Package 'extrasteps'

October 3, 2024

Title More Miscellaneous Steps for the 'recipes' Package

Version 0.1.0

Description Contains additional miscellaneous steps for the 'recipes' package. These steps are useful, but doesn't have a good home in other 'recipes' packages or its extensions.

License MIT + file LICENSE

URL https://github.com/EmilHvitfeldt/extrasteps, https://emilhvitfeldt.github.io/extrasteps/

BugReports https://github.com/EmilHvitfeldt/extrasteps/issues

Depends R (>= 3.6), recipes (>= 1.0.7)

Imports dplyr, generics, magrittr, purrr, rlang, tibble, vctrs

Suggests almanac, ggplot2, modeldata, testthat (>= 3.0.0)

Config/testthat/edition 3

Encoding UTF-8

RoxygenNote 7.3.2

NeedsCompilation no

Author Emil Hvitfeldt [aut, cre] (<https://orcid.org/0000-0002-0679-1945>)

Maintainer Emil Hvitfeldt <emilhhvitfeldt@gmail.com>

Repository CRAN

Date/Publication 2024-10-03 19:20:02 UTC

Contents

`step_date_after` *Time after Recurrent Date Time Event*

Description

`step_date_after()` creates a *specification* of a recipe step that will create new columns indicating the time after an recurrent event.

Usage

```
step_date_after(
  recipe,
  ...,
  role = "predictor",
  trained = FALSE,
  rules = list(),
  transform = "identity",
  columns = NULL,
  skip = FALSE,
  id = rand_id("date_after")
)
```

Arguments

`recipe`	A recipe object. The step will be added to the sequence of operations for this recipe.
`...`	One or more selector functions to choose variables for this step. See `selections()` for more details.
`role`	Not used by this step since no new variables are created.
`trained`	A logical to indicate if the quantities for preprocessing have been estimated.
`rules`	Named list of `almanac` rules.
`transform`	A function or character indication a function used oon the resulting variables. See details for allowed names and their functions.
`columns`	A character string of variables that will be used as inputs. This field is a placeholder and will be populated once `recipes::prep.recipe()` is used.

skip — A logical. Should the step be skipped when the recipe is baked by bake()? While all operations are baked when prep() is run, some operations may not be able to be conducted on new data (e.g. processing the outcome variable(s)). Care should be taken when using skip = TRUE as it may affect the computations for subsequent operations.

id — A character string that is unique to this step to identify it.

Details

The transform argument can be function that takes a numeric vector and returns a numeric vector of the same length. It can also be a character vector, below is the supported vector names. Some functions come with offset to avoid Inf.

