "huge","Huge"
caption	A string to include a table caption
label	A string to represent a latex table label
midrule1	Default is set to NULL
latex_comment	Add a latex comment above the table for notes
...	arguments passed to cat

Value

No return value

smart_boxplot	*smart_boxplot*

Description

smart_boxplot

Usage

```
smart_boxplot(MAT, mar_down = 8, srt = 45, ...)
```

Arguments

MAT	A numeric matrix of columns to plot as boxplots
mar_down	A positive numeric value to allow space below the x-axis for labels
srt	A numeric value to control the angle of x-axis labels
...	arguments passed to boxplot

Value

No return value.

smart_colors	*smart_colors*

Description

smart_colors

Usage

```
smart_colors(nn, alpha = 1, overwrite = FALSE)
```

Arguments

nn	A positive integer greater than or equal to 2
alpha	A positive numeric value less than or equal to one
overwrite	Boolean If nn = 2, setting to FALSE will force colors to be white or black

Value

No return value.

---

smart_compMATs *smart_compMATs*

Description

smart_compMATs

Usage

```
smart_compMATs(
  MAT1,
  MAT2 = NULL,
  which_range = NULL,
  xlab,
  ylab,
  show_corr = TRUE,
  show_plot = FALSE,
  main = NULL,
  vec_col = NULL,
  ...
)
```

Arguments

MAT1	A numeric matrix
MAT2	A second numeric matrix of columns comparable to MAT1. Default is set to NULL resulting in histograms plotted for columns of MAT1
which_range	Default is set to NULL to calculate data ranges. Otherwise if set to "01", will enforce minimum 0 and maximum 1. If set to a numeric vector of two elements, will enforce the range.
xlab	A string for x-axis label
ylab	A string for y-axis label
show_corr	Boolean set to TRUE to print Pearson and Spearman correlations
show_plot	Boolean set to TRUE to plot comparison of two matrices
main	A string for the plot title
vec_col	A vector of colors to color scatter plot points
...	arguments passed to plot

Value

No return value.

---

smart_df *smart_df*

Description

Construct data.frame with `data.frame()` but sets `stringsAsFactors` to `FALSE`.

Usage

```
smart_df(...)
```

Arguments

`...`	arguments passed to data.frame

Value

A data.frame

---

smart_digits *smart_digits*

Description

Round numeric values to specific

Usage

```
smart_digits(x, digits = 2)
```

Arguments

`x`	A numeric vector formatted to have consistently rounded values
`digits`	A positive integer to regulate the number of digits to round to

Value

Character version of rounded numeric value

---

smart_dots *smart_dots*

Description

Prints a series of dots every few seconds

Usage

```
smart_dots(wait = 300, num_dots = 30)
```

Arguments

wait	A number of seconds to wait before printing "."
num_dots	The number of dots to print before printing a message

Value

No return value.

---

smart_heatmap *smart_heatmap*

Description

smart_heatmap

Usage

```
smart_heatmap(
  MAT = NULL,
  DIST = FALSE,
  main = "",
  width = NULL,
  height = NULL,
  GRID = NULL,
  clustRC = c(TRUE, TRUE),
  nodePar_col = NULL,
  nodePar_row = NULL,
  mar = 2,
  cex.main = 2,
  rowData = NULL,
  colData = NULL,
  make_key = TRUE,
  vec_cols = NULL
)
```

Arguments

MAT	A numeric matrix of values
DIST	Boolean set to TRUE to treat MAT as distance matrix. Otherwise, function can perform row/column clustering
main	A string for the overall heatmap title
width	NULL
height	NULL
GRID	NULL
clustRC	NULL
nodePar_col	NULL
nodePar_row	NULL
mar	NULL
cex.main	NULL
rowData	NULL
colData	NULL
make_key	NULL
vec_cols	NULL

Value

No return value.

---

smart_hist	*smart_hist*

Description

smart_hist

Usage

```
smart_hist(x, freq = FALSE, dens = TRUE, main = "", ...)
```

Arguments

x	A numeric vector
freq	Boolean set to FALSE to plot density on y-axis. Otherwise TRUE to plot frequencies
dens	Boolean set to TRUE to overlay kernel density
main	String for plot title
...	arguments passed to hist

Value

No return value.

