

Package ‘XBN’

April 23, 2024

Title eXplainable Bayesian networks

Version 0.0.0.9000

Description Computes the most relevant explanation for observed evidence in a Bayesian network.

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Encoding UTF-8

Roxygen list(markdown = TRUE)

RoxygenNote 7.3.1

Imports dplyr,
glassoFast,
gRain,
gtools,
magrittr,
plyr,
stringi,
stringr,
tidyr

R topics documented:

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init_gbf	<i>Compute the initialisation values for each target in the set</i>
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Description

Compute the initialisation values for each target in the set

Usage

```
init_gbf(target_set, evidence_set, evidence_states, bn_grain)
```

Arguments

target_set	Set of variables to explore to explain the observed evidence
evidence_set	Set of observed variable names
evidence_states	Set of observed variable states
bn_grain	Bayesian network as grain object

Value

Starting solutions for each target variable in target_set

mre_brute	<i>Brute force search to obtain all explanations according to generalised Bayes factor</i>
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Description

Brute force search to obtain all explanations according to generalised Bayes factor

Usage

```
mre_brute(target_set, evidence_set, evidence_states, bn_grain)
```

Arguments

target_set	Set of variables to explore to explain the observed evidence
evidence_set	Set of observed variable names
evidence_states	Set of observed variable states
bn_grain	Bayesian network as grain object

Value

Dataframe containing all explanations

mre_fwd	<i>Solve the most relevant explanation in Bayesian networks using a forward search algorithm.</i>
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Description

Solve the most relevant explanation in Bayesian networks using a forward search algorithm.

Usage

```
mre_fwd(target_set, evidence_set, evidence_states, bn_grain)
```

Arguments

target_set	Set of variables to explore to explain the observed evidence
evidence_set	Set of observed variable names
evidence_states	Set of observed variable states
bn_grain	Bayesian network as grain object

Value

Set of most relevant explanations

mre_fwd_glasso	<i>Solve the most relevant explanation in Bayesian networks using a forward-gLasso search algorithm.</i>
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Description

Solve the most relevant explanation in Bayesian networks using a forward-gLasso search algorithm.

Usage

```
mre_fwd_glasso(
  target_set,
  evidence_set,
  evidence_states,
  bn_grain,
  bn_rho,
  score_scale = TRUE
)
```

Arguments

target_set	Set of variables to explore to explain the observed evidence
evidence_set	Set of observed variable names
evidence_states	Set of observed variable states
bn_grain	Bayesian network as grain object
bn_rho	L1 regularisation parameter for gLasso
score_scale	Parameter to add very small random noise to score matrix for gLasso

Value

Set of most relevant explanations

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