

Package ‘beastier’

June 15, 2022

Type Package

Title Call 'BEAST2'

Version 2.4.10

Maintainer Richèl J.C. Bilderbeek <richel@richelbilderbeek.nl>

Description 'BEAST2' (<<https://www.beast2.org>>) is a widely used Bayesian phylogenetic tool, that uses DNA/RNA/protein data and many model priors to create a posterior of jointly estimated phylogenies and parameters.

'BEAST2' is a command-line tool.

This package provides a way to call 'BEAST2' from an 'R' function call.

License GPL-3

Encoding UTF-8

RoxygenNote 7.2.0

Imports ape, assertive, beautier (>= 2.6.4), devtools, phangorn, rappdirs, readr, rJava, stringr, tibble, xml2

Suggests hunspell, knitr, markdown, rmarkdown, spelling, testit, testthat (>= 2.1.0), tracerer

URL <https://docs.ropensci.org/beastier/> (website)

<https://github.com/ropensci/beastier/>

BugReports <https://github.com/ropensci/beastier>

Language en-US

VignetteBuilder knitr

SystemRequirements BEAST2 (<https://www.beast2.org/>)

NeedsCompilation no

Author Richèl J.C. Bilderbeek [aut, cre]

(<<https://orcid.org/0000-0003-1107-7049>>),

Joëlle Barido-Sottani [rev] (Joëlle reviewed the package for rOpenSci, see <https://github.com/ropensci/onboarding/issues/209>),

David Winter [rev] (David reviewed the package for rOpenSci, see

<https://github.com/ropensci/onboarding/issues/209>),
 Jason Griffiths [ctb] (<<https://orcid.org/0000-0002-1667-8233>>),
 Thijs Janzen [ctb]

Repository CRAN

Date/Publication 2022-06-15 08:30:02 UTC

R topics documented:

add_quotes_if_has_spaces	4
are_beast2_input_lines	5
are_beast2_input_lines_deep	6
are_beast2_input_lines_fast	7
are_identical_alignments	8
beast2_options_to_table	8
beastier	9
beastier_report	10
check_beast2	11
check_beast2_options	11
check_beast2_optionses	12
check_beast2_options_data_types	13
check_beast2_options_do_not_overwrite_existing_files	14
check_beast2_options_filenames_differ	15
check_beast2_options_names	15
check_beast2_path	16
check_can_create_dir_for_state_output_file	17
check_can_create_file	17
check_can_create_screenlog_file	18
check_can_create_state_output_file	19
check_can_create_tracelog_file	19
check_can_create_treelog_file	20
check_empty_beastier_folder	20
check_empty_beastier_folders	21
check_input_filename	22
check_input_filename_validity	22
check_n_threads	24
check_os	24
check_rng_seed	25
continue_beast2	26
create_beast2_continue_cmd_from_options	27
create_beast2_input_file_folder	27
create_beast2_options	28
create_beast2_run_cmd	30
create_beast2_run_cmd_from_options	31
create_beast2_screenlog_folder	32
create_beast2_state_output_file_folder	33
create_beast2_tracelog_folder	33
create_beast2_treelog_folder	34

create_beast2_validate_cmd	34
create_beast2_validate_cmd_bin	35
create_beast2_validate_cmd_jar	36
create_beast2_version_cmd	37
create_beast2_version_cmd_bin	38
create_beast2_version_cmd_jar	39
create_beastier_tempfolder	39
create_beautier_tempfolder	40
create_mcbette_beast2_options	41
create_random_alignment	42
create_random_fasta	43
create_random_phylogeny	44
create_temp_input_filename	45
create_temp_state_filename	45
default_params_doc	46
do_minimal_run	50
extract_screenlog_filename_from_beast2_input_file	50
extract_tracelog_filename_from_beast2_input_file	51
extract_treelog_filename_from_beast2_input_file	52
get_alignment_ids_from_xml_filename	53
get_beast2_example_filename	53
get_beast2_example_filenames	54
get_beast2_main_class_name	55
get_beast2_options_filenames	56
get_beast2_version	56
get_beastier_folder	57
get_beastier_path	58
get_beastier_paths	58
get_beastier_tempfilename	59
get_default_beast2_bin_path	60
get_default_beast2_download_url	61
get_default_beast2_download_url_linux	62
get_default_beast2_download_url_win	62
get_default_beast2_folder	63
get_default_beast2_jar_path	64
get_default_beast2_path	65
get_default_beast2_version	66
get_default_java_path	66
get_duplicate_param_ids	67
get_java_version	68
get_trees_filenames	68
gives_beast2_warning	69
has_unique_ids	70
install_beast2	71
is_alignment	72
is_beast2_input_file	72
is_beast2_installed	74
is_bin_path	74

is_jar_path	75
is_on_appveyor	76
is_on_ci	77
is_on_travis	77
is_win_bin_path	78
print_beast2_options	78
remove_beastier_folder	79
remove_beastier_folders	80
remove_beautier_folder	80
remove_file_if_present	81
rename_beast2_options_filenames	82
run_beast2	83
run_beast2_from_options	85
save_lines	86
save_nexus_as_fasta	86
uninstall_beast2	87
upgrade_beast2	88

Index 89

add_quotes_if_has_spaces

Add quotes around the string if it contains spaces.

Description

Add quotes around the string if it contains spaces. Does nothing if the string contains no spaces. This is used for filenames

Usage

```
add_quotes_if_has_spaces(filename)
```

Arguments

filename a filename

Value

a filename. If the filename did not contain spaces, it is returned as-is. If the filename did contain spaces, the filename is surrounded by quotes

Author(s)

Richèl J.C. Bilderbeek

Examples

```
remove_beastier_folders()
check_empty_beastier_folders()

add_quotes_if_has_spaces("x")
add_quotes_if_has_spaces("a b")

check_empty_beastier_folders()
```

are_beast2_input_lines

Would these lines of text, when written to a file, result in a valid BEAST2 input file?

Description

Would these lines of text, when written to a file, result in a valid BEAST2 input file?

Usage

```
are_beast2_input_lines(
  lines,
  verbose = FALSE,
  method = ifelse(is_on_ci(), "deep", "fast"),
  beast2_path = get_default_beast2_path()
)
```

Arguments

lines	lines of text
verbose	if TRUE, additional information is displayed, that is potentially useful in debugging
method	the method to check. Can be 'deep' or 'fast'. The 'deep' method uses BEAST2 to validate the complete file. The 'fast' method uses some superficial tests (for example: if all IDs are unique)
beast2_path	name of either a BEAST2 binary file (usually simply beast) or a BEAST2 jar file (usually has a .jar extension). Use get_default_beast2_bin_path to get the default BEAST binary file's path Use get_default_beast2_jar_path to get the default BEAST jar file's path

Value

TRUE if the text is valid, FALSE if not

Author(s)

Richèl J.C. Bilderbeek

See Also

Use [is_beast2_input_file](#) to check a file

Examples

```
if (is_beast2_installed() && is_on_ci()) {
  are_beast2_input_lines(get_beastier_path("anthus_2_4.xml"))
}
```

```
are_beast2_input_lines_deep
```

Would these lines of text, when written to a file, result in a valid BEAST2 input file?

Description

Would these lines of text, when written to a file, result in a valid BEAST2 input file?

Usage

```
are_beast2_input_lines_deep(
  lines,
  verbose = FALSE,
  beast2_path = get_default_beast2_path()
)
```

Arguments

lines	lines of text
verbose	if TRUE, additional information is displayed, that is potentially useful in debugging
beast2_path	name of either a BEAST2 binary file (usually simply <code>beast</code>) or a BEAST2 jar file (usually has a <code>.jar</code> extension). Use get_default_beast2_bin_path to get the default BEAST binary file's path Use get_default_beast2_jar_path to get the default BEAST jar file's path

Value

TRUE if the text is valid, FALSE if not

Author(s)

Richèl J.C. Bilderbeek

See Also

Use [is_beast2_input_file](#) to check a file

Examples

```
if (is_beast2_installed() && is_on_ci()) {
  beast2_filename <- get_beastier_path("anthus_2_4.xml")
  text <- readLines(beast2_filename)
  are_beast2_input_lines_deep(text)
}
```

```
are_beast2_input_lines_fast
```

Would these lines of text, when written to a file, result in a valid BEAST2 input file?

Description

Would these lines of text, when written to a file, result in a valid BEAST2 input file?

Usage

```
are_beast2_input_lines_fast(lines)
```

Arguments

lines	lines of text
-------	---------------

Value

TRUE if the text is valid, FALSE if not

Author(s)

Richèl J.C. Bilderbeek

See Also

Use [is_beast2_input_file](#) to check a file

Examples

```
beast2_filename <- get_beastier_path("anthus_2_4.xml")
text <- readLines(beast2_filename)

# TRUE
are_beast2_input_lines_fast(text)
```

are_identical_alignments

Determines if the two alignments are equal

Description

Determines if the two alignments are equal

Usage

```
are_identical_alignments(p, q)
```

Arguments

p	the first alignment
q	the second alignment

Value

TRUE or FALSE

Author(s)

Richèl J.C. Bilderbeek

beast2_options_to_table

Convert a beast2_options to a table

Description

Convert a beast2_options to a table

Usage

```
beast2_options_to_table(beast2_options)
```

Arguments

beast2_options a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

Value

a [tibble](#) with two columns, called 'parameter' and 'value'. Each 'parameter' is the name of the element of the 'beast2_options' structure, where the 'value' on the same row holds the value of that parameter

Author(s)

Richèl J.C. Bilderbeek

Examples

```
beast2_options_to_table(create_beast2_options())
```

beastier	beastier: <i>A package to call BEAST2.</i>
----------	--

Description

beastier allows to call BEAST2, a popular Bayesian phylogenetics tool, using an R interface. 'beastier' closely follows the interface of BEAST2, including its default settings.

