Package 'socceR'

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Type Package

Title Evaluating Sport Tournament Predictions

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Description Functions for evaluating tournament predictions, simulating results from individual soccer matches and tournaments. See <http://sandsynligvis.dk/2018/08/03/world-cup-prediction-winners/> for more information.

License GPL (>= 2)

Depends R (>= 3.1.0)

Imports Rcpp (>= 1.0.0)

LinkingTo Rcpp

LazyData true

RoxygenNote 6.1.1

Encoding UTF-8

URL https://github.com/ekstroem/socceR

BugReports https://github.com/ekstroem/socceR/issues

NeedsCompilation yes

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Repository CRAN

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R topics documented:

`collapse_prediction` *Create a matrix to collapse tournament predictions to ranks*

Description

Creates a matrix to collapse the rows of a tournamewnt prediction matrix

Usage

```
collapse_prediction(ranks = c(1, 2, 3, 4, 8, 16, 32))
```

Arguments

`ranks`	An integer vector of R ordered elements giving the cut offs of the ranks to create

Details

Returns a vector of numeric values. Elements in the input factor that cannot be converted to numeric will produce NA.

Value

Returns a numeric matrix with R rows and T columns that can be multiplied on a square prediction matrix to obtain the collapsed predictions

Author(s)

Claus Ekstrom <ekstrom@sund.ku.dk>

Examples

```
m2 <- matrix(c(.5, .5, 0, 0, .5, .5, 0, 0, 0, 0, 1, 0, 0, 0, 0, 1), 4)
# Collapse into ranks 1, 2, and 3+4
collapse <- collapse_prediction(c(1, 2, 4))

collapsed_prediction <- collapse %*% m2
collapsed_prediction
```

fifa2018 *FIFA 2018 prediction matrices*

Description

A list containing five predictions for the FIFA 2018 World Cup.

Usage

```
fifa2018
```

Format

A list with 5 predictions (each a 7 by 32 matrix) containing the predictions probabilities of 1st, 2nd, 3rd, 4th, 5th-8th, 9th-12th, and 17th-32nd place.

flat A prediction with equal probability of winning for all teams

ekstrom1 Ekstrom's prediction (based on the Skellam distribution)

ekstrom2 Ekstrom's prediction (based on the ELO rankings)

GLSE1 Prediction of Groll et all

GLSE2 Updated prediction of Groll et all

Source

http://sandsynligvis.dk/2018/08/03/world-cup-prediction-winners/

fifa2018result *FIFA 2018 end results*

Description

A named vector sorted in the ranking of the teams in the FIFA 2018 World Cup. The value correspond to the corresponding columns in the prediction matrices of fifa2018

Usage

```
fifa2018result
```

Format

A vector of the final rankings

Source

http://sandsynligvis.dk/2018/08/03/world-cup-prediction-winners/

logloss *Computes the log loss score for a tournament prediction*

Description

Compute the (weighted) rank probability score for a tournament.

Usage

```
logloss(m, outcome, rankweights = 1L)
```

Arguments

m	An R*T prediction matrix where the R rows represent the ordered ranks and each column is a team. Each column should sum to 1, and each row should sum to the number of teams that can attain a given rank.
outcome	A vector of length T containing the integers 1 to R giving the ranks that were obtained by each of the T teams
rankweights	A vector of length R of rank weights or a single weight which will be reused for all ranks (defaults to 1)

Value

The rank probability score. Zero means a perfect score.

Author(s)

Claus Ekstrom <ekstrom@sund.ku.dk>

Examples

```
m1 <- matrix(c(1, 0, 0, 0, 0, 1, 0, 0, 0, 0, .5, .5, 0, 0, .5, .5), 4)
m1 # Prediction where certain on the top ranks
logloss(m1, c(1, 2, 3, 4))
```

optimize_weights *Optimize weights from list of prediction matrices*

Description

Computes the optimal weights to obtain the minimal loss function from a list of prediction matrices.

Usage

```
optimize_weights(predictionlist, outcome, FUN = trps)
```

Arguments

predictionlist	A list of R x T prediction matrices where each column sum to 1 and each row sums to
outcome	An integer vector listing the
FUN	The function used for optimizing the predictions. The default is top use rps for the rank probability score. Another option is logloss for log loss.

Value

Returns a numeric vector containing an optimal vector of weights that sum to 1 and that minimizes the loss function.

Author(s)

Claus Ekstrom <ekstrom@sund.ku.dk>

Examples

```
m1 <- matrix(c(1, 0, 0, 0, 0, 1, 0, 0, 0, 0, .5, .5, 0, 0, .5, .5), 4)
m1 # Prediction where certain on the top ranks
m2 <- matrix(c(.5, .5, 0, 0, .5, .5, 0, 0, 0, 0, 1, 0, 0, 0, 0, 1), 4)
m2  # Prediction where the groups are okay
m3 <- matrix(c(.5, .5, 0, 0, .5, .5, 0, 0, 0, 0, .5, .5, 0, 0, .5, .5), 4)
m3  # Prediction where no clue about anything
m4 <- matrix(rep(1/4, 16), 4)

optimize_weights(list(m1, m2, m3, m4), 1:4)
```

socceR *Evaluating sport tournament predictions*

Description

Functions for evaluating sport tournament predictions, the tournament rank probability score, and working with models for prediction sport matches.

Author(s)

Claus Ekstrom <ekstrom@sund.ku.dk>

trps *Computes the rank probability score for a tournament*

Description

Compute the (weighted) rank probability score for a tournament.

Usage

```
trps(m, outcome, rankweights = 1L)
```

Arguments

m	An R*T prediction matrix where the R rows represent the ordered ranks and each column is a team. Each column should sum to 1, and each row should sum to the number of teams that can attain a given rank.
outcome	A vector of length T containing the integers 1 to R giving the ranks that were obtained by each of the T teams
rankweights	A vector of length R of rank weights or a single weight which will be reused for all ranks (defaults to 1)

Value

The rank probability score. Zero means a perfect score.

Author(s)

Claus Ekstrom <ekstrom@sund.ku.dk>

Examples

```
m1 <- matrix(c(1, 0, 0, 0, 0, 1, 0, 0, 0, 0, .5, .5, 0, 0, .5, .5), 4)
m1 # Prediction where certain on the top ranks
trps(m1, c(1, 2, 3, 4))
```

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