

Package: macpan2helpers (via r-universe)

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Title `macpan2` Helper Functions
Version 1.0.0
Description Helper functions for the `macpan2` package.
License GPL (>= 3)
Depends macpan2
Imports visNetwork, dplyr, tidyr, ggplot2
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<code>.known_dist</code>	<i>Pick out obs/location pairs from terms involving probability distributions <code>find_obs_pairs(~ dnorm(a, b, c) + dpois(d, e))</code> <code>find_obs_pairs(stuff ~ other_stuff + more_stuff)</code></i>
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Description

Pick out obs/location pairs from terms involving probability distributions `find_obs_pairs(~ dnorm(a, b, c) + dpois(d, e))` `find_obs_pairs(stuff ~ other_stuff + more_stuff)`

Usage

```
.known_dist
```

Format

An object of class character of length 5.

<code>compare_fits</code>	<i>Compare fits between <code>deSolve::ode()</code> and <code>macpan2</code></i>
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Description

Compare fits between `deSolve::ode()` and `macpan2`

Usage

```
compare_fits(
  macpan2_results,
  deSolve_results,
  drop_last = TRUE,
  tolerance = sqrt(.Machine$double.eps)
)
```

Arguments

<code>macpan2_results</code>	results from running <code>report()</code> on a <code>macpan2</code> simulator
<code>deSolve_results</code>	results from <code>ode(...)</code> (typically want to use <code>method = "euler"</code> to match)
<code>drop_last</code>	drop last point? (for reasons I don't yet understand, <code>macpan2</code> diverges by a little bit at last time point)
<code>tolerance</code>	tolerance for numerical comparisons (set to 0 for exact comparison)

Value

a list containing elements

- `comb_plot`: combination plot (all variables)
- `diff_plot`: difference plot
- `all_equal`: results of `all.equal()`
- `waldo_compare`: results of `waldo::compare` (if available)

`drawio_tables`

Draw IO Table

Description

Create a `draw.io` file with a table giving a data frame.

Usage

```
drawio_tables(..., file_name = "")
```

```
drawio_table(
  data_frame,
  x = 0,
  y = 0,
  cell_width = 90,
  cell_height = 20,
  file_name = "",
  id_init = 2
)
```

Arguments

<code>file_name</code>	Optional name of file. If missing, the xml will be returned.
<code>data_frame</code>	The data frame to represent as a <code>draw.io</code> table.
<code>x</code>	Horizontal position of the table.
<code>y</code>	Vertical position of the table.
<code>cell_width</code>	Width of table cells.
<code>cell_height</code>	Height of table cells.
<code>id_init</code>	Initial cell identifier. This is not usually need by users.

Functions

- `drawio_tables()`: Place several `draw.io` tables in a single file. Each table is provided as a named list of the arguments to pass to `drawio_table`.

mk_calibrate

*Add calibration information to a simulator***Description****To do/FIXME:**

- see hacks for getting simulation variables, state variables
- modularize?
- switch for enabling a differenced/incidence class (add a flow/accumulator var to model; add a differencing step)?
- allow setting clamp tolerance? allow specified list of variables to clamp rather than all or nothing
- rename and move into macpan2
- document that 'log-likelihood' means $-1 * (\text{loss function})$ (e.g. for SSQ, chi-squared fits)

Usage

```
mk_calibrate(
  sim,
  params = list(),
  transforms = list(),
  data = NULL,
  start_time = NULL,
  end_time = NULL,
  exprs = list(),
  debug = FALSE,
  clamp_vars = FALSE
)
```

Arguments

sim	A macpan2 simulator (i.e., a TMBSimulator object).
params	a list of parameters with default/starting values.
transforms	TODO.
data	A data frame containing data to add (i.e., observed variables that will be compared with simulations). If the data frame contains a column called "time" or "date" (any capitalization), it will be used.
start_time	A time or date, overriding first time in data; set to 1 otherwise.
end_time	A time or date, overriding last time in data; set to number of time steps otherwise.
exprs	A list of expressions to add.
debug	(logical) Print debugging information?
clamp_vars	(logical) Force state variables to be positive in likelihood expression?

Value

This function modifies the simulator object **in place**. It also returns (invisibly) a character vector of the lower-level operations it performs.

topological_sort	<i>Topological Sort</i>
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Description

Topological Sort

Usage

```
topological_sort(model, warn_not_dag = TRUE)
```

Arguments

model	Compartmental model.
warn_not_dag	Throw a warning if the model flows do not constitute a directed acyclic graph (DAG)?

Value

Character vector giving the names of the state variables in topologically sorted order.

visCompartmental	<i>Visualize a Compartmental model</i>
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Description

Visualize a Compartmental model

Usage

```
visCompartmental(model, label_flows = FALSE, ...)
```

Arguments

model	Model object created using macpan2::Compartmental()
label_flows	Logical. Should edges be labelled with flow rates?
...	Additional arguments to pass to visNetwork

Value

A visNetwork object

Examples

```
# example code
# sir <- macpan2::Compartmental(system.file('starter_models', 'sir', package = 'macpan2'))
# visCompartmental(sir)
```

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