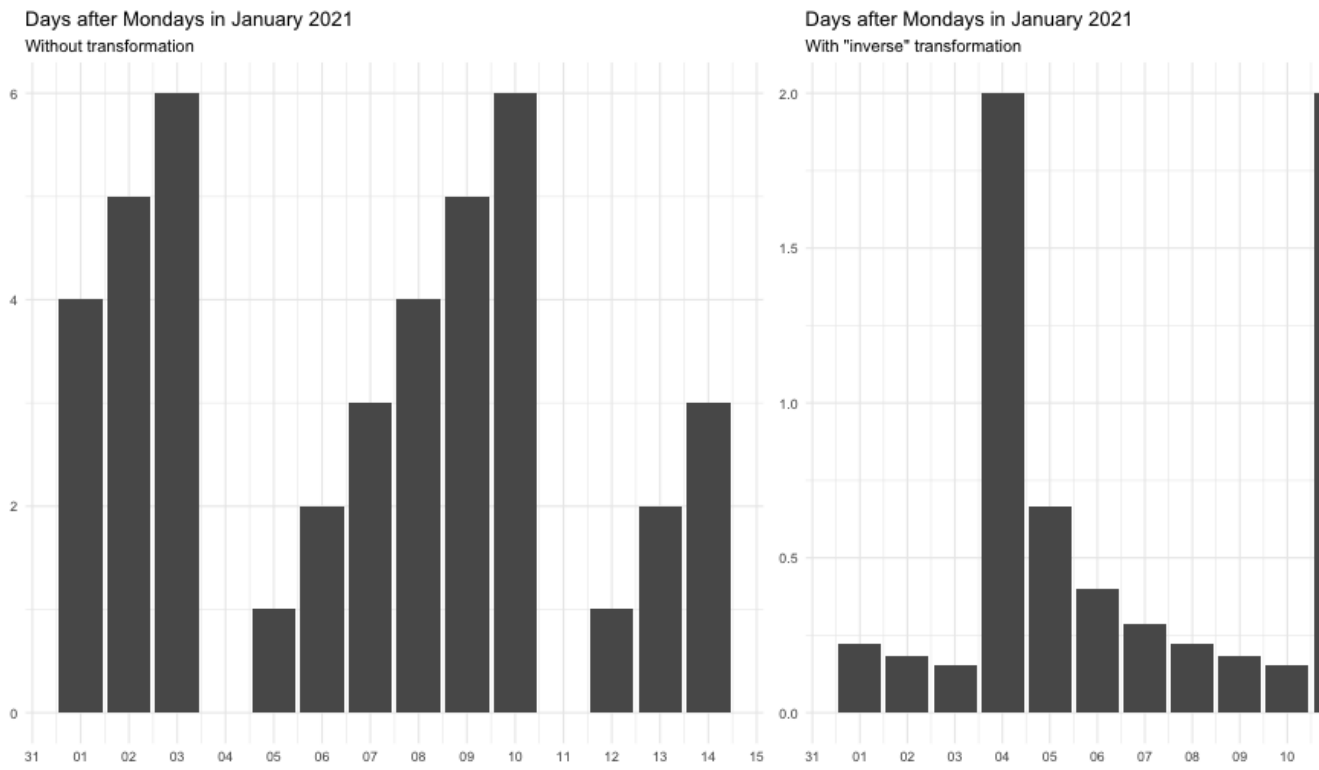
```
"identity"
function(x) x

"inverse"
function(x) 1 / (x + 0.5)

"exp"
function(x) exp(x)

"log"
function(x) log(x + 0.5)
```

The effect of transform is illustrated below.



The naming of the resulting variables will be on the form

```
{variable name}_after_{name of rule}
```

Value

An updated version of `recipe` with the new check added to the sequence of any existing operations.

Examples

```
library(recipes)
library(extrasteps)
library(almanac)
library(modeldata)

data(Chicago)

on_easter <- yearly() %>% recur_on_easter()
on_weekend <- weekly() %>% recur_on_weekends()

rules <- list(easter = on_easter, weekend = on_weekend)

rec_spec <- recipe(ridership ~ date, data = Chicago) %>%
  step_date_after(date, rules = rules)

rec_spec_preped <- prep(rec_spec)
```

```
bake(rec_spec_preped, new_data = NULL)
```

`step_date_before` *Time before Recurrent Date Time Event*

Description

`step_date_before()` creates a *specification* of a recipe step that will create new columns indicating the time before an recurrent event.

Usage

```
step_date_before(
  recipe,
  ...,
  role = "predictor",
  trained = FALSE,
  rules = list(),
  transform = "identity",
  columns = NULL,
  skip = FALSE,
  id = rand_id("date_before")
)
```

Arguments

`recipe`	A recipe object. The step will be added to the sequence of operations for this recipe.
`...`	One or more selector functions to choose variables for this step. See `selections()` for more details.
`role`	Not used by this step since no new variables are created.
`trained`	A logical to indicate if the quantities for preprocessing have been estimated.
`rules`	Named list of `almanac` rules.
`transform`	A function or character indication a function used oon the resulting variables. See details for allowed names and their functions.
`columns`	A character string of variables that will be used as inputs. This field is a placeholder and will be populated once `recipes::prep.recipe()` is used.
`skip`	A logical. Should the step be skipped when the recipe is baked by `bake()`? While all operations are baked when `prep()` is run, some operations may not be able to be conducted on new data (e.g. processing the outcome variable(s)). Care should be taken when using `skip = TRUE` as it may affect the computations for subsequent operations.
`id`	A character string that is unique to this step to identify it.

Details

The `transform` argument can be function that takes a numeric vector and returns a numeric vector of the same length. It can also be a character vector, below is the supported vector names. Some functions come with offset to avoid `Inf`.

