

Package ‘rflann’

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Type Package

Title Basic R Interface to the 'FLANN' C++ Library

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Author Marius Muja, David Lowe and Jeremy Yee

Maintainer Jeremy Yee <jeremyyee@outlook.com.au>

Description Basic R interface for the 'FLANN' C++ library version 1.8.4 written by Marius Muja and David Lowe. K-nearest neighbours searching and radius searching.

URL <https://github.com/YeeJeremy/rflann>

License GPL

Imports Rcpp (>= 0.11.6)

LinkingTo Rcpp, RcppArmadillo

Includes Rcpp

NeedsCompilation yes

BugReports <https://github.com/YeeJeremy/rflann/issues>

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FastKDNeighbour	<i>K nearest neighbours using kd-trees</i>
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Description

K nearest neighbours using kd-trees. Indices only.

Usage

```
FastKDNeighbour(query, ref, k)
```

Arguments

query	Matrix or data frame containing the set of query points where each row represents a point.
ref	Matrix or data frame containing the set of reference points where each row represents a point.
k	Number of nearest neighbours to search for.

Value

Matrix containing the indices of the nearest neighbours in the reference set for each query set of points.

Author(s)

Yee, Jeremy

Examples

```
## Find the nearest neighbour using a KD Tree
query <- matrix(rnorm(10), ncol = 2)
reference <- matrix(rnorm(10), ncol = 2)
FastKDNeighbour(query, reference, 3)
```

Neighbour	<i>K nearest neighbours</i>
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Description

K nearest neighbours

Usage

```
Neighbour(query, ref, k, build = "kdtree", cores = 0, checks = 1)
```

Arguments

query	Matrix or data frame containing the set of query points where each row represents a point.
ref	Matrix or data frame containing the set of reference points where each row represents a point.
k	Number of nearest neighbours to search for.
build	String indicating the search structure to be used: "kdtree", "kmeans", "linear".
cores	Number of cpu cores to be used for searching. If 0, then the maximum allowable cores are used.
checks	Number of checks during searching. Higher value gives better search precision but takes longer. See FLANN C++ manual for more details.

Value

List containing:

indices	Matrix containing the indices of the nearest neighbours in the reference set for each query set of points
distances	Matrix containing the distances to the nearest neighbours

Author(s)

Yee, Jeremy

Examples

```
## Find the nearest neighbour using a KD Tree
query <- matrix(rnorm(10), ncol = 2)
reference <- matrix(rnorm(10), ncol = 2)
Neighbour(query, reference, 3, "kdtree", 0, 1)
```

RadiusSearch

Radius searching

Description

Radius searching

Usage

```
RadiusSearch(query, ref, radius, max_neighbour, build = "kdtree",
cores = 0, checks = 1)
```

Arguments

query	Matrix or data frame containing the set of query points where each row represents a point.
ref	Matrix or data frame containing the set of reference points where each row represents a point.
radius	Squared euclidean distance from each query point.
max_neighbour	Maximum number of points to look for within the radius of each query point.
build	String indicating the search structure to be used: "kdtree", "kmeans", "linear".
cores	Number of cpu cores to be used for searching. If 0, then the maximum allowable cores are used.
checks	Number of checks during searching. Higher value gives better search precision but takes longer. See FLANN C++ manual for more details.

Value

List containing:

indices	List containing the index of points in the reference set that lie in the radius of each query point.
distances	List containing the corresponding squared distances.

Author(s)

Yee, Jeremy

Examples

```
## Radius searching
query <- matrix(rnorm(10), ncol = 2)
reference <- matrix(rnorm(10), ncol = 2)
RadiusSearch(query, reference, 1, 2, "kdtree", 0, 1)
```

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