See Also

These are packages associated with beastier:

- The package beautier can create BEAST2 input files from R
- The package tracerer can parse BEAST2 output files from R
- The package babette combines the functionality of beautier, beastier and tracerer into a single workflow

Examples

```
check_empty_beastier_folders()

beast2_options <- create_beast2_options(
  input_filename = get_beastier_path("2_4.xml")
)

if (is_beast2_installed() && is_on_ci()) {
  run_beast2_from_options(beast2_options)
  file.remove(beast2_options$output_state_filename)
  remove_beastier_folders()
}

check_empty_beastier_folders()
```

beastier_report	<i>Creates a beastier report</i>
-----------------	--

Description

Creates a [beastier](#) report, to be used when reporting bugs. Uses [message](#)

Usage

```
beastier_report(  
    beast2_folder = get_default_beast2_folder(),  
    os = rappdirs::app_dir()$os  
)
```

Arguments

beast2_folder	the folder where the BEAST2 is installed. Note that this is not the folder where the BEAST2 executable is installed: the BEAST2 executable is in a sub-folder. Use get_default_beast2_folder to get the default BEAST2 folder. Use get_default_beast2_bin_path to get the full path to the default BEAST2 executable.
os	name of the operating system, must be unix (Linux, Mac) or win (Windows)

Value

No return value, the information will be shown using [message](#)

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()  
  
beastier_report()  
  
check_empty_beastier_folders()
```

check_beast2	<i>Check if BEAST2 is installed properly.</i>
--------------	---

Description

Calls [stop](#) if BEAST2 is improperly installed

Usage

```
check_beast2(beast2_path = beastier::get_default_beast2_path())
```

Arguments

`beast2_path` name of either a BEAST2 binary file (usually simply `beast`) or a BEAST2 jar file (usually has a `.jar` extension). Use [get_default_beast2_bin_path](#) to get the default BEAST binary file's path Use [get_default_beast2_jar_path](#) to get the default BEAST jar file's path

Value

nothing Will [stop](#) if BEAST2 is improperly installed

Author(s)

Richèl J.C. Bilderbeek

Examples

```
if (is_beast2_installed()) {  
  check_beast2()  
}
```

check_beast2_options	<i>Check if the <code>beast2_options</code> is a valid BEAST2 options object.</i>
----------------------	---

Description

Calls `stop` if the BEAST2 option object is invalid

Usage

```
check_beast2_options(beast2_options)
```

Arguments

`beast2_options` a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

Value

nothing Will stop if the BEAST2 option object is invalid

Author(s)

Richèl J.C. Bilderbeek

See Also

Use [create_beast2_options](#) to create a valid BEAST2 options object

Examples

```
check_empty_beastier_folders()
```

```
check_beast2_options(create_beast2_options())
```

```
check_empty_beastier_folders()
```

check_beast2_optionses

Check if the beast2_options is a valid BEAST2 options object.

Description

Calls stop if the BEAST2 option object is invalid

Usage

```
check_beast2_optionses(beast2_optionses)
```

Arguments

beast2_optionses

list of one or more beast2_options structures, as can be created by [create_beast2_options](#).
Use of reduplicated plural to achieve difference with beast2_options

Value

Nothing. Will stop if the BEAST2 option object is invalid

Author(s)

Richèl J.C. Bilderbeek

See Also

Use [create_beast2_options](#) to create a valid BEAST2 options object

Examples

```
check_empty_beastier_folders()

check_beast2_optionses(list(create_beast2_options()))

check_empty_beastier_folders()
```

check_beast2_options_data_types

Check if the `beast2_options`, which is a list, has all elements of the right data types

Description

Calls `stop` if not.

Usage

```
check_beast2_options_data_types(beast2_options)
```

Arguments

`beast2_options` a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

Value

nothing

Author(s)

Richèl J.C. Bilderbeek

See Also

Use [check_beast2_options](#) to check the entire `beast2_options` object

check_beast2_options_do_not_overwrite_existing_files
Internal function

Description

Check if the `beast2_options` will not overwrite existing files, when the `'overwrite'` options is set to `FALSE`.

Usage

```
check_beast2_options_do_not_overwrite_existing_files(beast2_options)
```

Arguments

`beast2_options` a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

Details

Will [stop](#) if a file is threatened to be overwritten

Value

Nothing. Will [stop](#) if a file is threatened to be overwritten

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()

check_beast2_options_do_not_overwrite_existing_files(
  beast2_options = create_beast2_options()
)

check_empty_beastier_folders()
```

check_beast2_options_filenames_differ
Check if the filenames in beast2_options differ

Description

Calls stop if not.

Usage

```
check_beast2_options_filenames_differ(beast2_options)
```

Arguments

beast2_options a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

Value

nothing

Author(s)

Richèl J.C. Bilderbeek

See Also

Use [check_beast2_options](#) to check the entire beast2_options object

check_beast2_options_names
Check if the beast2_options, which is a list, has all the elements needed.

Description

Calls stop if not.

Usage

```
check_beast2_options_names(beast2_options)
```

Arguments

beast2_options a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

Value

nothing

Author(s)

Richèl J.C. Bilderbeek

See Also

Use [check_beast2_options](#) to check the entire `beast2_options` object

check_beast2_path	<i>Checks the BEAST2 .jar path. Will stop if there is a problem with the BEAST2 .jar path.</i>
-------------------	--

Description

Checks the BEAST2 .jar path. Will stop if there is a problem with the BEAST2 .jar path.

Usage

```
check_beast2_path(beast2_path)
```

Arguments

beast2_path	name of either a BEAST2 binary file (usually simply <code>beast</code>) or a BEAST2 jar file (usually has a <code>.jar</code> extension). Use get_default_beast2_bin_path to get the default BEAST binary file's path Use get_default_beast2_jar_path to get the default BEAST jar file's path
-------------	---

Value

nothing. Will call [stop](#) if the BEAST2 .jar path has a problem

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()

if (is_beast2_installed()) {
  beast2_path <- get_default_beast2_jar_path()
  check_beast2_path(beast2_path)
}

check_empty_beastier_folders()
```

check_can_create_dir_for_state_output_file
Internal function

Description

Check if the folder for the state output file can be created. Will [stop](#) otherwise

Usage

```
check_can_create_dir_for_state_output_file(beast2_options)
```

Arguments

beast2_options a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

Value

Nothing. Will [stop](#) if the folder for the state output file cannot be created

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()

check_can_create_dir_for_state_output_file(
  beast2_options = create_beast2_options()
)

check_empty_beastier_folders()
```

check_can_create_file *Internal function*

Description

Check that a file can be created at a certain path.

Usage

```
check_can_create_file(filename, overwrite = TRUE)
```

Arguments

filename file that may or may not be created
overwrite if TRUE, if filename already exists, it will be deleted by this function

Details

Will **stop** if not. Will **stop** if the file already exists. Does so by creating an empty file at the path, and then deleting it.

Value

Nothing. Will **stop** if a file cannot be created at a certain path.

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_can_create_file("my_local_file.txt")
```

check_can_create_screenlog_file
Internal function

Description

Check if the MCMC's screenlog file can be created. Will **stop** if not

Usage

```
check_can_create_screenlog_file(beast2_options)
```

Arguments

beast2_options a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

Value

Nothing. Will **stop** if the MCMC's screenlog file cannot be created.

Author(s)

Richèl J.C. Bilderbeek

check_can_create_state_output_file
Internal function

Description

Check if the state output file can be created. Will [stop](#) otherwise

Usage

```
check_can_create_state_output_file(beast2_options)
```

Arguments

`beast2_options` a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

Value

Nothing. Will [stop](#) if the state output file cannot be created.

Author(s)

Richèl J.C. Bilderbeek

check_can_create_tracelog_file
Internal function to check if the MCMC's tracelog file can be created.

Description

Check if the MCMC's tracelog file can be created. Will [stop](#) if not. If the tracelog file already exists, it is assumed that a new file can be created, by overwriting the existing one.

Usage

```
check_can_create_tracelog_file(beast2_options)
```

Arguments

`beast2_options` a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

Value

Nothing. Will [stop](#) if the MCMC's tracelog file is absent and cannot be created.

Author(s)

Richèl J.C. Bilderbeek

check_can_create_treelog_file
Internal function

Description

Check if the MCMC's treelog file can be created. Will [stop](#) if not

Usage

```
check_can_create_treelog_file(beast2_options)
```

Arguments

`beast2_options` a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

Value

Nothing. Will [stop](#) if the MCMC's treelog file is absent and cannot be created.

Author(s)

Richèl J.C. Bilderbeek

check_empty_beastier_folder
Check there are no files in the default [beastier](#) folder

Description

Check there are no files in the default [beastier](#) folder. The goal is to make sure no temporary files are left undeleted. Will [stop](#) if there are files in the [beastier](#) folder

Usage

```
check_empty_beastier_folder(beastier_folder = get_beastier_folder())
```

Arguments

`beastier_folder`
the path to the [beastier](#) temporary files folder

Value

Nothing. Will **stop** if there are files in the **beastier** folder

Author(s)

Richèl J.C. Bilderbeek

check_empty_beastier_folders

Check there are no files in the default 'beautier' and 'beastier' folders

Description

Check there are no files in the default 'beautier' and 'beastier' folders.

Usage

```
check_empty_beastier_folders(  
    beautier_folder = beautier::get_beautier_folder(),  
    beastier_folder = get_beastier_folder()  
)
```

Arguments

beautier_folder
temporary folder used by **beautier**

beastier_folder
the path to the **beastier** temporary files folder

Details

The goal is to make sure no temporary files are left undeleted. Will **stop** if there are files in the **beautier** or **beastier** folder.

Value

Nothing. Will **stop** if there are files in the **beautier** or **beastier** folder.

Author(s)

Richèl J.C. Bilderbeek

check_input_filename *Checks the input filename. Will stop if there is a problem with the input filename.*

Description

Checks the input filename. Will stop if there is a problem with the input filename.

Usage

```
check_input_filename(input_filename)
```

Arguments

input_filename the name of a BEAST2 input XML file. This file usually has an .xml extension. Use [create_temp_input_filename](#) to create a temporary filename with that extension.

Value

Nothing. Will **stop** if the input file is invalid

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()

check_input_filename(
  get_beastier_path("beast2_example_output.log")
)

check_empty_beastier_folders()
```

check_input_filename_validity
Checks the input filename. Will stop if there is a problem with the input filename.

Description

Checks the input filename. Will stop if there is a problem with the input filename.

Usage

```
check_input_filename_validity(  
  beast2_options,  
  input_filename = "deprecated",  
  beast2_path = "deprecated",  
  verbose = "deprecated"  
)
```

Arguments

beast2_options a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

input_filename the name of a BEAST2 input XML file. This file usually has an .xml extension. Use [create_temp_input_filename](#) to create a temporary filename with that extension.

beast2_path name of either a BEAST2 binary file (usually simply `beast`) or a BEAST2 jar file (usually has a .jar extension). Use [get_default_beast2_bin_path](#) to get the default BEAST binary file's path Use [get_default_beast2_jar_path](#) to get the default BEAST jar file's path

verbose if TRUE, additional information is displayed, that is potentially useful in debugging

Value

nothing. Will call [stop](#) if the input file is invalid

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()  
  
if (is_beast2_installed()) {  
  check_input_filename_validity(  
    create_beast2_options(  
      input_filename = get_beastier_path("2_4.xml")  
    )  
  )  
}  
check_empty_beastier_folders()
```

check_n_threads	<i>Check if the input is a valid number of threads.</i>
-----------------	---

Description

Will [stop](#) if not.

Usage

```
check_n_threads(n_threads)
```

Arguments

n_threads	the number of computational threads to use. Use NA to use the BEAST2 default of 1.
-----------	--

Value

Nothing. Will [stop](#) if the number of threads is invalid

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()

# Can have 1 or more threads
check_n_threads(1)
check_n_threads(2)
# Can have NA threads
check_n_threads(NA)

check_empty_beastier_folders()
```

check_os	<i>Checks if the operating system is supported</i>
----------	--

Description

Checks if the operating system is supported

Usage

```
check_os(os)
```


Arguments

os name of the operating system, must be unix (Linux, Mac) or win (Windows)