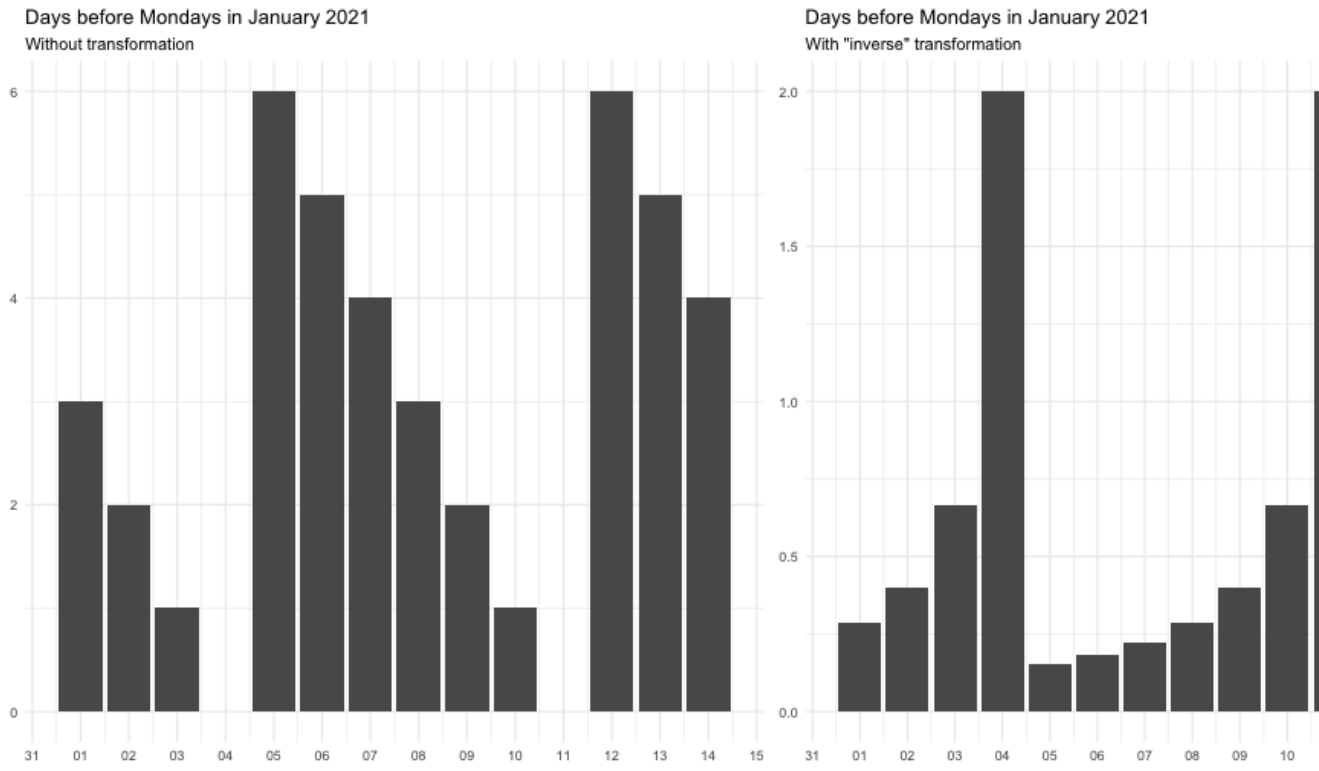
```
"identity"
function(x) x

"inverse"
function(x) 1 / (x + 0.5)

"exp"
function(x) exp(x)

"log"
function(x) log(x + 0.5)
```

The effect of `transform` is illustrated below.



The naming of the resulting variables will be on the form

```
{variable name}_before_{name of rule}
```

Value

An updated version of `recipe` with the new check added to the sequence of any existing operations.

Examples

```
library(recipes)
library(extrasteps)
library(almanac)
library(modeldata)

data(Chicago)

on_easter <- yearly() %>% recur_on_easter()
on_weekend <- weekly() %>% recur_on_weekends()

rules <- list(easter = on_easter, weekend = on_weekend)

rec_spec <- recipe(ridership ~ date, data = Chicago) %>%
  step_date_before(date, rules = rules)

rec_spec_preped <- prep(rec_spec)

bake(rec_spec_preped, new_data = NULL)
```

---

step_date_nearest *Time to Nearest Recurrent Date Time Event*

Description

`step_date_nearest()` creates a *specification* of a recipe step that will create new columns indicating the time to nearest recurrent event.

