Package 'linearOrdering'

October 11, 2019

Type Package

Title Methods of Linear Ordering of Data

Version 1.0.0

Description Provides various methods of linear ordering of data. Supports weights and positive/negative impacts.
Currently included methods:
* Sum of ranks
* Standardized sums
* Hellwig's (Hellwig, 1968, <https://unesdoc.unesco.org/ark:/48223/pf0000158559.locale=en>)
* TOPSIS (Yoon & Hwang, 1981, ISBN:978-3-642-48318-9).

URL https://github.com/Yard1/linearOrdering

BugReports https://github.com/Yard1/linearOrdering/issues

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Encoding UTF-8

LazyData true

RoxygenNote 6.1.1

NeedsCompilation no

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Repository CRAN

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R topics documented:

| hellwig | *Hellwig's method.* |

Description

Hellwig's method.

Usage

```
hellwig(decision, weights, impacts)
```

Arguments

decision	A numeric matrix with m rows for m alternatives and n columns for n criterions.
weights	A numeric vector with length equal to number of columns in decision matrix for weights of criterions.
impacts	A character vector of '+' and '-' signs for the way that each criterion influences on the alternatives.

Value

A data frame including elements:

alt.row Row number of alternatives in decision matrix.

score Score of alternatives.

rank Rank of alternatives based on score.

Should decision be a data frame, the row names will be carried over to the return value.

Author(s)

Antoni Baum <antoni.baum@protonmail.com>

References

Hellwig, Z. (1968). On the optimal choice of predictors. UNESCO.

Examples

```
d <- matrix(rpois(12, 5), nrow = 3, ncol = 3)
w <- c(1, 1, 2)
i <- c('+', '-', '+')
hellwig(d, w, i)
```

standardized_sums   *Standardized sums method.*

Description

Standardized sums method.

Usage

```
standardized_sums(decision, weights, impacts)
```

Arguments

decision	A numeric matrix with m rows for m alternatives and n columns for n criterions.
weights	A numeric vector with length equal to number of columns in decision matrix for weights of criterions.
impacts	A character vector of '+' and '-' signs for the way that each criterion influences on the alternatives.

Value

A data frame including elements:

alt.row Row number of alternatives in decision matrix.

score Score of alternatives.

rank Rank of alternatives based on score.

Should decision be a data frame, the row names will be carried over to the return value. Should decision be a data frame, the row names will be carried over to the return value.

Author(s)

Antoni Baum <antoni.baum@protonmail.com>

Examples

```
d <- matrix(rpois(12, 5), nrow = 3, ncol = 3)
w <- c(1, 1, 2)
i <- c('+', '-', '+')
standardized_sums(d, w, i)
```

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sum_of_ranks   *Sum of ranks method.*

Description

Sum of ranks method.

Usage

```
sum_of_ranks(decision, weights, impacts)
```

Arguments

decision	A numeric matrix with m rows for m alternatives and n columns for n criterions.
weights	A numeric vector with length equal to number of columns in decision matrix for weights of criterions.
impacts	A character vector of '+' and '-' signs for the way that each criterion influences on the alternatives.

Value

A data frame including elements:

alt.row Row number of alternatives in decision matrix.

score Score of alternatives.

rank Rank of alternatives based on score.

Should decision be a data frame, the row names will be carried over to the return value.

Author(s)

Antoni Baum <antoni.baum@protonmail.com>

Examples

```
d <- matrix(rpois(12, 5), nrow = 3, ncol = 3)
w <- c(1, 1, 2)
i <- c('+', '-', '+')
sum_of_ranks(d, w, i)
```

---

topsis	*TOPSIS - the Technique for Order of Preference by Similarity to Ideal Solution.*

Description

TOPSIS - the Technique for Order of Preference by Similarity to Ideal Solution.

Usage

```
topsis(decision, weights, impacts)
```

Arguments

decision   A numeric matrix with m rows for m alternatives and n columns for n criterions.

weights   A numeric vector with length equal to number of columns in decision matrix for weights of criterions.

impacts   A character vector of '+' and '-' signs for the way that each criterion influences on the alternatives.

Value

A data frame including elements:

alt.row Row number of alternatives in decision matrix.

score Score of alternatives.

rank Rank of alternatives based on score.

Should decision be a data frame, the row names will be carried over to the return value.

Author(s)

Antoni Baum <antoni.baum@protonmail.com>

References

Yoon, K. P., & Hwang, C. L. (1981). Multiple Attribute Decision Making: Methods and Applications. New York: Springer-Verlag. ISBN: 978-3-642-48318-9

Examples

```
d <- matrix(rpois(12, 5), nrow = 3, ncol = 3)
w <- c(1, 1, 2)
i <- c('+', '-', '+')
topsis(d, w, i)
```

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