Value

Nothing. Will **stop** if the OS is unsupported

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()

check_os("mac")
check_os("unix")
check_os("win")

check_empty_beastier_folders()
```

check_rng_seed *Check if the input is a valid RNG seed.*

Description

Will **stop** if not.

Usage

```
check_rng_seed(rng_seed)
```

Arguments

rng_seed the random number generator seed of the BEAST2 run. Must be a non-zero positive integer value or **NA**. If rng_seed is **NA**, BEAST2 will pick a random seed

Value

Nothing. Will **stop** if the RNG seed is invalid

Author(s)

Richèl J.C. Bilderbeek

Examples

```

check_empty_beastier_folders()

# Numbers from 1 and higher are valid RNG seeds
check_rng_seed(1)
check_rng_seed(2)
# Also NA is a valid RNG seed
check_rng_seed(NA)

check_empty_beastier_folders()

```

continue_beast2	<i>Continue a BEAST2 run</i>
-----------------	------------------------------

Description

Continue a BEAST2 run

Usage

```
continue_beast2(beast2_options = create_beast2_options())
```

Arguments

`beast2_options` a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

Value

The text sent to STDOUT and STDERR. It will create the file with name `output_state_filenames`

Author(s)

Richèl J.C. Bilderbeek

Examples

```

check_empty_beastier_folders()

if (is_beast2_installed() && is_on_ci()) {
  beast2_options <- create_beast2_options(
    input_filename = get_beastier_path("2_4.xml")
  )
  run_beast2_from_options(beast2_options)
  continue_beast2(beast2_options)
  file.remove(beast2_options$output_state_filename)
  remove_beastier_folders()
}

check_empty_beastier_folders()

```

```
create_beast2_continue_cmd_from_options
```

*Creates the terminal command to run BEAST2 from a
beast2_options*

Description

If the BEAST2 input .xml filename or the BEAST2 state .state.xml filename contain spaces, these filenames are quoted, so that the command-line interface to BEAST2 correctly parses its arguments

Usage

```
create_beast2_continue_cmd_from_options(beast2_options)
```

Arguments

`beast2_options` a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

Value

a character vector with the command and arguments to call BEAST2

Author(s)

Richèl J.C. Bilderbeek

Examples

```
if (is_beast2_installed()) {  
  create_beast2_continue_cmd_from_options(  
    beast2_options = create_beast2_options()  
  )  
}
```

```
create_beast2_input_file_folder
```

Create the folder where the BEAST2 input file will be created

Description

Create the folder where the BEAST2 input file will be created

Usage

```
create_beast2_input_file_folder(beast2_options)
```

Arguments

`beast2_options` a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

Value

nothing

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()

beast2_options <- create_beast2_options()
create_beast2_input_file_folder(beast2_options)

remove_beastier_folders()
check_empty_beastier_folders()
```

`create_beast2_options` *Function to create a set of BEAST2 options.*

Description

These BEAST2 options are the R equivalent of the command-line options.

Usage

```
create_beast2_options(
  input_filename = create_temp_input_filename(),
  output_state_filename = create_temp_state_filename(),
  rng_seed = NA,
  n_threads = NA,
  use_beagle = FALSE,
  overwrite = TRUE,
  beast2_path = get_default_beast2_path(),
  verbose = FALSE,
  output_log_filename = "deprecated",
  output_trees_filenames = "deprecated",
  beast2_working_dir = "deprecated"
)
```

Arguments

input_filename	the name of a BEAST2 input XML file. This file usually has an .xml extension. Use create_temp_input_filename to create a temporary filename with that extension.
output_state_filename	name of the .xml.state file to create. Use create_temp_state_filename to create a temporary filename with that extension.
rng_seed	the random number generator seed of the BEAST2 run. Must be a non-zero positive integer value or NA . If rng_seed is NA , BEAST2 will pick a random seed
n_threads	the number of computational threads to use. Use NA to use the BEAST2 default of 1.
use_beagle	use BEAGLE if present
overwrite	if TRUE: overwrite the .log and .trees files if one of these exists. If FALSE, BEAST2 will not be started if <ul style="list-style-type: none"> • the .log file exists • the .trees files exist • the .log file created by BEAST2 exists • the .trees files created by BEAST2 exist
beast2_path	name of either a BEAST2 binary file (usually simply beast) or a BEAST2 jar file (usually has a .jar extension). Use get_default_beast2_bin_path to get the default BEAST binary file's path Use get_default_beast2_jar_path to get the default BEAST jar file's path
verbose	if TRUE, additional information is displayed, that is potentially useful in debugging
output_log_filename	name of the .log file to create
output_trees_filenames	one or more names for .trees file to create. There will be one .trees file created per alignment in the input file. The number of alignments must equal the number of .trees filenames, else an error is thrown. Alignments are sorted alphabetically by their IDs
beast2_working_dir	a folder where BEAST2 can work in isolation. For each BEAST2 run, a new subfolder is created in that folder. Within this folder, BEAST2 is allowed to create all of its output files, without the risk of overwriting existing ones, allowing BEAST2 to run in multiple parallel processes.

Value

a BEAST2 options structure, which is a [list](#) of all function arguments, of which all elements are checked (by [check_beast2_options](#))

Author(s)

Richèl J.C. Bilderbeek

Examples

```

check_empty_beastier_folders()

beast2_options <- create_beast2_options()
check_beast2_options(beast2_options)

check_empty_beastier_folders()

```

create_beast2_run_cmd *Creates the terminal command to run BEAST2*

Description

Creates the terminal command to run BEAST2

Usage

```

create_beast2_run_cmd(
  input_filename,
  output_state_filename,
  rng_seed = NA,
  n_threads = NA,
  use_beagle = FALSE,
  overwrite = FALSE,
  beast2_path = get_default_beast2_path(),
  verbose = FALSE
)

```

Arguments

input_filename	the name of a BEAST2 input XML file. This file usually has an .xml extension. Use create_temp_input_filename to create a temporary filename with that extension.
output_state_filename	name of the BEAST2 output file that stores the state (usually has a .xml.state extension)
rng_seed	the random number generator seed of the BEAST2 run. Must be a non-zero positive integer value or NA . If rng_seed is NA , BEAST2 will pick a random seed
n_threads	the number of computational threads to use. Use NA to use the BEAST2 default of 1.
use_beagle	use BEAGLE if present
overwrite	if TRUE: overwrite the .log and .trees files if one of these exists. If FALSE, BEAST2 will not be started if <ul style="list-style-type: none"> the .log file exists

	<ul style="list-style-type: none"> • the .trees files exist • the .log file created by BEAST2 exists • the .trees files created by BEAST2 exist
beast2_path	name of either a BEAST2 binary file (usually simply <code>beast</code>) or a BEAST2 jar file (usually has a <code>.jar</code> extension). Use get_default_beast2_bin_path to get the default BEAST binary file's path Use get_default_beast2_jar_path to get the default BEAST jar file's path
verbose	if TRUE, additional information is displayed, that is potentially useful in debugging

Value

a character vector with the command and arguments to call BEAST2

Author(s)

Richèl J.C. Bilderbeek

Examples

```

check_empty_beastier_folders()

if (is_beast2_installed()) {
  create_beast2_run_cmd(
    input_filename = "input.xml",
    output_state_filename = "output.xml.state",
    beast2_path = get_default_beast2_jar_path()
  )
}

check_empty_beastier_folders()

```

```
create_beast2_run_cmd_from_options
```

*Creates the terminal command to run BEAST2 from a
beast2_options*

Description

Creates the terminal command to run BEAST2 from a `beast2_options`

Usage

```
create_beast2_run_cmd_from_options(beast2_options)
```

Arguments

`beast2_options` a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

Value

a character vector with the command and arguments to call BEAST2

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()

if (is_beast2_installed()) {
  create_beast2_run_cmd_from_options(
    beast2_options = create_beast2_options()
  )
}

check_empty_beastier_folders()
```

create_beast2_screenlog_folder
Internal function

Description

Create the folder for the BEAST2 screenlog file

Usage

```
create_beast2_screenlog_folder(beast2_options)
```

Arguments

`beast2_options` a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

Author(s)

Richèl J.C. Bilderbeek

`create_beast2_state_output_file_folder`*Create the folder where the BEAST2 state output file will be created*

Description

Create the folder where the BEAST2 state output file will be created

Usage

```
create_beast2_state_output_file_folder(beast2_options)
```

Arguments

`beast2_options` a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

Value

nothing

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()

beast2_options <- create_beast2_options()
create_beast2_state_output_file_folder(beast2_options)

remove_beastier_folders()
check_empty_beastier_folders()
```

`create_beast2_tracelog_folder`*Internal function*

Description

Create the folder for the BEAST2 tracelog file

Usage

```
create_beast2_tracelog_folder(beast2_options)
```

Arguments

beast2_options a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

Author(s)

Richèl J.C. Bilderbeek

create_beast2_treelog_folder
Internal function

Description

Create the folder for the BEAST2 treelog file

Usage

```
create_beast2_treelog_folder(beast2_options)
```

Arguments

beast2_options a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

Author(s)

Richèl J.C. Bilderbeek

create_beast2_validate_cmd
Creates the terminal command to validate a BEAST2 input file

Description

Creates the terminal command to validate a BEAST2 input file

Usage

```
create_beast2_validate_cmd(  
  input_filename,  
  beast2_path = get_default_beast2_path()  
)
```

Arguments

- input_filename the name of a BEAST2 input XML file. This file usually has an .xml extension. Use [create_temp_input_filename](#) to create a temporary filename with that extension.
- beast2_path name of either a BEAST2 binary file (usually simply beast) or a BEAST2 jar file (usually has a .jar extension). Use [get_default_beast2_bin_path](#) to get the default BEAST binary file's path Use [get_default_beast2_jar_path](#) to get the default BEAST jar file's path

Value

a character vector, of which the first element is the command (java, in this case), and the others are arguments (-jar, in this case, followed by more arguments).

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()

if (is_beast2_installed() && is_on_ci()) {
  create_beast2_validate_cmd(
    input_filename = "input.xml"
  )
}

check_empty_beastier_folders()
```

```
create_beast2_validate_cmd_bin
```

Creates the terminal command to validate a BEAST2 input file using a call to the launcher.jar file

Description

Creates the terminal command to validate a BEAST2 input file using a call to the launcher.jar file

Usage

```
create_beast2_validate_cmd_bin(
  input_filename,
  beast2_bin_path = get_default_beast2_bin_path()
)
```

Arguments

- `input_filename` the name of a BEAST2 input XML file. This file usually has an `.xml` extension. Use [create_temp_input_filename](#) to create a temporary filename with that extension.
- `beast2_bin_path` name of the BEAST2 binary file (usually simply `beast`). Use [get_default_beast2_bin_path](#) to get the default BEAST binary file's path

Value

a character vector, of which the first element is the command (`java`, in this case), and the others are arguments (`-jar`, in this case, followed by more arguments).

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()

if (is_beast2_installed() && is_on_ci()) {
  create_beast2_validate_cmd_bin(
    input_filename = "input.xml"
  )
}

check_empty_beastier_folders()
```

```
create_beast2_validate_cmd_jar
```

Creates the terminal command to validate a BEAST2 input file using a call to the launcher.jar file

Description

Creates the terminal command to validate a BEAST2 input file using a call to the `launcher.jar` file

Usage

```
create_beast2_validate_cmd_jar(
  input_filename,
  beast2_jar_path = get_default_beast2_jar_path()
)
```

Arguments

- `input_filename` the name of a BEAST2 input XML file. This file usually has an `.xml` extension. Use [create_temp_input_filename](#) to create a temporary filename with that extension.
- `beast2_jar_path` name of the BEAST2 jar file (usually has a `.jar` extension). Use [get_default_beast2_jar_path](#) to get the default BEAST jar file's path

Value

a character vector, of which the first element is the command (`java`, in this case), and the others are arguments (`-jar`, in this case, followed by more arguments).