Usage

```
step_date_nearest(
  recipe,
  ...,
  role = "predictor",
  trained = FALSE,
  rules = list(),
  transform = "identity",
  columns = NULL,
  skip = FALSE,
  id = rand_id("date_nearest")
)
```

Arguments

recipe	A recipe object. The step will be added to the sequence of operations for this recipe.
...	One or more selector functions to choose variables for this step. See selections() for more details.
role	Not used by this step since no new variables are created.
trained	A logical to indicate if the quantities for preprocessing have been estimated.
rules	Named list of almanac rules.
transform	A function or character indication a function used oon the resulting variables. See details for allowed names and their functions.
columns	A character string of variables that will be used as inputs. This field is a placeholder and will be populated once recipes::prep.recipe() is used.
skip	A logical. Should the step be skipped when the recipe is baked by bake()? While all operations are baked when prep() is run, some operations may not be able to be conducted on new data (e.g. processing the outcome variable(s)). Care should be taken when using skip = TRUE as it may affect the computations for subsequent operations.
id	A character string that is unique to this step to identify it.

Details

The transform argument can be function that takes a numeric vector and returns a numeric vector of the same length. It can also be a character vector, below is the supported vector names. Some functions come with offset to avoid Inf.

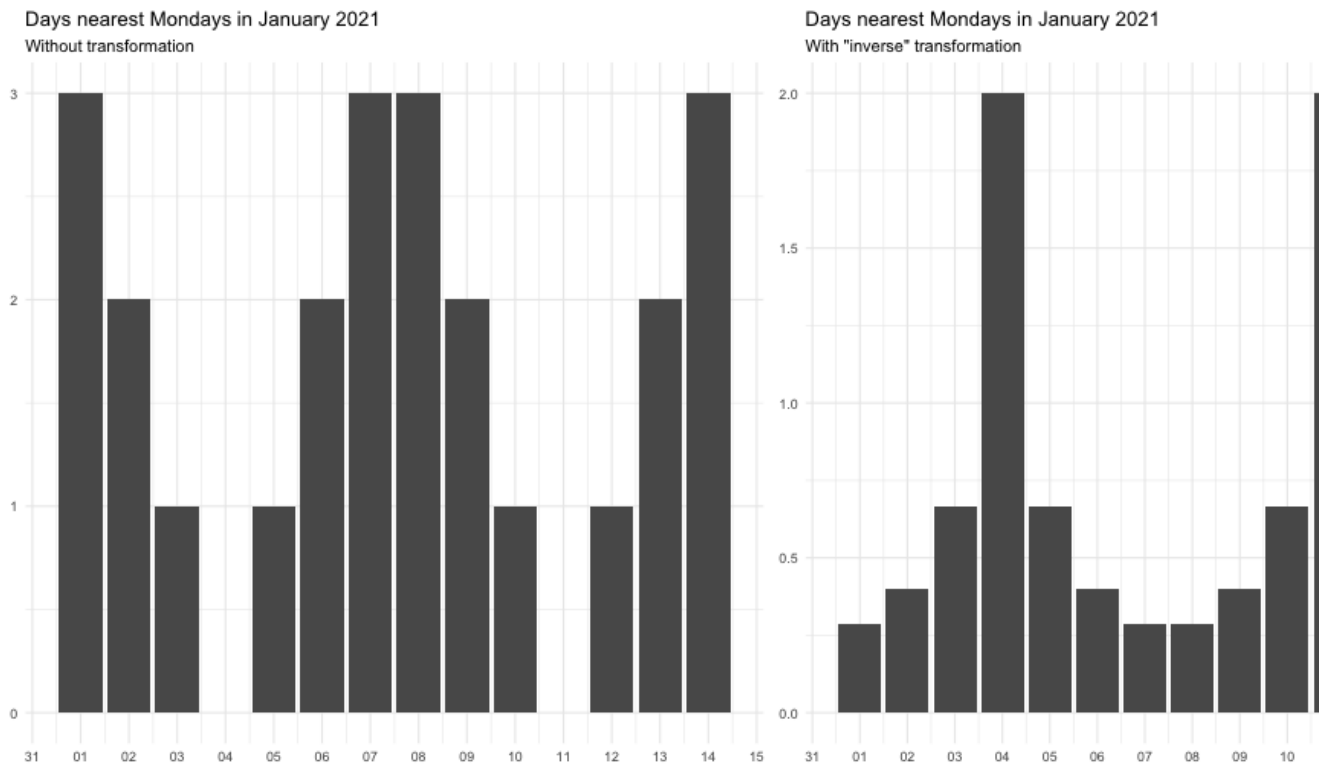
```
"identity"
function(x) x

"inverse"
function(x) 1 / (x + 0.5)

"exp"
function(x) exp(x)

"log"
function(x) log(x + 0.5)
```

