Package ‘safeBinaryRegression’

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Title Safe Binary Regression
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Depends R (>= 2.9.1), lpSolveAPI (>= 5.5.0.14)
Description Overloads the glm function in the stats package so that
a test for the existence of the maximum likelihood estimate is included
in the fitting procedure for binary regression models.
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R topics documented:

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glm  Fitting Generalized Linear Models

Description

This function overloads the glm function so that a check for the existence of the maximum likelihood
estimate is computed before fitting a 'glm' with a binary response.
Usage

glm(formula, family = gaussian, data, weights, subset, na.action, start = NULL,
etastart, mustart, offset, control = glm.control(...), model = TRUE,
method = "glm.fit", x = FALSE, y = TRUE, contrasts = NULL, ...,
separation = c("find", "test"))

Arguments

The arguments are identical to the arguments of the \texttt{glm} function provided in the \texttt{stats} package with the exception of either “find” or “test”. Both options prevent the model from being fit to binary data when the maximum likelihood estimate does not exist. Additionally, when separation = "find", the terms separating the sample points are identified when the maximum likelihood estimate is found not to exist.

The following arguments are passed to the \texttt{glm} function:

- \texttt{formula} see \texttt{glm}
- \texttt{family} see \texttt{glm}
- \texttt{data} see \texttt{glm}
- \texttt{weights} see \texttt{glm}
- \texttt{subset} see \texttt{glm}
- \texttt{na.action} see \texttt{glm}
- \texttt{start} see \texttt{glm}
- \texttt{etastart} see \texttt{glm}
- \texttt{mustart} see \texttt{glm}
- \texttt{offset} see \texttt{glm}
- \texttt{control} see \texttt{glm}
- \texttt{model} see \texttt{glm}
- \texttt{method} see \texttt{glm}
- \texttt{x} see \texttt{glm}
- \texttt{y} see \texttt{glm}
- \texttt{contrasts} see \texttt{glm}
- \texttt{...} see \texttt{glm}

Details

This function checks for the existence of the maximum likelihood estimate before the ‘\texttt{glm}’ function is used to fit binary regression models by solving the linear program proposed in Konis (2007).

Value

See the return value for the \texttt{glm} function.
Author(s)
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References
Kjell Konis (2007). Linear programming algorithms for detecting separated data in binary logistic regression models. DPhil, University of Oxford http://ora.ouls.ox.ac.uk/objects/uuid:8f9ee0d0-d78e-4101-9ab4-f9cbceed2a2a

See Also
glm.

Examples
## A set of 4 completely separated sample points ##
x <- c(-2, -1, 1, 2)
y <- c(0, 0, 1, 1)

## Not run: glm(y ~ x, family = binomial)

## A set of 4 quasicompletely separated sample points ##
x <- c(-2, 0, 0, 2)
y <- c(0, 0, 1, 1)

## Not run: glm(y ~ x, family = binomial)
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