Package ‘sift’

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**break_join**

Join tables based on overlapping intervals.

**Description**

User-friendly interface that synthesizes power of `dplyr::left_join` and `findInterval`.

**Usage**

```r
break_join(x, y, brk = character(), by = NULL, ...)
```

**Arguments**

- `x`: A data frame.
- `y`: Data frame containing desired reference information.
- `brk`: Name of column in `x` and `y` to join by via interval overlapping. Must be coercible to numeric.
- `by`: Joining variables, if needed. See `mutate-joins`.
- `...`: additional arguments automatically directed to `findInterval` and `dplyr::left_join`. No partial matching.

**Value**

An object of the same type as `x`.

- All `x` rows will be returned.
- All columns between `x` and `y` are returned.
- Rows in `y` are matched with `x` based on overlapping values of `brk` (e.g. `findInterval(x$brk, y$brk, ...)`).

**Examples**

```r
# joining USA + UK leaders with population time-series
break_join(us_uk_pop, us_uk_leaders, brk = c("date" = "start"))

# simple dataset
set.seed(1)
a <- data.frame(p = c(rep("A", 10), rep("B", 10)), q = rnorm(20, 0, 10))
b <- data.frame(p = c("A", "A", "B", "B"), q = c(3, 5, 6, 9), r = c("a1", "a2", "b1", "b2"))
break_join(a, b, brk = "p") # p identified as common variable automatically
```
```r
break_join(a, b, brk = "q", by = "p") # same result
break_join(a, b, brk = "q", all.inside = TRUE) # note missing values have been filled

# joining toll prices with vehicle time-series

library(mopac)
library(dplyr, warn.conflicts = FALSE)
library(hms)

express %>%
  mutate(time_hms = as_hms(time)) %>%
  break_join(rates, brk = c("time_hms" = "time"))
```

---

**comms**

*Simulated records of radio station communications.*

**Description**

Dataset intended to demonstrate usage of `sift::conjecture`.

**Usage**

```r
comms
```

**Format**

An object of class `tbl_df` (inherits from `tbl, data.frame`) with 50000 rows and 4 columns.

---

**conjecture**

*Specialized "long to wide" reshaping*

**Description**

On the surface, `conjecture()` appears similar to `tidyr::pivot_wider()`, but uses different logic tailored to a specific type of dataset:

- column corresponding to `names_from` contains only 2 levels
- there is no determinate combination of elements to fill 2 columns per row.

See vignette("conjecture") for more details.

**Usage**

```r
conjecture(data, sort_by, names_from, names_first)
```
kluster

Automatically cluster 1-dimensional continuous data.

Description

Automatically cluster 1-dimensional continuous data.

Usage

kluster(x, bw = "SJ", fixed = FALSE)

Arguments

x Vector to be clustered. Must contain at least 1 non-missing value.

bw kernel bandwidth. Default "SJ" should suffice more application, however you can supply a custom numeric value. See stats::density for more information.

fixed logical; if TRUE, performs simple 1-dimensional clustering without kernel density estimation. default FALSE.

Value

An integer vector identifying the cluster corresponding to each element in x.
Examples

# Below vector clearly has 2 groups.
# kluster will identify these groups using kernel density estimation.
kluster(c(0.1, 0.2, 1))

# kluster shines in cases where manually assigning groups via "eyeballing" is impractical.
# Suppose we obtained vector 'x' without knowing how it was generated.
set.seed(1)
nodes <- runif(10, min = 0, max = 100)
x <- lapply(nodes, function(x) rnorm(10, mean = x, sd = 0.1))
x <- unlist(x)

kluster(x) # kluster reveals the natural grouping

kluster(x, bw = 10) # adjust bandwidth depending on application

# Example with faithful dataset
faithful$k <- kluster(faithful$eruptions)
library(ggplot2)
ggplot(faithful, aes(eruptions)) +
  geom_density() +
  geom_rug(aes(color = factor(k))) +
  theme_minimal() +
  scale_color_discrete(name = "k")

nyt2020 2020 New York Times Headlines

Description

Includes selected headlines and additional metadata for NYT articles throughout 2020. This dataset is not a comprehensive account of all major events from 2020.

Usage

nyt2020

Format

A data frame with 1,830 rows and 6 variables:

- **headline**  Article Headline
- **abstract**  Brief summary of article
- **byline**  Contributing Writers
- **pub_date**  Date of Publication
- **section_name**  NYT section in which article was published
- **web_url**  Article URL ...
Description
Imagine `dplyr::filter` that includes neighboring observations. Choose how many observations to include by adjusting inputs `sift.col` and `scope`.

Usage
`sift(.data, sift.col, scope, ...)`

Arguments
- `.data` A data frame.
- `sift.col` Column name, as symbol, to serve as "sifting/augmenting" dimension. Must be non-missing and coercible to numeric.
- `scope` Specifies augmentation bandwidth relative to "key" observations. Parameter should share the same scale as `sift.col`. If length 1, bandwidth used is +/- `scope`. If length 2, bandwidth used is (`-scope[1]`, `+scope[2]`).
- `...` Expressions passed to `dplyr::filter`, of which the results serve as the "key" observations. The same data-masking rules used in `dplyr::filter` apply here.

Details
`sift()` can be understood as a 2-step process:

1. `.data` is passed to `dplyr::filter`, using subsetting expression(s) provided in `...`. We’ll refer to these intermediate results as "key" observations.
2. For each key observation, `sift` expands the row selection bidirectionally along dimension specified by `sift.col`. Any row from the original dataset within `scope` units of a key observation is captured in the final result.

Essentially, this allows us to "peek" at neighboring rows surrounding the key observations.

Value
A sifted data frame, with 2 additional columns:

- `.cluster <int>`: Identifies resulting group formed by each key observation and its neighboring rows. When the key observations are close enough together, the clusters will overlap.
- `.key <lgl>`: TRUE indicates key observation.
Examples

# See current events from same timeframe as 2020 Utah Monolith discovery.
sift(nyt2020, pub_date, scope = 2, grepl("Monolith", headline))

# or Biden’s presidential victory.
sift(nyt2020, pub_date, scope = 2, grepl("Biden is elected", headline))

# We can specify lower & upper scope to see what happened AFTER Trump tested positive.
sift(nyt2020, pub_date, scope = c(0, 2), grepl("Trump Tests Positive", headline))

# sift recognizes dplyr group specification.
library(dplyr)
library(mopac)
express %>%
  group_by(direction) %>%
  sift(time, 30, plate == "EAS-1671") # row augmentation performed within groups.

---

us_uk_pop

Fragments of US & UK population & leaders

Description

These datasets are intended to demonstrate usage of sift::break_join.

Usage

us_uk_pop

us_uk_leaders

Source

See tidyr::who and ggplot2::presidential.
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