

Package ‘scperturbR’

July 23, 2025

Type Package

Title E-Statistics for Seurat Objects

Version 0.1.0

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Description R version of 'scperturb' tool for single-cell perturbation analysis. Contains wrappers for performing E-statistics for Seurat objects. More details on the method can be found in Peidli et al. (2023) <doi:10.1101/2022.08.20.504663> and in Székely and Rizzo (2004).

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URL https://github.com/sanderlab/scPerturb/tree/master/package_r

BugReports <https://github.com/sanderlab/scPerturb/issues>

Depends R (>= 3.5.0)

Imports Seurat, dplyr, rdist, energy, stats

Encoding UTF-8

Language en-US

RoxygenNote 7.2.3

Suggests testthat (>= 3.0.0)

Config/testthat/edition 3

NeedsCompilation no

Repository CRAN

Date/Publication 2023-03-01 20:10:02 UTC

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edist

edist

Description

Computes pairwise E-distances on a Seurat object. Computes E-distance between all groups in a Seurat object in space given by reduction.

Usage

```
edist(
  seurat_object,
  groupby = "perturbation",
  reduction = "pca",
  sample_correction = FALSE,
  verbose = TRUE
)
```

Arguments

seurat_object	An object of class Seurat.
groupby	An object of class character. Points to the column in the Seurat object's meta data that contains the group labels.
reduction	An object of class character. The reduction / embedding in seurat_object that is used to compute the E-distance in.
sample_correction	An object of class logical. If TRUE, the E-distances are corrected for sample size. Will make it not a proper distance, leads to negative values.
verbose	An object of class logical. If TRUE, prints messages. Default is TRUE.

Value

Returns an object of class data.frame. For each group contains the E-test p-value and the E-distance to control group.

Examples

```
# Add some code illustrating how to use the function
```

etest

etest

Description

Performs E-testing on a Seurat object. Computes E-test statistics for each group in a Seurat object, using the E-distance in space given by reduction to the group defined by control.

Usage

```
etest(  
  seurat_object,  
  groupby = "perturbation",  
  control = "control",  
  reduction = "pca",  
  verbose = TRUE,  
  permutations = 1000  
)
```

Arguments

<code>seurat_object</code>	An object of class Seurat.
<code>groupby</code>	An object of class character. Points to the column in the Seurat object's meta data that contains the group labels.
<code>control</code>	An object of class character. The group that is used as the control.
<code>reduction</code>	An object of class character. The reduction / embedding in <code>seurat_object</code> that is used to compute the E-distance in.
<code>verbose</code>	An object of class logical. If TRUE, prints messages. Default is TRUE.
<code>permutations</code>	An object of class integer. The number of permutations used to compute the p-value. Default is 1000.

Value

Returns an object of class data.frame. For each group contains the E-test p-value and the E-distance to control group.

Examples

```
# Add some code illustrating how to use the function
```

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