---

smart_merge *smart_merge*

Description

Merges two data.frames assuming they have at least one shared column name

Usage

```
smart_merge(x, y, mess = FALSE, ...)
```

Arguments

x	A data.frame
y	A data.frame
mess	Default to FALSE. Otherwise a message is printed.
...	arguments passed to merge

Value

A merged data.frame

Examples

```
aa = smart_df(a = c(1,2,3),b = c("a","b","c"),c = c(4,5,6))
bb = smart_df(a = c(2,4,5),b = c("b","d","e"),d = c("alpha","beta","gamma"))
smart_merge(aa,bb,all.x = TRUE)
smart_merge(aa,bb,all.y = TRUE)
smart_merge(aa,bb,all = TRUE)
```

---

smart_mkdir *smart_mkdir*

Description

Create directory if it does not exist

Usage

```
smart_mkdir(input_dir)
```

Arguments

input_dir	A full path name for a directory to create

Value

No return value

---

smart_names   *smart_names*

Description

Sets row/column names to matrix or data.frame

Usage

```
smart_names(MAT, ROW = NULL, COL = NULL)
```

Arguments

MAT	A matrix
ROW	A vector of length equal to `nrow(MAT)`
COL	A vector of length equal to `ncol(MAT)`

Value

Outputs a matrix or data.frame depending on input object class

---

smart_pack_versions   *smart_pack_versions*

Description

Return all associated package versions

Usage

```
smart_pack_versions(pack, repo = "CRAN")
```

Arguments

pack	A string for the package name
repo	A string that takes values "CRAN", "aCRAN", and "cCRAN" for combining options "aCRAN" and "cCRAN". "cCRAN" refers to contributed packages. "aCRAN" refers to archived packages.

Value

A data.frame of available R packages

---

smart_progress *smart_progress*

Description

Print progress of a for loop

Usage

```
smart_progress(ii, nn, string = ".", iter = 5, iter2 = 200, ...)
```

Arguments

ii	A positive integer to track a loop's progress
nn	A positive integer for the total number of loop iterations
string	A string to print
iter	A positive integer for how many multiple iterations to print "."
iter2	A positive integer to end a line of printed "." and track the loop's progress
...	arguments passed to cat

Value

No return value.

---

smart_reqNames *smart_reqNames*

Description

Checks if required column names are contained in the matrix or data.frame.

Usage

```
smart_reqNames(DATA, REQ)
```

Arguments

DATA	A matrix or data.frame
REQ	A string vector of colnames required to be contained in DATA

Value

No return value.

smart_rmcols   *smart_rmcols*

Description

Drops columns from a matrix or data.frame.

Usage

```
smart_rmcols(OBJ, rm_names)
```

Arguments

OBJ	A matrix or data.frame
rm_names	A string vector of colnames to remove

Value

A matrix or data.frame

smart_RT   *smart_RT*

Description

Calls `read.table()` but sets argument `stringsAsFactors = FALSE` to prevent treating character columns as factors.

Usage

```
smart_RT(...)
```

Arguments

...	arguments passed to read.table

Value

Return is identical to `read.table()`

---

smart_SN   *smart_SN*

Description

Convert numeric values into scientific notation

Usage

```
smart_SN(x, digits = 2)
```

Arguments

x   A numeric vector to convert to scientific notation

digits   A positive integer for number of digits to include in notation

Value

A character vector

---

smart_solve   *smart_solve*

Description

smart_solve

Usage

```
smart_solve(mm)
```

Arguments

mm   A square numeric matrix

Value

A square numeric matrix.

---

smart_table *smart_table*

Description

Should elements passed into `table()` contain NA or NaN, we want to see them by default.

Usage

```
smart_table(...)
```

Arguments

```
...                arguments passed to table
```

Value

Return a table

Examples

```
aa = c(1,1,2,2,2,3,NA)
table(aa)
smart_table(aa)
```

---

smart_WT *smart_WF*

Description

Calls `write.table()` setting parameters `row.names` and `quote` to `FALSE`.

Usage

```
smart_WT(...)
```

Arguments

```
...                arguments passed to write.table
```

Value

Return is identical to `write.table()`

Index