Package 'tidygenomics'

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Type Package

Title Tidy Verbs for Dealing with Genomic Data Frames

Version 0.1.0

Description Handle genomic data within data frames just as you would with 'GRanges'.
This packages provides method to deal with genomic intervals the ``tidy-way'' which makes it simpler to integrate in the the general data munging process. The API is inspired by the popular 'bedtools' and the genome_join() method from the 'fuzzyjoin' package.

URL https://github.com/const-ae/tidygenomics

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Encoding UTF-8

LazyData true

Imports dplyr, purrr, tidyr, fuzzyjoin (>= 0.1.3), IRanges, Rcpp

Suggests testthat, knitr, rmarkdown

RoxygenNote 6.0.1

LinkingTo Rcpp

VignetteBuilder knitr

NeedsCompilation yes

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R topics documented:

`cluster_interval` *Cluster ranges which are implemented as 2 equal-length numeric vectors.*

Description

Cluster ranges which are implemented as 2 equal-length numeric vectors.

Usage

```
cluster_interval(starts, ends, max_distance = 0L)
```

Arguments

`starts`	A numeric vector that defines the starts of each interval
`ends`	A numeric vector that defines the ends of each interval
`max_distance`	The maximum distance up to which intervals are still considered to be the same cluster. Default: 0.

Examples

```
starts <- c(50, 100, 120)
ends <- c(75, 130, 150)
j <- cluster_interval(starts, ends)
j == c(0,1,1)
```

`genome_cluster` *Intersect data frames based on chromosome, start and end.*

Description

Intersect data frames based on chromosome, start and end.

Usage

```
genome_cluster(x, by = NULL, max_distance = 0,
  cluster_column_name = "cluster_id")
```

Arguments

x	A dataframe.
by	A character vector with 3 entries which are the chromosome, start and end column. For example: by=c("chr", "start", "end")
max_distance	The maximum distance up to which intervals are still considered to be the same cluster. Default: 0.
cluster_column_name	A string that is used as the new column name

Value

The dataframe with the additional column of the cluster

Examples

```
library(dplyr)

x1 <- data.frame(id = 1:4, bla=letters[1:4],
                 chromosome = c("chr1", "chr1", "chr2", "chr1"),
                 start = c(100, 120, 300, 260),
                 end = c(150, 250, 350, 450))
genome_cluster(x1, by=c("chromosome", "start", "end"))
genome_cluster(x1, by=c("chromosome", "start", "end"), max_distance=10)
```

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genome_complement

Calculates the complement to the intervals covered by the intervals in a data frame. It can optionally take a chromosome_size *data frame that contains 2 or 3 columns, the first the names of chromosome and in case there are 2 columns the size or first the start index and lastly the end index on the chromosome.*

Description

Calculates the complement to the intervals covered by the intervals in a data frame. It can optionally take a chromosome_size data frame that contains 2 or 3 columns, the first the names of chromosome and in case there are 2 columns the size or first the start index and lastly the end index on the chromosome.

Usage

```
genome_complement(x, chromosome_size = NULL, by = NULL)
```

Arguments

x	A data frame for which the complement is calculated
chromosome_size	A dataframe with at least 2 columns that contains first the chromosome name and then the size of that chromosome. Can be NULL in which case the largest value per chromosome from x is used.
by	A character vector with 3 entries which are the chromosome, start and end column. For example: by=c("chr", "start", "end")

Examples

```
library(dplyr)

x1 <- data.frame(id = 1:4, bla=letters[1:4],
                 chromosome = c("chr1", "chr1", "chr2", "chr1"),
                 start = c(100, 200, 300, 400),
                 end = c(150, 250, 350, 450))

genome_complement(x1, by=c("chromosome", "start", "end"))
```

---

genome_intersect *Intersect data frames based on chromosome, start and end.*

Description

Intersect data frames based on chromosome, start and end.