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()

if (is_beast2_installed() && is_on_ci()) {
  create_beast2_validate_cmd_jar(
    input_filename = "input.xml"
  )
}

check_empty_beastier_folders()
```

```
create_beast2_version_cmd
```

Creates the terminal command to version a BEAST2 input file

Description

Creates the terminal command to version a BEAST2 input file

Usage

```
create_beast2_version_cmd(beast2_path = beastier::get_default_beast2_path())
```

Arguments

- `beast2_path` name of either a BEAST2 binary file (usually simply `beast`) or a BEAST2 jar file (usually has a `.jar` extension). Use [get_default_beast2_bin_path](#) to get the default BEAST binary file's path Use [get_default_beast2_jar_path](#) to get the default BEAST jar file's path

Value

a character vector, of which the first element is the command (java, in this case), and the others are arguments (-jar, in this case, followed by more arguments).

Author(s)

Richèl J.C. Bilderbeek

Examples

```
if (is_beast2_installed()) {  
  create_beast2_version_cmd()  
}
```

create_beast2_version_cmd_bin

Creates the terminal command to version a BEAST2 input file using a call to the launcher .jar file

Description

Creates the terminal command to version a BEAST2 input file using a call to the launcher .jar file

Usage

```
create_beast2_version_cmd_bin(beast2_bin_path = get_default_beast2_bin_path())
```

Arguments

beast2_bin_path

name of the BEAST2 binary file (usually simply beast). Use [get_default_beast2_bin_path](#) to get the default BEAST binary file's path

Value

a character vector, of which the first element is the command (java, in this case), and the others are arguments (-jar, in this case, followed by more arguments).

Author(s)

Richèl J.C. Bilderbeek

Examples

```
if (is_beast2_installed() && is_on_ci()) {  
  create_beast2_version_cmd_bin()  
}
```

`create_beast2_version_cmd_jar`

Creates the terminal command to version a BEAST2 input file using a call to the launcher . jar file

Description

Creates the terminal command to version a BEAST2 input file using a call to the launcher . jar file

Usage

```
create_beast2_version_cmd_jar(beast2_jar_path = get_default_beast2_jar_path())
```

Arguments

beast2_jar_path

name of the BEAST2 jar file (usually has a . jar extension). Use [get_default_beast2_jar_path](#) to get the default BEAST jar file's path

Value

a character vector, of which the first element is the command (java, in this case), and the others are arguments (-jar, in this case, followed by more arguments).

Author(s)

Richèl J.C. Bilderbeek

Examples

```
if (is_beast2_installed()) {  
  create_beast2_version_cmd_jar()  
}
```

`create_beastier_tempfolder`

Create the temporary folder as used by [beastier](#)

Description

Create the temporary folder as used by [beastier](#)

Usage

```
create_beastier_tempfolder()
```

Value

nothing

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()
```

```
create_beastier_tempfolder()
```

```
remove_beastier_folders()  
check_empty_beastier_folders()
```

create_beautier_tempfolder

Deprecated function, use [create_beautier_tempfolder](#).

Description

Create the default ‘beautier’ temporary folder

Usage

```
create_beautier_tempfolder()
```

Value

nothing

Author(s)

Richèl J.C. Bilderbeek

`create_mcbette_beast2_options`*Create a 'beast2_options' structure for the 'mcbette' R package*

Description

Create a 'beast2_options' structure to be used for the 'mcbette' R package, which is a package that allows one to do model comparison. The generated filenames indicating 'mcbette' usage, as well as the correct BEAST2 binary/executable type

Usage

```
create_mcbette_beast2_options(  
  input_filename = beastier::create_temp_input_filename(),  
  output_state_filename = beastier::create_temp_state_filename(),  
  rng_seed = NA,  
  n_threads = NA,  
  use_beagle = FALSE,  
  overwrite = TRUE,  
  beast2_bin_path = beastier::get_default_beast2_bin_path(),  
  verbose = FALSE  
)
```

Arguments

- | | |
|------------------------------------|--|
| <code>input_filename</code> | the name of a BEAST2 input XML file. This file usually has an <code>.xml</code> extension. Use create_temp_input_filename to create a temporary filename with that extension. |
| <code>output_state_filename</code> | name of the <code>.xml</code> state file to create. Use create_temp_state_filename to create a temporary filename with that extension. |
| <code>rng_seed</code> | the random number generator seed of the BEAST2 run. Must be a non-zero positive integer value or <code>NA</code> . If <code>rng_seed</code> is <code>NA</code> , BEAST2 will pick a random seed |
| <code>n_threads</code> | the number of computational threads to use. Use <code>NA</code> to use the BEAST2 default of 1. |
| <code>use_beagle</code> | use BEAGLE if present |
| <code>overwrite</code> | if <code>TRUE</code> : overwrite the <code>.log</code> and <code>.trees</code> files if one of these exists. If <code>FALSE</code> , BEAST2 will not be started if <ul style="list-style-type: none">the <code>.log</code> file existsthe <code>.trees</code> files existthe <code>.log</code> file created by BEAST2 existsthe <code>.trees</code> files created by BEAST2 exist |

beast2_bin_path	name of the BEAST2 binary file (usually simply <code>beast</code>). Use get_default_beast2_bin_path to get the default BEAST binary file's path
verbose	if TRUE, additional information is displayed, that is potentially useful in debugging

Value

a 'beast2_options' structure suitable to be used by the 'mcbette' R package, which is a [list](#) of all function arguments, of which all elements are checked (by [check_beast2_options](#))

Author(s)

Richèl J.C. Bilderbeek

See Also

to create a regular (that is, not intended for model comparison) BEAST2 options structure, use [create_beast2_options](#)

Examples

```
check_empty_beastier_folders()
create_mcbette_beast2_options()
check_empty_beastier_folders()
```

```
create_random_alignment
      Create a random alignment
```

Description

Create a random alignment

Usage

```
create_random_alignment(n_taxa, sequence_length, rate = 1, taxa_name_ext = "")
```

Arguments

n_taxa	The number of taxa
sequence_length	The number of base pairs the alignment will have
rate	mutation rate
taxa_name_ext	the extension of the taxa names

Value

an alignment of class [DNABin](#)

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beaustier_folders()

alignment <- create_random_alignment(
  n_taxa = 5,
  sequence_length = 10
)
image(alignment)

check_empty_beaustier_folders()
```

create_random_fasta *Create a random FASTA file*

Description

Create a random FASTA file

Usage

```
create_random_fasta(
  n_taxa,
  sequence_length,
  fasta_filename,
  taxa_name_ext = ""
)
```

Arguments

`n_taxa` The number of taxa
`sequence_length` a DNA sequence length, in base pairs
`fasta_filename` a FASTA filename.
`taxa_name_ext` the extension of the taxa names

Value

Nothing, creates a FASTA file

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()

fasta_filename <- get_beastier_tempfilename()
create_random_fasta(
  n_taxa = 5,
  sequence_length = 20,
  fasta_filename = fasta_filename
)
file.remove(fasta_filename)

remove_beastier_folders()
check_empty_beastier_folders()
```

create_random_phylogeny

Create a random phylogeny

Description

Create a random phylogeny

Usage

```
create_random_phylogeny(n_taxa, taxa_name_ext = "")
```

Arguments

n_taxa	The number of taxa
taxa_name_ext	the extension of the taxa names

Value

a phylogeny of class 'phylo' (which is part of the 'ape' package)

Author(s)

Richèl J.C. Bilderbeek

Examples

```
create_random_phylogeny(n_taxa = 6)
```

create_temp_input_filename

Create a temporary filename for the BEAST2 XML filename

Description

Create a temporary filename for the BEAST2 XML filename

Usage

create_temp_input_filename()

Value

a temporary filename, that starts with 'beast2_' and has extension '.xml'

Author(s)

Richèl J.C. Bilderbeek

Examples

check_empty_beastier_folders()

create_temp_input_filename()

check_empty_beastier_folders()

create_temp_state_filename

Create a temporary file for the BEAST2 XML output file that stores its state.

Description

Create a temporary file for the BEAST2 XML output file that stores its state.

Usage

create_temp_state_filename()

Value

a temporary filename, that starts with 'beast2_' and has extension '.xml.state'

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()

create_temp_state_filename()

check_empty_beastier_folders()
```

default_params_doc *This function does nothing. It is intended to inherit is parameters' documentation.*

Description

This function does nothing. It is intended to inherit is parameters' documentation.

Usage

```
default_params_doc(
  beast2_bin_path,
  beast2_folder,
  beast2_jar_path,
  beast2_options,
  beast2_optionses,
  beast2_path,
  beast2_version,
  beast2_working_dir,
  beastier_folder,
  beautier_folder,
  clock_model,
  clock_models,
  crown_age,
  crown_ages,
  fasta_filename,
  fasta_filenames,
  fixed_crown_age,
  fixed_crown_ages,
  initial_phylogenies,
  input_filename,
  mcmc,
  misc_options,
  n_taxa,
  n_threads,
  os,
```