The effect of transform is illustrated below.



The naming of the resulting variables will be on the form

```
{variable name}_nearest_{name of rule}
```

Value

An updated version of `recipe` with the new check added to the sequence of any existing operations.

Examples

```
library(recipes)
library(extrasteps)
library(almanac)
library(modeldata)

data(Chicago)

on_easter <- yearly() %>% recur_on_easter()
on_weekend <- weekly() %>% recur_on_weekends()

rules <- list(easter = on_easter, weekend = on_weekend)

rec_spec <- recipe(ridership ~ date, data = Chicago) %>%
  step_date_nearest(date, rules = rules)

rec_spec_preped <- prep(rec_spec)
```

```
bake(rec_spec_preped, new_data = NULL)
```

`step_difftime` *difftimearithmic Transformation*

Description

`step_difftime()` creates a *specification* of a recipe step that will calculate difftimes of the data.

Usage

```
step_difftime(
  recipe,
  ...,
  role = NA,
  trained = FALSE,
  time = NULL,
  tz = NULL,
  unit = "auto",
  columns = NULL,
  skip = FALSE,
  id = rand_id("difftime")
)
```

Arguments

`recipe`	A recipe object. The step will be added to the sequence of operations for this recipe.
`...`	One or more selector functions to choose which variables are affected by the step. See `recipes::selections()` for more details. For the `tidy` method, these are not currently used.
`role`	Not used by this step since no new variables are created.
`trained`	A logical to indicate if the quantities for preprocessing have been estimated.
`time`	date-time or date objects. Used for reference. Must match the type of variable.
`tz`	an optional time zone specification to be used for the conversion, mainly for "POSIXlt" objects.
`unit`	character string. Units in which the results are desired. Must be one of "auto", "secs", "mins", "hours","days", and "weeks" Defaults to "auto".
`columns`	A character string of variable names that will be populated (eventually) by the `terms` argument.
`skip`	A logical. Should the step be skipped when the recipe is baked by `bake()`? While all operations are baked when `prep()` is run, some operations may not be able to be conducted on new data (e.g. processing the outcome variable(s)). Care should be taken when using `skip = TRUE` as it may affect the computations for subsequent operations.
`id`	A character string that is unique to this step to identify it.

Value

An updated version of `recipe` with the new step added to the sequence of existing steps (if any). For the `tidy` method, a tibble with columns `terms` (the columns that will be affected) and `base`.

Examples

```
library(recipes)
example_date <- data.frame(
  dates = seq(as.Date("2010/1/1"), as.Date("2016/1/1"), by = "quarter")
 )

 example_datetime <- data.frame(
  datetimes = seq(ISOdate(1993,1,1), ISOdate(1993,1,2), by = "hour")
 )

rec <- recipe(~ dates, data = example_date) %>%
  step_difftime(dates, time = as.Date("2010/1/1"))

difftime_obj <- prep(rec)

bake(difftime_obj, new_data = NULL)

recipe(~ dates, data = example_date) %>%
  step_difftime(dates, time = as.Date("2010/1/1"), unit = "weeks") %>%
  prep() %>%
  bake(new_data = NULL)

recipe(~ datetimes, data = example_datetime) %>%
  step_difftime(datetimes, time = ISOdate(1993,1,1), unit = "secs") %>%
  prep() %>%
  bake(new_data = NULL)
```

---

step_encoding_binary *Perform binary encoding of factor variables*

Description

`step_encoding_binary()` creates a *specification* of a recipe step that will perform binary encoding of factor variables.

