Package 'otinference'

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Type Package

Title Inference for Optimal Transport

Version 0.1.0

Imports MASS (>= 7.3-45), Rglpk (>= 0.6-2), sm (>= 2.2-5.4), transport (>= 0.8-1)

Suggests Rcplex (>= 0.3.3)

Description Sample from the limiting distributions of empirical Wasserstein distances under the null hypothesis and under the alternative. Perform a two-sample test on multivariate data using these limiting distributions and binning.

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Encoding UTF-8

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NeedsCompilation no

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Repository CRAN

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binWDTest *Two-sample test for multivariate data based on binning.*

Description

Two-sample test for multivariate data based on binning.

Usage

```
binWDTest(x, y, L = 5, B = 100)
```

Arguments

x, y	The two samples, rows are realizations.
L	Number of bins in each dimension.
B	Number of realizations of limiting distribution to simulate.

Value

p-value.

Examples

```
## Not run:
x <- MASS::mvrnorm(n = 100, mean = c(0, 0), Sigma = diag(1, 2))
y <- MASS::mvrnorm(n = 100, mean = c(0, 0), Sigma = diag(2, 2))
pVal <- binWDTest(x, y)
## End(Not run)
```

limDisAlt *Sample from the limit distribution under the alternative.*

Description

Sample from the limit distribution under the alternative.

Usage

```
limDisAlt(B = 1000, r, s, distMat, p = 1)
```

Arguments

B	Number of samples to generate.
r, s	Number of counts giving the two samples.
distMat	Distance matrix.
p	Cost exponent. Defaults to 1.

Value

A vector of samples.

`limDisAltBoot` *m-out-of-n Bootstrap for the limiting distribution.*

Description

m-out-of-n Bootstrap for the limiting distribution.

Usage

```
limDisAltBoot(r, s, distMat, B = 1000, p = 1, gamma = 0.9)
```

Arguments

`r, s`	Vectors of counts giving the two samples.
`distMat`	Distance matrix.
`B`	The number of samples to generate. Defaults to 1000.
`p`	Cost exponent. Defaults to 1.
`gamma`	m = n^gamma. Defaults to 0.9.

Value

A sample from the limiting distribution.

`limDisNull` *Sample from the limiting distribution under the null.*

Description

Sample from the limiting distribution under the null.

Usage

```
limDisNull(B = 500, r, distMat, p = 1)
```

Arguments

`B`	number of samples to generate. Defaults to 500.
`r`	vector of probabilities in the original problem.
`distMat`	distance matrix in the original problem.
`p`	cost exponent. Defaults to 1.

Value

A vector of samples.

`limDisNullGrid` *Sample from the limiting distribution under the null when the underlying space is a grid.*

Description

Sample from the limiting distribution under the null when the underlying space is a grid.

Usage

```
limDisNullGrid(B = 500, r, p = 1)
```

Arguments

`B`	Number of bootstrap samples to generate. Defaults to 500.
`r`	vector of probabilities in the original problem. Is interpreted as a square matrix.
`p`	cost exponent.

Value

A vector of samples.

`wassDist` *Compute the Wasserstein distance between to finite distributions.*

Description

Compute the Wasserstein distance between to finite distributions.

Usage

```
wassDist(a, b, distMat, p = 1)
```

Arguments

`a, b`	Vectors representing probability distributions.
`distMat`	Cost matrix.
`p`	cost exponent.

Value

The Wasserstein distance.

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