```

output_filename,
output_log_filename,
output_state_filename,
output_trees_filenames,
overwrite,
rename_fun,
rng_seed,
sequence_length,
site_model,
site_models,
tree_prior,
tree_priors,
use_beagle,
verbose
)

```

Arguments

- beast2_bin_path** name of the BEAST2 binary file (usually simply `beast`). Use [get_default_beast2_bin_path](#) to get the default BEAST binary file's path
- beast2_folder** the folder where the BEAST2 is installed. Note that this is not the folder where the BEAST2 executable is installed: the BEAST2 executable is in a subfolder. Use [get_default_beast2_folder](#) to get the default BEAST2 folder. Use [get_default_beast2_bin_path](#) to get the full path to the default BEAST2 executable.
- beast2_jar_path** name of the BEAST2 jar file (usually has a `.jar` extension). Use [get_default_beast2_jar_path](#) to get the default BEAST jar file's path
- beast2_options** a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)
- beast2_optionses** list of one or more `beast2_options` structures, as can be created by [create_beast2_options](#). Use of reduplicated plural to achieve difference with `beast2_options`
- beast2_path** name of either a BEAST2 binary file (usually simply `beast`) or a BEAST2 jar file (usually has a `.jar` extension). Use [get_default_beast2_bin_path](#) to get the default BEAST binary file's path Use [get_default_beast2_jar_path](#) to get the default BEAST jar file's path
- beast2_version** the version of BEAST2. By default, this is the version as returned by [get_default_beast2_version](#)
- beast2_working_dir** a folder where BEAST2 can work in isolation. For each BEAST2 run, a new subfolder is created in that folder. Within this folder, BEAST2 is allowed to create all of its output files, without the risk of overwriting existing ones, allowing BEAST2 to run in multiple parallel processes.
- beastier_folder** the path to the [beastier](#) temporary files folder

beautier_folder	temporary folder used by beautier
clock_model	a beautier clock model
clock_models	a list of one or more beautier clock models
crown_age	the crown age of the phylogeny
crown_ages	the crown ages of the phylogenies. Set to NA if the crown age needs to be estimated
fasta_filename	a FASTA filename.
fasta_filenames	One or more FASTA filenames.
fixed_crown_age	determines if the phylogeny's crown age is fixed. If FALSE, crown age is estimated by BEAST2. If TRUE, the crown age is fixed to the crown age of the initial phylogeny.
fixed_crown_ages	one or more booleans to determine if the phylogenies' crown ages are fixed. If FALSE, crown age is estimated by BEAST2. If TRUE, the crown age is fixed to the crown age of the initial phylogeny.
initial_phylogenies	one or more MCMC chain's initial phylogenies. Each one set to NA will result in BEAST2 using a random phylogeny. Else the phylogeny is assumed to be of class <code>ape::phylo</code> .
input_filename	the name of a BEAST2 input XML file. This file usually has an <code>.xml</code> extension. Use create_temp_input_filename to create a temporary filename with that extension.
mcmc	one beautier MCMC
misc_options	one beautier misc_options object
n_taxa	The number of taxa
n_threads	the number of computational threads to use. Use <code>NA</code> to use the BEAST2 default of 1.
os	name of the operating system, must be <code>unix</code> (Linux, Mac) or <code>win</code> (Windows)
output_filename	Name of the XML parameter file created by this function. BEAST2 uses this file as input.
output_log_filename	name of the <code>.log</code> file to create
output_state_filename	name of the <code>.xml</code> state file to create. Use create_temp_state_filename to create a temporary filename with that extension.
output_trees_filenames	one or more names for <code>.trees</code> file to create. There will be one <code>.trees</code> file created per alignment in the input file. The number of alignments must equal the number of <code>.trees</code> filenames, else an error is thrown. Alignments are sorted alphabetically by their IDs

overwrite	if TRUE: overwrite the .log and .trees files if one of these exists. If FALSE, BEAST2 will not be started if <ul style="list-style-type: none"> • the .log file exists • the .trees files exist • the .log file created by BEAST2 exists • the .trees files created by BEAST2 exist
rename_fun	a function to rename a filename, as can be checked by check_rename_fun . This function should have one argument, which will be a filename or <code>NA</code> . The function should return one filename (when passed one filename) or one <code>NA</code> (when passed one <code>NA</code>). Example rename functions are: <ul style="list-style-type: none"> • get_remove_dir_fun get a function that removes the directory paths from the filenames, in effect turning these into local files • get_replace_dir_fun get a function that replaces the directory paths from the filenames • get_remove_hex_fun get a function that removes the hex string from filenames. For example, <code>tracelog_82c1a522040.log</code> becomes <code>tracelog.log</code>
rng_seed	the random number generator seed of the BEAST2 run. Must be a non-zero positive integer value or <code>NA</code> . If <code>rng_seed</code> is <code>NA</code> , BEAST2 will pick a random seed
sequence_length	a DNA sequence length, in base pairs
site_model	a beautier site model
site_models	one or more beautier site models
tree_prior	a beautier tree prior
tree_priors	one or more beautier tree priors
use_beagle	use BEAGLE if present
verbose	if TRUE, additional information is displayed, that is potentially useful in debugging

Value

Nothing. This is an internal function that does nothing

Note

This is an internal function, so it should be marked with `@noRd`. This is not done, as this will disallow all functions to find the documentation parameters

Author(s)

Richèl J.C. Bilderbeek

do_minimal_run *Do a minimal BEAST2 run*

Description

To achieve this, [run_beast2_from_options](#) is called.

Usage

```
do_minimal_run()
```

Value

The text sent to STDOUT and STDERR. It will create the files with name output_state_filename

Author(s)

Richèl J.C. Bilderbeek

Examples

```
if (is_beast2_installed() && is_on_ci()) {  
  do_minimal_run()  
}
```

extract_screenlog_filename_from_beast2_input_file

Internal function to extract the screenlog filename for a BEAST2 input file

Description

Extract the screenlog filename from a BEAST2 input file

Usage

```
extract_screenlog_filename_from_beast2_input_file(input_filename)
```

Arguments

input_filename the name of a BEAST2 input XML file. This file usually has an .xml extension. Use [create_temp_input_filename](#) to create a temporary filename with that extension.

Value

the screenlog filename for a BEAST2 input file

Author(s)

Richèl J.C. Bilderbeek

extract_tracelog_filename_from_beast2_input_file

Internal function to extract the tracelog filename for a BEAST2 input file

Description

Extract the tracelog filename for a BEAST2 input file

Usage

```
extract_tracelog_filename_from_beast2_input_file(input_filename)
```

Arguments

`input_filename` the name of a BEAST2 input XML file. This file usually has an `.xml` extension. Use [create_temp_input_filename](#) to create a temporary filename with that extension.

Value

the name of the tracelog file

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()

beast2_input_filename <- get_beastier_tempfilename()
tracelog_filename <- get_beastier_tempfilename()
beastier::create_beast2_input_file_from_model(
  input_filename = beastier::get_beastier_path("test_output_0.fas"),
  output_filename = beast2_input_filename,
  inference_model = beastier::create_inference_model(
    mcmc = beastier::create_mcmc(
      tracelog = beastier::create_tracelog(
        filename = tracelog_filename
      )
    )
  )
)
extract_tracelog_filename_from_beast2_input_file(
  input_filename = beast2_input_filename
```

```

)
file.remove(beast2_input_filename)

remove_beastier_folders()
check_empty_beastier_folders()

```

```
extract_treelog_filename_from_beast2_input_file
```

Internal function to extract the treelog filename for a BEAST2 input file

Description

Extract the treelog filename from a BEAST2 input file

Usage

```
extract_treelog_filename_from_beast2_input_file(input_filename)
```

Arguments

`input_filename` the name of a BEAST2 input XML file. This file usually has an `.xml` extension. Use [create_temp_input_filename](#) to create a temporary filename with that extension.

Value

the treelog filename for a BEAST2 input file

Author(s)

Richèl J.C. Bilderbeek

Examples

```

check_empty_beastier_folders()

beast2_input_filename <- get_beastier_tempfilename()

beastier::create_beast2_input_file_from_model(
  input_filename = beastier::get_beastier_path("test_output_0.fas"),
  output_filename = beast2_input_filename
)
extract_treelog_filename_from_beast2_input_file(
  input_filename = beast2_input_filename
)
file.remove(beast2_input_filename)

remove_beastier_folders()
check_empty_beastier_folders()

```

`get_alignment_ids_from_xml_filename`

Get the alignment ID from a file with one alignment

Description

Get the alignment ID from a file with one alignment

Usage

```
get_alignment_ids_from_xml_filename(xml_filename)
```

Arguments

`xml_filename` name of a BEAST2 XML input filename

Value

one or more alignment IDs

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()

# test_output_0
get_alignment_ids_from_xml_filename(get_beastier_path("2_4.xml"))
# c("anthus_aco", "anthus_nd2")
get_alignment_ids_from_xml_filename(get_beastier_path("anthus_15_15.xml"))

check_empty_beastier_folders()
```

`get_beast2_example_filename`

Get the full path of a BEAST2 example file

Description

Will [stop](#) if the filename is not a BEAST2 example file

Usage

```
get_beast2_example_filename(
    filename,
    beast2_folder = get_default_beast2_folder()
)
```

Arguments

`filename` name of the BEAST2 example file. This should exclude the full path; this function exists to add that full path

`beast2_folder` the folder where the BEAST2 is installed. Note that this is not the folder where the BEAST2 executable is installed: the BEAST2 executable is in a sub-folder. Use [get_default_beast2_folder](#) to get the default BEAST2 folder. Use [get_default_beast2_bin_path](#) to get the full path to the default BEAST2 executable.

Value

the full path of a BEAST2 example file, will [stop](#) if the filename is not a BEAST2 example file

Examples

```
if (is_beast2_installed()) {
  get_beast2_example_filename("testJukesCantor.xml")
}
```

```
get_beast2_example_filenames
```

Get a list with the full paths of all BEAST2 example filenames

Description

Get a list with the full paths of all BEAST2 example filenames

Usage

```
get_beast2_example_filenames(beast2_folder = get_default_beast2_folder())
```

Arguments

`beast2_folder` the folder where the BEAST2 is installed. Note that this is not the folder where the BEAST2 executable is installed: the BEAST2 executable is in a sub-folder. Use [get_default_beast2_folder](#) to get the default BEAST2 folder. Use [get_default_beast2_bin_path](#) to get the full path to the default BEAST2 executable.

Value

a list with the full paths of all BEAST2 example filenames

Author(s)

Richèl J.C. Bilderbeek

Examples

```
if (is_beast2_installed()) {  
  get_beast2_example_filenames()  
}
```

`get_beast2_main_class_name`

Get the BEAST2 main class name.

Description

One way to fix the error no main manifest attribute is to specify the main class name.

Usage

```
get_beast2_main_class_name()
```

Value

the BEAST2 main class name

Author(s)

Richèl J.C. Bilderbeek

Examples

```
get_beast2_main_class_name()
```

get_beast2_options_filenames

Extract the filenames from a 'beast2_options'

Description

Extract the filenames from a 'beast2_options'

Usage

```
get_beast2_options_filenames(beast2_options)
```

Arguments

`beast2_options` a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

Value

the filenames from a 'beast2_options'

Author(s)

Richèl J.C. Bilderbeek

Examples

```
beast2_options <- create_beast2_options()
get_beast2_options_filenames(beast2_options)
```

get_beast2_version *Get the BEAST2 version*

Description

Get the BEAST2 version

Usage

```
get_beast2_version(beast2_path = get_default_beast2_path())
```

Arguments

`beast2_path` name of either a BEAST2 binary file (usually simply `beast`) or a BEAST2 jar file (usually has a `.jar` extension). Use [get_default_beast2_bin_path](#) to get the default BEAST binary file's path Use [get_default_beast2_jar_path](#) to get the default BEAST jar file's path

Value

the BEAST2 version

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()

if (is_beast2_installed() && is_on_ci()) {
  get_beast2_version()
}

check_empty_beastier_folders()
```

`get_beastier_folder` *Get the path to the [beastier](#) temporary files folder*

Description

Get the path to the [beastier](#) temporary files folder.

Usage

```
get_beastier_folder()
```

Value

the path to the [beastier](#) temporary files folder.