Usage

```
step_encoding_binary(
  recipe,
  ...,
  role = NA,
  trained = FALSE,
  res = NULL,
  columns = NULL,
```

```
  keep_original_cols = FALSE,
  skip = FALSE,
  id = rand_id("encoding_binary")
)
```

Arguments

recipe	A recipe object. The step will be added to the sequence of operations for this recipe.
...	One or more selector functions to choose which variables are affected by the step. See recipes::selections() for more details. For the tidy method, these are not currently used.
role	Not used by this step since no new variables are created.
trained	A logical to indicate if the quantities for preprocessing have been estimated.
res	A list containing levels of training variables is stored here once this preprocessing step has be trained by recipes::prep().
columns	A character string of variable names that will be populated (eventually) by the terms argument.
keep_original_cols	A logical to keep the original variables in the output. Defaults to FALSE.
skip	A logical. Should the step be skipped when the recipe is baked by bake()? While all operations are baked when prep() is run, some operations may not be able to be conducted on new data (e.g. processing the outcome variable(s)). Care should be taken when using skip = TRUE as it may affect the computations for subsequent operations.
id	A character string that is unique to this step to identify it.

Value

An updated version of recipe with the new step added to the sequence of existing steps (if any). For the tidy method, a tibble with columns terms (the columns that will be affected) and base.

Examples

```
library(recipes)
library(modeldata)

data(ames)

rec <- recipe(~ Land_Contour + Neighborhood, data = ames) %>%
  step_encoding_binary(all_nominal_predictors()) %>%
  prep()

rec %>%
  bake(new_data = NULL)

tidy(rec, 1)
```

step_encoding_frequency *Perform frequency encoding*

Description

step_encoding_frequency() creates a *specification* of a recipe step that will perform frequency encoding.

Usage

```
step_encoding_frequency(
  recipe,
  ...,
  role = NA,
  trained = FALSE,
  res = NULL,
  columns = NULL,
  skip = FALSE,
  id = rand_id("encoding_frequency")
)
```

Arguments

recipe	A recipe object. The step will be added to the sequence of operations for this recipe.
...	One or more selector functions to choose which variables are affected by the step. See recipes::selections() for more details. For the tidy method, these are not currently used.
role	Not used by this step since no new variables are created.
trained	A logical to indicate if the quantities for preprocessing have been estimated.
res	A list frequencies of the levels of the training variables is stored here once this preprocessing step has be trained by recipes::prep().
columns	A character string of variable names that will be populated (eventually) by the terms argument.
skip	A logical. Should the step be skipped when the recipe is baked by bake()? While all operations are baked when prep() is run, some operations may not be able to be conducted on new data (e.g. processing the outcome variable(s)). Care should be taken when using skip = TRUE as it may affect the computations for subsequent operations.
id	A character string that is unique to this step to identify it.

Value

An updated version of recipe with the new step added to the sequence of existing steps (if any). For the tidy method, a tibble with columns terms (the columns that will be affected) and base.

Examples

```
library(recipes)
library(modeldata)

data(ames)

rec <- recipe(~ Land_Contour + Neighborhood, data = ames) %>%
  step_encoding_frequency(all_nominal_predictors()) %>%
  prep()

rec %>%
  bake(new_data = NULL)

tidy(rec, 1)
```

`step_maxabs` *Perform Max Abs Scaling*

Description

`step_maxabs()` creates a *specification* of a recipe step that will perform Max Abs scaling.

Usage

```
step_maxabs(
  recipe,
  ...,
  role = NA,
  trained = FALSE,
  res = NULL,
  columns = NULL,
  skip = FALSE,
  id = rand_id("maxabs")
)
```

Arguments

`recipe`	A recipe object. The step will be added to the sequence of operations for this recipe.
`...`	One or more selector functions to choose which variables are affected by the step. See `recipes::selections()` for more details. For the `tidy` method, these are not currently used.
`role`	Not used by this step since no new variables are created.
`trained`	A logical to indicate if the quantities for preprocessing have been estimated.
`res`	A list containing absolute max of training variables is stored here once this preprocessing step has be trained by `recipes::prep()`.

columns	A character string of variable names that will be populated (eventually) by the terms argument.
skip	A logical. Should the step be skipped when the recipe is baked by bake()? While all operations are baked when prep() is run, some operations may not be able to be conducted on new data (e.g. processing the outcome variable(s)). Care should be taken when using skip = TRUE as it may affect the computations for subsequent operations.
id	A character string that is unique to this step to identify it.

