Package 'unitedR'

October 13, 2015

Title Assessment and Evaluation of Formations in United

Version 0.1

Description United is a software tool which can be downloaded at http://www.schroepl.net/pbm/software/united/. In general, it is a virtual manager game for football teams. The package unitedR contains helpful functions for determining an optimal formation for a virtual match in United. E.g. knowing that the opponent has a strong defensive it is advisable to beat him in the midfield. Furthermore, unitedR contains functions for computing the optimal usage of hardness in a game.

Depends R (>= 3.1.2), methods, plyr

License GPL (>=2)

LazyData true

Collate 'simRedCard.R' 'getLineup.R' 'formation.R' 'penaltyGoalsProb.R' 'summary.R' 'unitedRPackage.R' 'unitedRoverview.R' 'unitedSimClass.R' 'unitedSimResults.R' 'unitedSimOne.R' 'unitedSim.R'

Suggests testthat, knitr

VignetteBuilder knitr

NeedsCompilation no

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R topics documented:

unitedR-package *Assessment and Evaluation of United Formations*

Description

Assessment and Evaluation of United Formations

Details

Package:	unitedR
Type:	Package
Version:	0.1
Date:	2014-12-18
License:	GPL (>= 2)
LazyLoad:	yes

This package provides functionality for the assessment of lineups and formations in United. The rules for United in detail can be found under: United-rules.

Author(s)

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References

omido United

formation *Representing a formation*

Description

Represents a valid united formation.

Usage

```
formation(GK, SW, DF, MF, ST, hardness = c(0, 0, 0, 0, 0), homeAdv = c(0, 0,
  0, 0, 0))
```

Arguments

GK	integer for the strength goalkeeper
SW	vector for the strength of the sweeper, can be NA or a numeric
DF	numeric vector for the strengths of the players in the defense
MF	numeric vector for the strengths of the players in the midfield
ST	numeric vector of integers for the strenghts of the strikers
hardness	numeric vector of length five with integers for the used hardness
homeAdv	numeric vector of length five with integers for the used hardness

Value

S4 object of the class formation.

---

getLineup,formation-method *Lineup of a united formation*

Description

Generates a numeric vector which specifies the used united lineup

Usage

```
## S4 method for signature 'formation'
getLineup(obj)

getLineup(obj)
```

Arguments

obj	object of the class formation.

Value

vector of the used lineup

---

overview *Overview over the parameters used in the* unitedR *package*

Description

This list of parameters yields a comprehensive overview of the parameters used in the unitedR package.

Arguments

away	away team (an object of the S4class formation)
DF	numeric vector for the strengths of the players in the defense
formation	object of the S4class formation
GK	integer for the strength goalkeeper
hardness	numeric vector of length five with integers for the used hardness
home	home team (an object of the S4class formation)
homeAdv	numeric vector of length five with integers for the used hardness
MF	numeric vector for the strengths of the players in the midfield
penaltyGoalProb	probability of a goal by a singular penalty
posPenalties	number of possible penalties in a game

preventGoalGK	factor multiplicied with the strength of the GK for computing the probability of preventing a goal by the goalkeeper
preventGoalSW	factor multiplicied with the strength of the SW for computing the probability of preventing a goal by the sweeper
r	number of replications for the simulation of hardness and penalties, can be missing (exact results will be computed)
ST	numeric vector of integers for the strenghts of the strikers
SW	vector for the strength of the sweeper, can be NA or a numeric
x	a variable x.

---

penaltyGoalsProb *Computing goals by united*

Description

Computes the distribution function of possible goals by penalties.

Usage

```
penaltyGoalsProb(posPenalties, penaltyGoalProb)
```

Arguments

posPenalties	number of possible penalties in a game
penaltyGoalProb	probability of a goal by a singular penalty

Value

A data.frame with two columns: the possible goals and the probability for achieving this number of goals.

---

simRedCard,formation,numeric-method *Simulate red card(s)*

Description

Simulates red card(s) in the united and returns the adjusted lineup.

Usage

```
## S4 method for signature 'formation,numeric'
simRedCard(obj, lineup)

simRedCard(obj, lineup)
```

Arguments

obj	object of the class formation
lineup	lineup of the corresponding object obj

Value

vector of the adjusted lineup for the red card(s)

---

summary *Summary of assessments of a randomization procedure*

Description

Summary of assessments of a randomization procedure

Usage

```
summary(object, ...)

## S4 method for signature 'unitedSim'
summary(object)

## S4 method for signature 'unitedSimResults'
summary(object)
```

Arguments

object	object of class unitedSimResults
...	additional arguments affecting the summary that will be produced.

Value

data.frame with a summary of the assessed object.

---

unitedSim *Simulating a formation*

Description

Simulates a formation against another formations (several formations of away are possible).

Usage

```
unitedSim(home, ..., r, preventGoalGK = 1/14, preventGoalSW = 1/15)
```

Arguments

home	home team (an object of the S4class formation)
...	several objects of the class formation
r	number of replications for the simulation of hardness and penalties, can be missing (exact results will be computed)
preventGoalGK	factor multiplicied with the strength of the GK for computing the probability of preventing a goal by the goalkeeper
preventGoalSW	factor multiplicied with the strength of the SW for computing the probability of preventing a goal by the sweeper

Value

Creates an object of the unitedSim class.

Examples

```
home <- formation(10, NA, c(7,5,3), c(8,8), c(10,10,8))
away <- formation(5, 8, c(8,8), c(10,10), c(10,10,10),
 hardness = c(0,0,0,0,1))
set.seed(123)
unitedSim(home, away)
# can also be simualated
unitedSim(home, away, r = 100)
# several away lineups
unitedSim(home, away, away)
# several away lineups simulated
unitedSim(home, away, away, r = 100)
```

---

unitedSimOne *Simulating a formation*

Description

Simulates a formation against another formation.

Usage

```
unitedSimOne(home, away, r, preventGoalGK = 1/14, preventGoalSW = 1/15)
```

Arguments

home	home team (an object of the S4class formation)
away	away team (an object of the S4class formation)
r	number of replications for the simulation of hardness and penalties, can be missing (exact results will be computed)
preventGoalGK	factor multiplicied with the strength of the GK for computing the probability of preventing a goal by the goalkeeper
preventGoalSW	factor multiplicied with the strength of the SW for computing the probability of preventing a goal by the sweeper

Value

Creates an object of the `unitedSim` class.

Examples

```
home <- formation(10, NA, c(7,5,3), c(8,8), c(10,10,8))
away <- formation(5, 8, c(8,8), c(10,10), c(10,10,10),
 hardness = c(0,0,0,0,1))
set.seed(123)
unitedSimOne(home, away)
# you can even simulated the game
unitedSimOne(home, away, r = 100)
```

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