Author(s)

Richèl J.C. Bilderbeek

Examples

```
get_beastier_folder()
```

get_beastier_path *Get the full path of a file in the inst/extdata folder*

Description

Get the full path of a file in the inst/extdata folder

Usage

```
get_beastier_path(filename)
```

Arguments

filename the file's name, without the path

Value

the full path to the filename. Will stop if the file is absent in the inst/extdata folder

Author(s)

Richèl J.C. Bilderbeek

See Also

for more files, use [get_beastier_paths](#)

Examples

```
get_beastier_path("beast2_example_output.log")
get_beastier_path("beast2_example_output.trees")
get_beastier_path("beast2_example_output.xml")
get_beastier_path("beast2_example_output.xml.state")
```

get_beastier_paths *Get the full paths of files in the inst/extdata folder*

Description

Get the full paths of files in the inst/extdata folder

Usage

```
get_beastier_paths(filenamees)
```

Arguments

filenames the files' names, without the path

Value

the filenames' full paths. Will stop if a file is absent in the inst/extdata folder

Author(s)

Richèl J.C. Bilderbeek

See Also

for one file, use [get_beastier_path](#)

Examples

```
get_beastier_paths(  
  c(  
    "beast2_example_output.log",  
    "beast2_example_output.trees",  
    "beast2_example_output.xml",  
    "beast2_example_output.xml.state"  
  )  
)
```

get_beastier_tempfilename

Get a temporary filename

Description

Get a temporary filename, similar to [tempfile](#), except that it always writes to a temporary folder named [beastier](#).

Usage

```
get_beastier_tempfilename(pattern = "file", fileext = "")
```

Arguments

pattern a non-empty character vector giving the initial part of the name.
fileext a non-empty character vector giving the file extension

Value

name for a temporary file

Note

this function is added to make sure no temporary cache files are left undeleted

Author(s)

Richèl J.C. Bilderbeek

Examples

```
get_beastier_tempfilename()  
get_beastier_tempfilename(pattern = "my_pattern_")  
get_beastier_tempfilename(fileext = ".ext")
```

```
get_default_beast2_bin_path
```

Get the default BEAST2 binary file (beast, that is) path

Description

Get the default BEAST2 binary file (beast, that is) path

Usage

```
get_default_beast2_bin_path(  
  beast2_folder = get_default_beast2_folder(),  
  os = rappdirs::app_dir()$os  
)
```

Arguments

beast2_folder the folder where the BEAST2 is installed. Note that this is not the folder where the BEAST2 executable is installed: the BEAST2 executable is in a sub-folder. Use [get_default_beast2_folder](#) to get the default BEAST2 folder. Use [get_default_beast2_bin_path](#) to get the full path to the default BEAST2 executable.

os name of the operating system, must be unix (Linux, Mac) or win (Windows)

Value

the default BEAST2 binary file's path

Author(s)

Richèl J.C. Bilderbeek

See Also

Use [get_default_beast2_folder](#) to get the default folder in which BEAST2 is installed. Use [install_beast2](#) with default arguments to install BEAST2 to this location.

Examples

```
check_empty_beastier_folders()

if (is_beast2_installed()) {
  get_default_beast2_bin_path()
}

check_empty_beastier_folders()
```

`get_default_beast2_download_url`

Get the default BEAST2 download URL, which depends on the operating system

Description

Get the default BEAST2 download URL, which depends on the operating system

Usage

```
get_default_beast2_download_url(
  beast2_version = beastier::get_default_beast2_version(),
  os = rappdirs::app_dir()$os
)
```

Arguments

`beast2_version` the version of BEAST2. By default, this is the version as returned by [get_default_beast2_version](#)
`os` name of the operating system, must be `unix` (Linux, Mac) or `win` (Windows)

Value

the URL where BEAST2 can be downloaded from

Author(s)

Richèl J.C. Bilderbeek

Examples

```
get_default_beast2_download_url()
```

get_default_beast2_download_url_linux

Get the BEAST2 download URL for Linux

Description

Get the BEAST2 download URL for Linux

Usage

```
get_default_beast2_download_url_linux(  
    beast2_version = beastier::get_default_beast2_version()  
)
```

Arguments

beast2_version the version of BEAST2. By default, this is the version as returned by [get_default_beast2_version](#)

Value

the URL where BEAST2 can be downloaded from

Author(s)

Richèl J.C. Bilderbeek

get_default_beast2_download_url_win

Get the BEAST2 download URL for Windows

Description

Get the BEAST2 download URL for Windows

Usage

```
get_default_beast2_download_url_win(  
    beast2_version = beastier::get_default_beast2_version()  
)
```

Arguments

beast2_version the version of BEAST2. By default, this is the version as returned by [get_default_beast2_version](#)

Value

the URL where BEAST2 can be downloaded from

Author(s)

Richèl J.C. Bilderbeek

`get_default_beast2_folder`

Get the path to the folder where this package installs BEAST2 by default

Description

Get the path to the folder where this package installs BEAST2 by default

Usage

`get_default_beast2_folder()`

Value

the path to the folder where this package installs BEAST2 by default

Author(s)

Richèl J.C. Bilderbeek

See Also

Use [get_default_beast2_jar_path](#) to get the path to the BEAST2 jar file, when installed by this package Use [install_beast2](#) with default arguments to install BEAST2 to this folder.

Examples

`check_empty_beastier_folders()`

`get_default_beast2_folder()`

`check_empty_beastier_folders()`

`get_default_beast2_jar_path`*Get the default BEAST2 jar file's path*

Description

Get the default BEAST2 jar file's path

Usage

```
get_default_beast2_jar_path(  
    beast2_folder = beastier::get_default_beast2_folder(),  
    os = rappdirs::app_dir()$os  
)
```

Arguments

`beast2_folder` the folder where the BEAST2 is installed. Note that this is not the folder where the BEAST2 executable is installed: the BEAST2 executable is in a sub-folder. Use [get_default_beast2_folder](#) to get the default BEAST2 folder. Use [get_default_beast2_bin_path](#) to get the full path to the default BEAST2 executable.

`os` name of the operating system, must be `unix` (Linux, Mac) or `win` (Windows)

Value

the default BEAST2 jar file's path

Author(s)

Richèl J.C. Bilderbeek

See Also

Use [get_default_beast2_folder](#) to get the default folder in which BEAST2 is installed. Use [install_beast2](#) with default arguments to install BEAST2 to this location.

Examples

```
check_empty_beastier_folders()  
  
get_default_beast2_jar_path()  
  
check_empty_beastier_folders()
```

`get_default_beast2_path`*Get the default BEAST2 path*

Description

Get the default BEAST2 path

Usage

```
get_default_beast2_path(  
    beast2_folder = beastier::get_default_beast2_folder(),  
    os = rappdirs::app_dir()$os  
)
```

Arguments

`beast2_folder` the folder where the BEAST2 is installed. Note that this is not the folder where the BEAST2 executable is installed: the BEAST2 executable is in a sub-folder. Use [get_default_beast2_folder](#) to get the default BEAST2 folder. Use [get_default_beast2_bin_path](#) to get the full path to the default BEAST2 executable.

`os` name of the operating system, must be `unix` (Linux, Mac) or `win` (Windows)

Value

the default BEAST2 path

Author(s)

Richèl J.C. Bilderbeek

See Also

Use [get_default_beast2_bin_path](#) to get the default path to the BEAST2 binary file. Use [get_default_beast2_jar_path](#) to get the default path to the BEAST2 jar file. Use [get_default_beast2_folder](#) to get the default folder in which BEAST2 is installed. Use [install_beast2](#) with default arguments to install BEAST2 to this location.

Examples

```
if (is_beast2_installed()) {  
  get_default_beast2_path()  
}
```

```
get_default_beast2_version
```

Get the default BEAST2 version that is used by beastier

Description

Get the default BEAST2 version that is used by beastier

Usage

```
get_default_beast2_version()
```

Value

the BEAST2 version

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()
```

```
get_default_beast2_version()
```

```
check_empty_beastier_folders()
```

```
get_default_java_path
```

Obtains the default path to the Java executable

Description

Obtains the default path to the Java executable

Usage

```
get_default_java_path(os = rappdirs::app_dir())$os)
```

Arguments

os name of the operating system, must be unix (Linux, Mac) or win (Windows)

Value

the default path to the Java executable

Author(s)

Richèl J.C. Bilderbeek

`get_duplicate_param_ids`*Find duplicate RealParameter IDs*

Description

Find duplicate RealParameter IDs

Usage`get_duplicate_param_ids(text)`**Arguments**`text` the XML as text**Value**

a vector of duplicate IDs, will be empty if all IDs are unique

Author(s)

Richèl J.C. Bilderbeek

See Alsoto see if all IDs are unique, use [has_unique_ids](#)**Examples**

```
check_empty_beaustier_folders()

line_1 <- "<parameter id=\"RealParameter.1\" ...</parameter>"
line_2 <- "<parameter id=\"RealParameter.2\" ...</parameter>"
# No elements
get_duplicate_param_ids(c(line_1, line_2))

# 'RealParameter.1'
get_duplicate_param_ids(c(line_1, line_1))

# 'RealParameter.2'
get_duplicate_param_ids(c(line_2, line_2))

check_empty_beaustier_folders()
```

get_java_version	<i>Get the Java version</i>
------------------	-----------------------------

Description

Get the Java version

Usage

```
get_java_version()
```

Value

the Java version

Author(s)

Richèl J.C. Bilderbeek

Examples

```
if (is_beast2_installed() && is_on_ci()) {  
  get_java_version()  
}
```

get_trees_filenames	<i>Get the .trees filenames that BEAST2 will produce</i>
---------------------	--

Description

Get the .trees filenames that BEAST2 will produce

Usage

```
get_trees_filenames(input_filename)
```

Arguments

`input_filename` the name of a BEAST2 input XML file. This file usually has an .xml extension. Use [create_temp_input_filename](#) to create a temporary filename with that extension.

Value

character vector with the names of the .trees files that BEAST2 will produce

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()

get_trees_filenames(get_beastier_path("2_4.xml"))
get_trees_filenames(get_beastier_path("anthus_2_4.xml"))

check_empty_beastier_folders()
```

gives_beast2_warning	<i>Determines if BEAST2 issues a warning when using the BEAST2 XML input file</i>
----------------------	---

Description

Determines if BEAST2 issues a warning when using the BEAST2 XML input file

Usage

```
gives_beast2_warning(
  filename,
  verbose = FALSE,
  beast2_path = beastier::get_default_beast2_path()
)
```

Arguments

filename	name of the BEAST2 XML input file
verbose	if TRUE, additional information is displayed, that is potentially useful in debugging
beast2_path	name of either a BEAST2 binary file (usually simply <code>beast</code>) or a BEAST2 jar file (usually has a <code>.jar</code> extension). Use get_default_beast2_bin_path to get the default BEAST binary file's path Use get_default_beast2_jar_path to get the default BEAST jar file's path

Value

TRUE if the file produces a BEAST2 warning, FALSE if not

Author(s)

Richèl J.C. Bilderbeek

See Also

Use [is_beast2_input_file](#) to check if a file is a valid BEAST2 input file. Use [are_beast2_input_lines](#) to check if the text (for example, as loaded from a file) to be valid BEAST2 input.