Value

An updated version of recipe with the new step added to the sequence of existing steps (if any). For the tidy method, a tibble with columns terms (the columns that will be affected) and base.

Examples

```
library(recipes)

rec <- recipe(~., data = mtcars) %>%
  step_maxabs(all_predictors()) %>%
  prep()

rec %>%
  bake(new_data = NULL)

tidy(rec, 1)
```

---

step_minmax *Perform Min Max Scaling*

Description

step_minmax() creates a *specification* of a recipe step that will perform Min Max scaling.

Usage

```
step_minmax(
  recipe,
  ...,
  role = NA,
  trained = FALSE,
  res = NULL,
  columns = NULL,
  skip = FALSE,
  id = rand_id("minmax")
)
```

Arguments

recipe	A recipe object. The step will be added to the sequence of operations for this recipe.
...	One or more selector functions to choose which variables are affected by the step. See recipes::selections() for more details. For the tidy method, these are not currently used.
role	Not used by this step since no new variables are created.
trained	A logical to indicate if the quantities for preprocessing have been estimated.
res	A list containing min and max of training variables is stored here once this preprocessing step has be trained by recipes::prep().
columns	A character string of variable names that will be populated (eventually) by the terms argument.
skip	A logical. Should the step be skipped when the recipe is baked by bake()? While all operations are baked when prep() is run, some operations may not be able to be conducted on new data (e.g. processing the outcome variable(s)). Care should be taken when using skip = TRUE as it may affect the computations for subsequent operations.
id	A character string that is unique to this step to identify it.

Value

An updated version of recipe with the new step added to the sequence of existing steps (if any). For the tidy method, a tibble with columns terms (the columns that will be affected) and base.

Examples

```
library(recipes)

rec <- recipe(~., data = mtcars) %>%
  step_minmax(all_predictors()) %>%
  prep()

rec %>%
  bake(new_data = NULL)

tidy(rec, 1)
```

---

step_robust *Perform Robust Scaling*

Description

step_robust() creates a *specification* of a recipe step that will perform Robust scaling.

Usage

```
step_robust(
  recipe,
  ...,
  role = NA,
  trained = FALSE,
  range = c(0.25, 0.75),
  res = NULL,
  columns = NULL,
  skip = FALSE,
  id = rand_id("robust")
)
```

Arguments

recipe	A recipe object. The step will be added to the sequence of operations for this recipe.
...	One or more selector functions to choose which variables are affected by the step. See recipes::selections() for more details. For the tidy method, these are not currently used.
role	Not used by this step since no new variables are created.
trained	A logical to indicate if the quantities for preprocessing have been estimated.
range	A numeric vector with 2 values denoting the lower and upper quantile that is used for scaling. Defaults to c(0.25, 0.75).
res	A list containing the 3 quantiles of training variables is stored here once this preprocessing step has be trained by recipes::prep().
columns	A character string of variable names that will be populated (eventually) by the terms argument.
skip	A logical. Should the step be skipped when the recipe is baked by bake()? While all operations are baked when prep() is run, some operations may not be able to be conducted on new data (e.g. processing the outcome variable(s)). Care should be taken when using skip = TRUE as it may affect the computations for subsequent operations.
id	A character string that is unique to this step to identify it.

Details

The scaling performed by this step is done using the following transformation

$$x_new = (x - Q2(x))/(Q3(x) - Q1(x))$$

where Q2(x) is the median, Q3(x) is the upper quantile (defaults to 0.75) and Q1(x) is the lower quantile (defaults to 0.25). The upper and lower quantiles can be changed with the range argument.

Value

An updated version of `recipe` with the new step added to the sequence of existing steps (if any). For the `tidy` method, a tibble with columns `terms` (the columns that will be affected) and `base`.