Usage

```
genome_intersect(x, y, by = NULL, mode = "both")
```

Arguments

x	A dataframe.
y	A dataframe.
by	A character vector with 3 entries which are used to match the chromosome, start and end column. For example: by=c("Chromosome"="chr", "Start"="start", "End"="end")
mode	One of "both", "left", "right" or "anti".

Value

The intersected dataframe of x and y with the new boundaries.

Examples

```
library(dplyr)

x1 <- data.frame(id = 1:4, bla=letters[1:4],
                 chromosome = c("chr1", "chr1", "chr2", "chr2"),
                 start = c(100, 200, 300, 400),
                 end = c(150, 250, 350, 450))

x2 <- data.frame(id = 1:4, BLA=LETTERS[1:4],
                 chromosome = c("chr1", "chr2", "chr2", "chr1"),
                 start = c(140, 210, 400, 300),
                 end = c(160, 240, 415, 320))
j <- genome_intersect(x1, x2, by=c("chromosome", "start", "end"), mode="both")
print(j)
```

---

genome_join_closest *Join intervals on chromosomes in data frames, to the closest partner*

Description

Join intervals on chromosomes in data frames, to the closest partner

Usage

```
genome_join_closest(x, y, by = NULL, mode = "inner",
  distance_column_name = NULL, max_distance = Inf, select = "all")

genome_inner_join_closest(x, y, by = NULL, ...)

genome_left_join_closest(x, y, by = NULL, ...)

genome_right_join_closest(x, y, by = NULL, ...)

genome_full_join_closest(x, y, by = NULL, ...)

genome_semi_join_closest(x, y, by = NULL, ...)

genome_anti_join_closest(x, y, by = NULL, ...)
```

Arguments

x	A dataframe.
y	A dataframe.
by	A character vector with 3 entries which are used to match the chromosome, start and end column. For example: `by=c("Chromosome"="chr", "Start"="start", "End"="end")`

mode	One of "inner", "full", "left", "right", "semi" or "anti".
distance_column_name	A string that is used as the new column name with the distance. If NULL no new column is added.
max_distance	The maximum distance that is allowed to join 2 entries.
select	A string that is passed on to IRanges::distanceToNearest, can either be all which means that in case that multiple intervals have the same distance all are reported, or arbitrary which means in that case one would be chosen at random.
...	Additional arguments parsed on to genome_join_closest.

Value

The joined dataframe of x and y.

Examples

```
library(dplyr)

x1 <- data.frame(id = 1:4, bla=letters[1:4],
                 chromosome = c("chr1", "chr1", "chr2", "chr2"),
                 start = c(100, 200, 300, 400),
                 end = c(150, 250, 350, 450))

x2 <- data.frame(id = 1:4, BLA=LETTERS[1:4],
                 chromosome = c("chr1", "chr2", "chr2", "chr1"),
                 start = c(140, 210, 400, 300),
                 end = c(160, 240, 415, 320))
j <- genome_intersect(x1, x2, by=c("chromosome", "start", "end"), mode="both")
print(j)
```

---

genome_subtract *Subtract one data frame from another based on chromosome, start and end.*

Description

Subtract one data frame from another based on chromosome, start and end.

Usage

```
genome_subtract(x, y, by = NULL)
```

Arguments

x	A dataframe.
y	A dataframe.
by	A character vector with 3 entries which are used to match the chromosome, start and end column. For example: by=c("Chromosome"="chr", "Start"="start", "End"="end")

Value

The subtracted dataframe of x and y with the new boundaries.

Examples

```
library(dplyr)

x1 <- data.frame(id = 1:4, bla=letters[1:4],
                 chromosome = c("chr1", "chr1", "chr2", "chr1"),
                 start = c(100, 200, 300, 400),
                 end = c(150, 250, 350, 450))

x2 <- data.frame(id = 1:4, BLA=LETTERS[1:4],
                 chromosome = c("chr1", "chr2", "chr1", "chr1"),
                 start = c(120, 210, 300, 400),
                 end = c(125, 240, 320, 415))

j <- genome_subtract(x1, x2, by=c("chromosome", "start", "end"))
print(j)
```

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