Examples

```
if (is_beast2_installed() &&
    is_on_ci() &&
    rappdirs::app_dir()$os == "unix") {

  # This file is OK for BEAST2, no warning, returns FALSE
  gives_beast2_warning(filename = get_beastier_path("2_4.xml"))

  # BEAST2 will give a warning on this file, returns TRUE
  gives_beast2_warning(
    filename = get_beastier_path("beast2_warning.xml")
  )
}
```

has_unique_ids

Determine if the XML text has unique parameter IDs

Description

Determine if the XML text has unique parameter IDs

Usage

```
has_unique_ids(text)
```

Arguments

text the XML as text

Value

TRUE if all parameter IDs are unique, FALSE otherwise

Author(s)

Richèl J.C. Bilderbeek

See Also

to obtain the duplicate parameter IDs, use [get_duplicate_param_ids](#)

Examples

```

check_empty_beastier_folders()

line_1 <- "<parameter id=\"RealParameter.1\" ...</parameter>"
line_2 <- "<parameter id=\"RealParameter.2\" ...</parameter>"
# Unique IDs
has_unique_ids(c(line_1, line_2))
# No unique ID
has_unique_ids(c(line_1, line_1))

check_empty_beastier_folders()

```

install_beast2	<i>Deprecated function to install BEAST2</i>
----------------	--

Description

This function is deprecated as it violated CRAN policy.

Usage

```

install_beast2(
  folder_name = rappdirs::user_data_dir(),
  beast2_version = beastier::get_default_beast2_version(),
  verbose = FALSE,
  os = rappdirs::app_dir()$os
)

```

Arguments

folder_name	name of the folder where the BEAST2 files will be put. The name of the BEAST2 binary file will be at [folder_name]/beast/bin/beast The name of the BEAST2 jar file will be at [folder_name]/beast/lib/launcher.jar
beast2_version	the version of BEAST2. By default, this is the version as returned by get_default_beast2_version
verbose	if TRUE, additional information is displayed, that is potentially useful in debugging
os	name of the operating system, must be unix (Linux, Mac) or win (Windows)

Value

Nothing. Gives a deprecation message using [stop](#).

Author(s)

Richèl J.C. Bilderbeek

is_alignment	<i>Determines if the input is an alignment of type DNABin</i>
--------------	---

Description

Determines if the input is an alignment of type [DNABin](#)

Usage

```
is_alignment(input)
```

Arguments

input	The input to be tested
-------	------------------------

Value

TRUE or FALSE

Author(s)

Richèl J.C. Bilderbeek

is_beast2_input_file	<i>Is a file a valid BEAST2 input file?</i>
----------------------	---

Description

Is a file a valid BEAST2 input file?

Usage

```
is_beast2_input_file(  
  filename,  
  show_warnings = FALSE,  
  verbose = FALSE,  
  beast2_path = get_default_beast2_path()  
)
```


Arguments

filename	name of the BEAST2 XML input file
show_warnings	if TRUE, warnings will shown
verbose	if TRUE, additional information is displayed, that is potentially useful in debugging
beast2_path	name of either a BEAST2 binary file (usually simply <code>beast</code>) or a BEAST2 jar file (usually has a <code>.jar</code> extension). Use get_default_beast2_bin_path to get the default BEAST2 binary file's path Use get_default_beast2_jar_path to get the default BEAST2 jar file's path

Value

TRUE if the file is valid, FALSE if not

Note

this function only works on standard BEAST2 input files: if a BEAST2 input file is modified to use a certain BEAST2 package, this function will label it as an invalid file

Author(s)

Richèl J.C. Bilderbeek

See Also

Use [are_beast2_input_lines](#) to check the lines

Examples

```
check_empty_beastier_folders()

if (is_beast2_installed() && is_on_ci()) {

  filename <- get_beastier_path("anthus_2_4.xml")
  # TRUE, this is a BEAST2 input file
  is_beast2_input_file(filename)

  filename <- get_beastier_path("beast2_example_output.log")
  # FALSE, this is not a BEAST2 input file,
  # it is a BEAST2 output log file instead
  is_beast2_input_file(filename)
}

check_empty_beastier_folders()
```

is_beast2_installed *Checks if BEAST2 is installed*

Description

Checks if BEAST2 is installed

Usage

```
is_beast2_installed(
  folder_name = get_default_beast2_folder(),
  os = rappdirs::app_dir()$os
)
```

Arguments

folder_name name of the folder where the BEAST2 files are put. The name of the BEAST2 binary file will be at [folder_name]/beast/bin/beast The name of the BEAST2 jar file will be at [folder_name]/beast/lib/launcher.jar

os name of the operating system, must be unix (Linux, Mac) or win (Windows)

Value

TRUE if BEAST2 is installed

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()

is_beast2_installed()

check_empty_beastier_folders()
```

is_bin_path *Is the path a path to the BEAST2 binary file? Does not check if the file at that path is present*

Description

Is the path a path to the BEAST2 binary file? Does not check if the file at that path is present

Usage

```
is_bin_path(path)
```

Arguments

path a string to a path

Value

TRUE if the path is a path to a BEAST2 binary file

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()

if (is_beast2_installed()) {
  # TRUE
  is_bin_path("beast")
  is_bin_path("BEAST.exe")
  is_bin_path(get_default_beast2_bin_path())
  # FALSE
  is_bin_path("launcher.jar")
  is_bin_path(get_default_beast2_jar_path())
}

check_empty_beastier_folders()
```

is_jar_path	<i>Is the path a path to the BEAST2 jar file? Does not check if the file at that path is present</i>
-------------	--

Description

Is the path a path to the BEAST2 jar file? Does not check if the file at that path is present

Usage

```
is_jar_path(path)
```

Arguments

path a string to a path

Value

TRUE if the path is a path to a BEAST2 jar file

Author(s)

Richèl J.C. Bilderbeek

Examples

```
# Returns TRUE
is_jar_path("beast.jar")
is_jar_path("launcher.jar")
is_jar_path(get_default_beast2_jar_path())
# Returns FALSE
is_jar_path("beast")
is_jar_path(get_default_beast2_bin_path())
```

is_on_appveyor

Determines if the environment is AppVeyor

Description

Determines if the environment is AppVeyor

Usage

```
is_on_appveyor()
```

Value

TRUE if run on AppVeyor, FALSE otherwise

Author(s)

Richèl J.C. Bilderbeek

Examples

```
if (is_on_appveyor()) {
  message("Running on AppVeyor")
}
```

is_on_ci	<i>Determines if the environment is a continuous integration service</i>
----------	--

Description

Determines if the environment is a continuous integration service

Usage

```
is_on_ci()
```

Value

TRUE if run on AppVeyor or Travis CI, FALSE otherwise

Author(s)

Richèl J.C. Bilderbeek

Examples

```
if (is_on_ci()) {  
  message("Running on a continuous integration service")  
}
```

is_on_travis	<i>Determines if the environment is Travis CI</i>
--------------	---

Description

Determines if the environment is Travis CI

Usage

```
is_on_travis()
```

Value

TRUE if run on Travis CI, FALSE otherwise

Author(s)

Richèl J.C. Bilderbeek

Examples

```
if (is_on_ci()) {  
  message("Running on Travis CI")  
}
```

is_win_bin_path *Is the path a path to the BEAST2 binary file? Does not check if the file at that path is present*

Description

Is the path a path to the BEAST2 binary file? Does not check if the file at that path is present

Usage

```
is_win_bin_path(path)
```

Arguments

path a string to a path

Value

TRUE if the path is a path to a BEAST2 binary file

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()

# TRUE
is_win_bin_path("BEAST.exe")
# FALSE
is_win_bin_path("beast")
is_win_bin_path("launcher.jar")

check_empty_beastier_folders()
```

print_beast2_options *Pretty-print a 'beast2_options'*

Description

Pretty-print a 'beast2_options'

Usage

```
print_beast2_options(beast2_options)
```

Arguments

`beast2_options` a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

Value

Nothing. Will display the 'beast2_options' using [cat](#).

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()
print_beast2_options(create_beast2_options())
check_empty_beastier_folders()
```

remove_beastier_folder

Check there are no files in the default [beautier](#) folder

Description

Check there are no files in the default [beautier](#) folder. The goal is to make sure no temporary files are left undeleted. Will [stop](#) if there are files in the [beautier](#) folder.

Usage

```
remove_beastier_folder()
```

Value

Nothing.

Author(s)

Richèl J.C. Bilderbeek

See Also

use [remove_beautier_folder](#) to remove the default 'beautier' folder

Examples

```
check_empty_beastier_folder()
remove_beastier_folder()
check_empty_beastier_folder()
```

```
remove_beastier_folders
```

Remove the 'beautier' and 'beastier' temporary folders

Description

Remove the 'beautier' and 'beastier' temporary folders

Usage

```
remove_beastier_folders()
```

Value

Nothing.

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()
remove_beastier_folders()
check_empty_beastier_folders()
```

```
remove_beautier_folder
```

Deprecated function, use [remove_beautier_folder](#).

Description

Deprecated function, use [remove_beautier_folder](#).

Usage

```
remove_beautier_folder()
```


Details

Check there are no files in the default 'beautier' folder. The goal is to make sure no temporary files are left undeleted. Will [stop](#) if there are files in the 'beautier' folder.

Value

Nothing.

Author(s)

Richèl J.C. Bilderbeek

remove_file_if_present

Remove a file if it is present, will do nothing if it is not.

Description

Remove a file if it is present, will do nothing if it is not.

Usage

```
remove_file_if_present(filename)
```

Arguments

filename name of a file

Value

Nothing. Will remove the file if it is presented, will do nothing if it is not.

Author(s)

Richèl J.C. Bilderbeek

Examples

```
filename <- tempfile()
file.create(filename)
remove_file_if_present(filename)
remove_file_if_present(filename)
```

`rename_beast2_options_filenames`*Rename the filenames in the BEAST2 options*

Description

Rename the filenames in the BEAST2 options

Usage

```
rename_beast2_options_filenames(beast2_options, rename_fun)
```

Arguments

`beast2_options` a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

`rename_fun` a function to rename a filename, as can be checked by [check_rename_fun](#). This function should have one argument, which will be a filename or `NA`. The function should [return](#) one filename (when passed one filename) or one `NA` (when passed one `NA`). Example rename functions are:

- [get_remove_dir_fun](#) get a function that removes the directory paths from the filenames, in effect turning these into local files
- [get_replace_dir_fun](#) get a function that replaces the directory paths from the filenames
- [get_remove_hex_fun](#) get a function that removes the hex string from filenames. For example, `tracelog_82c1a522040.log` becomes `tracelog.log`

Value

a ‘beast2_options’ with the filenames it contains renamed

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()

# beast2_options with local filenames
beast2_options <- create_beast2_options(
  input_filename = "my.fas",
  output_state_filename = "my_state.xml.state"
)
# Rename filenames to be in /my/new/folder
rename_beast2_options_filenames(
  beast2_options = beast2_options,
```

```

    rename_fun = beautier::get_replace_dir_fun("/my/new/folder")
  )

  check_empty_beastier_folders()