Examples

```
library(recipes)

rec <- recipe(~., data = mtcars) %>%
  step_robust(all_predictors()) %>%
  prep()

rec %>%
  bake(new_data = NULL)

tidy(rec, 1)

rec <- recipe(~., data = mtcars) %>%
  step_robust(all_predictors(), range = c(0.1, 0.9)) %>%
  prep()

rec %>%
  bake(new_data = NULL)

tidy(rec, 1)
```

---

step_time_event *Indicate Recurrent Date Time Event*

Description

`step_time_event()` creates a *specification* of a recipe step that will create new columns indicating if the date fall on recurrent event.

Usage

```
step_time_event(
  recipe,
  ...,
  role = "predictor",
  trained = FALSE,
  rules = list(),
  columns = NULL,
  keep_original_cols = FALSE,
  skip = FALSE,
  id = rand_id("time_event")
)
```

Arguments

recipe	A recipe object. The step will be added to the sequence of operations for this recipe.
...	One or more selector functions to choose variables for this step. See selections() for more details.
role	Not used by this step since no new variables are created.
trained	A logical to indicate if the quantities for preprocessing have been estimated.
rules	Named list of almanac rules.
columns	A character string of variables that will be used as inputs. This field is a placeholder and will be populated once recipes::prep.recipe() is used.
keep_original_cols	A logical to keep the original variables in the output. Defaults to TRUE.
skip	A logical. Should the step be skipped when the recipe is baked by bake()? While all operations are baked when prep() is run, some operations may not be able to be conducted on new data (e.g. processing the outcome variable(s)). Care should be taken when using skip = TRUE as it may affect the computations for subsequent operations.
id	A character string that is unique to this step to identify it.

Details

Unlike some other steps step_time_event does *not* remove the original date variables by default. Set keep_original_cols to FALSE to remove them.

Value

An updated version of recipe with the new check added to the sequence of any existing operations.

Examples

```
library(recipes)
library(extrasteps)
library(almanac)
library(modeldata)

data(Chicago)

on_easter <- yearly() %>% recur_on_easter()
on_weekend <- weekly() %>% recur_on_weekends()

rules <- list(easter = on_easter, weekend = on_weekend)

rec_spec <- recipe(ridership ~ date, data = Chicago) %>%
  step_time_event(date, rules = rules)

rec_spec_preped <- prep(rec_spec)

bake(rec_spec_preped, new_data = NULL)
```

`step_unit_normalize` *Perform Unit Normalization*

Description

`step_unit_normalize()` creates a *specification* of a recipe step that will perform unit normalization by scaling individual samples to have unit norm.

Usage

```
step_unit_normalize(
  recipe,
  ...,
  role = NA,
  trained = FALSE,
  norm = c("l2", "l1", "max"),
  columns = NULL,
  skip = FALSE,
  id = rand_id("unit_normalize")
)
```

Arguments

`recipe`	A recipe object. The step will be added to the sequence of operations for this recipe.
`...`	One or more selector functions to choose which variables are affected by the step. See `recipes::selections()` for more details. For the `tidy` method, these are not currently used.
`role`	Not used by this step since no new variables are created.
`trained`	A logical to indicate if the quantities for preprocessing have been estimated.
`norm`	Character denoting which type of normalization to perform. Must be one of `"l1"`, `"l2"`, or `""max"`.
`columns`	A character string of variable names that will be populated (eventually) by the `terms` argument.
`skip`	A logical. Should the step be skipped when the recipe is baked by `bake()`? While all operations are baked when `prep()` is run, some operations may not be able to be conducted on new data (e.g. processing the outcome variable(s)). Care should be taken when using `skip = TRUE` as it may affect the computations for subsequent operations.
`id`	A character string that is unique to this step to identify it.

Value

An updated version of `recipe` with the new step added to the sequence of existing steps (if any). For the `tidy` method, a tibble with columns `terms` (the columns that will be affected) and `base`.

Examples

```
library(recipes)

rec <- recipe(~., data = mtcars) %>%
  step_unit_normalize(all_predictors()) %>%
  prep()

rec %>%
  bake(new_data = NULL)

tidy(rec, 1)
```

Index