```

run_beast2

Run BEAST2

Description

Run BEAST2

Usage

```

run_beast2(
  input_filename,
  output_log_filename = "output_log_filename_is_deprecated",
  output_trees_filenames = "output_trees_filenames_is_deprecated",
  output_state_filename = create_temp_state_filename(),
  rng_seed = NA,
  n_threads = NA,
  use_beagle = FALSE,
  overwrite = TRUE,
  beast2_working_dir = "beast2_working_dir_is_deprecated",
  beast2_path = get_default_beast2_path(),
  verbose = FALSE
)

```

Arguments

input_filename the name of a BEAST2 input XML file. This file usually has an `.xml` extension. Use [create_temp_input_filename](#) to create a temporary filename with that extension.

output_log_filename name of the `.log` file to create

output_trees_filenames one or more names for `.trees` file to create. There will be one `.trees` file created per alignment in the input file. The number of alignments must equal the number of `.trees` filenames, else an error is thrown. Alignments are sorted alphabetically by their IDs

output_state_filename name of the `.xml` state file to create. Use [create_temp_state_filename](#) to create a temporary filename with that extension.

rng_seed the random number generator seed of the BEAST2 run. Must be a non-zero positive integer value or `NA`. If `rng_seed` is `NA`, BEAST2 will pick a random seed

n_threads	the number of computational threads to use. Use NA to use the BEAST2 default of 1.
use_beagle	use BEAGLE if present
overwrite	if TRUE: overwrite the .log and .trees files if one of these exists. If FALSE, BEAST2 will not be started if <ul style="list-style-type: none"> • the .log file exists • the .trees files exist • the .log file created by BEAST2 exists • the .trees files created by BEAST2 exist
beast2_working_dir	a folder where BEAST2 can work in isolation. For each BEAST2 run, a new subfolder is created in that folder. Within this folder, BEAST2 is allowed to create all of its output files, without the risk of overwriting existing ones, allowing BEAST2 to run in multiple parallel processes.
beast2_path	name of either a BEAST2 binary file (usually simply beast) or a BEAST2 jar file (usually has a .jar extension). Use get_default_beast2_bin_path to get the default BEAST binary file's path Use get_default_beast2_jar_path to get the default BEAST jar file's path
verbose	if TRUE, additional information is displayed, that is potentially useful in debugging

Value

The text sent to STDOUT and STDERR. It will create the file with name output_state_filenames

Author(s)

Richèl J.C. Bilderbeek

Examples

```

check_empty_beastier_folders()

if (is_beast2_installed() && is_on_ci()) {

  output_state_filename <- create_temp_state_filename()

  run_beast2(
    input_filename = get_beastier_path("2_4.xml"),
    output_state_filename = output_state_filename
  )
  file.remove(output_state_filename)
  remove_beastier_folders()
}

check_empty_beastier_folders()

```

```
run_beast2_from_options
      Run BEAST2
```

Description

Run BEAST2

Usage

```
run_beast2_from_options(beast2_options = create_beast2_options())
```

Arguments

`beast2_options` a set of BEAST2 options, that are the R equivalent of the BEAST2 command-line options, as can be created by [create_beast2_options](#)

Value

The text sent to STDOUT and STDERR. It will create the file with name `output_state_filenames`

Author(s)

Richèl J.C. Bilderbeek

Examples

```
check_empty_beastier_folders()

if (is_beast2_installed() && is_on_ci()) {
  beast2_options <- create_beast2_options(
    input_filename = get_beastier_path("2_4.xml")
  )
  run_beast2_from_options(beast2_options)
  file.remove(beast2_options$output_state_filename)
  remove_beastier_folders()
}
check_empty_beastier_folders()
```

save_lines	<i>Save text (a container of strings) to a file</i>
------------	---

Description

Save text (a container of strings) to a file

Usage

```
save_lines(filename, lines)
```

Arguments

filename	filename of the file to have the text written to
lines	lines of text to be written to file

Value

Nothing. Will save the lines to file

Author(s)

Richèl J.C. Bilderbeek

Examples

```
text <- c("hello", "world")
filename <- get_beastier_tempfilename()
save_lines(filename = filename, lines = text)
file.remove(filename)

remove_beastier_folders()
```

save_nexus_as_fasta	<i>Save a NEXUS file as a FASTA file</i>
---------------------	--

Description

Save a NEXUS file as a FASTA file

Usage

```
save_nexus_as_fasta(nexus_filename, fasta_filename)
```

Arguments

nexus_filename name of an existing NEXUS file
 fasta_filename name of the FASTA file to be created

Value

nothing. The NEXUS file will be saved as a FASTA file

uninstall_beast2	<i>Deprecated function to uninstall BEAST2</i>
------------------	--

Description

Deprecated function to uninstall BEAST2

Usage

```
uninstall_beast2(
  folder_name = rappdirs::user_data_dir(),
  os = rappdirs::app_dir()$os,
  verbose = FALSE
)
```

Arguments

folder_name name of the folder where the BEAST2 files are installed. The name of the BEAST2 binary file will be at [folder_name]/beast/bin/beast The name of the BEAST2 jar file will be at [folder_name]/beast/lib/launcher.jar

os name of the operating system, must be unix (Linux, Mac) or win (Windows)

verbose if TRUE, additional information is displayed, that is potentially useful in debugging

Value

Nothing. A deprecation message using [stop](#) will be triggered

Author(s)

Richèl J.C. Bilderbeek

upgrade_beast2	<i>Deprecated function to upgrade BEAST2.</i>
----------------	---

Description

Deprecated function to upgrade BEAST2.

Usage

```
upgrade_beast2(  
  folder_name = rappdirs::user_data_dir(),  
  os = rappdirs::app_dir()$os  
)
```

Arguments

folder_name	name of the folder where the BEAST2 files will be put. The name of the BEAST2 binary file will be at [folder_name]/beast/bin/beast The name of the BEAST2 jar file will be at [folder_name]/beast/lib/launcher.jar
os	name of the operating system, must be unix (Linux, Mac) or win (Windows)

Value

Nothing. A deprecation message using [stop](#) will be triggered

Author(s)

Richèl J.C. Bilderbeek

Index

add_quotes_if_has_spaces, 4
are_beast2_input_lines, 5, 70, 73
are_beast2_input_lines_deep, 6
are_beast2_input_lines_fast, 7
are_identical_alignments, 8

beast2_options_to_table, 8
beastier, 9, 10, 20, 21, 39, 47, 57, 59
beastier_report, 10
beautier, 21, 48, 79

cat, 79
check_beast2, 11
check_beast2_options, 11, 13, 15, 16, 29, 42
check_beast2_options_data_types, 13
check_beast2_options_do_not_overwrite_existing_files, 14
check_beast2_options_filenames_differ, 15
check_beast2_options_names, 15
check_beast2_optionses, 12
check_beast2_path, 16
check_can_create_dir_for_state_output_file, 17
check_can_create_file, 17
check_can_create_screenlog_file, 18
check_can_create_state_output_file, 19
check_can_create_tracelog_file, 19
check_can_create_treelog_file, 20
check_empty_beastier_folder, 20
check_empty_beastier_folders, 21
check_input_filename, 22
check_input_filename_validity, 22
check_n_threads, 24
check_os, 24
check_rename_fun, 49, 82
check_rng_seed, 25
continue_beast2, 26
create_beast2_continue_cmd_from_options, 27
create_beast2_input_file_folder, 27
create_beast2_options, 8, 11–15, 17–20, 23, 26–28, 28, 31–34, 42, 47, 56, 79, 82, 85
create_beast2_run_cmd, 30
create_beast2_run_cmd_from_options, 31
create_beast2_screenlog_folder, 32
create_beast2_state_output_file_folder, 33
create_beast2_tracelog_folder, 33
create_beast2_treelog_folder, 34
create_beast2_validate_cmd, 34
create_beast2_validate_cmd_bin, 35
create_beast2_validate_cmd_jar, 36
create_beast2_version_cmd, 37
create_beast2_version_cmd_bin, 38
create_beast2_version_cmd_jar, 39
create_beastier_tempfolder, 39
create_beautier_tempfolder, 40, 40
create_mcbette_beast2_options, 41
create_random_alignment, 42
create_random_fasta, 43
create_random_phylogeny, 44
create_temp_input_filename, 22, 23, 29, 30, 35–37, 41, 45, 48, 50–52, 68, 83
create_temp_state_filename, 29, 41, 45, 48, 83

default_params_doc, 46
DNABin, 43, 72
do_minimal_run, 50

extract_screenlog_filename_from_beast2_input_file, 50
extract_tracelog_filename_from_beast2_input_file, 51
extract_treelog_filename_from_beast2_input_file, 52

get_alignment_ids_from_xml_filename, 53

- get_beast2_example_filename, 53
- get_beast2_example_filenames, 54
- get_beast2_main_class_name, 55
- get_beast2_options_filenames, 56
- get_beast2_version, 56
- get_beastier_folder, 57
- get_beastier_path, 58, 59
- get_beastier_paths, 58, 58
- get_beastier_tempfilename, 59
- get_default_beast2_bin_path, 5, 6, 10, 11, 16, 23, 29, 31, 35–38, 42, 47, 54, 56, 60, 60, 64, 65, 69, 73, 84
- get_default_beast2_download_url, 61
- get_default_beast2_download_url_linux, 62
- get_default_beast2_download_url_win, 62
- get_default_beast2_folder, 10, 47, 54, 60, 61, 63, 64, 65
- get_default_beast2_jar_path, 5, 6, 11, 16, 23, 29, 31, 35, 37, 39, 47, 56, 63, 64, 65, 69, 73, 84
- get_default_beast2_path, 65
- get_default_beast2_version, 47, 61, 62, 66, 71
- get_default_java_path, 66
- get_duplicate_param_ids, 67, 70
- get_java_version, 68
- get_remove_dir_fun, 49, 82
- get_remove_hex_fun, 49, 82
- get_replace_dir_fun, 49, 82
- get_trees_filenames, 68
- gives_beast2_warning, 69

- has_unique_ids, 67, 70

- install_beast2, 61, 63–65, 71
- is_alignment, 72
- is_beast2_input_file, 6, 7, 70, 72
- is_beast2_installed, 74
- is_bin_path, 74
- is_jar_path, 75
- is_on_appveyor, 76
- is_on_ci, 77
- is_on_travis, 77
- is_win_bin_path, 78

- list, 29, 42

- message, 10

- NA, 24, 25, 29, 30, 41, 48, 49, 82–84
- print_beast2_options, 78

- remove_beastier_folder, 79
- remove_beastier_folders, 80
- remove_beastier_folder, 79, 80, 80
- remove_file_if_present, 81
- rename_beast2_options_filenames, 82
- return, 49, 82
- run_beast2, 83
- run_beast2_from_options, 50, 85

- save_lines, 86
- save_nexus_as_fasta, 86
- stop, 11, 14, 16–25, 53, 54, 71, 79, 81, 87, 88

- tempfile, 59
- tibble, 8

- uninstall_beast2, 87
- upgrade_beast2, 88