Package ‘RobustLinearReg’

June 12, 2020

Type Package

Title Robust Linear Regressions

Version 1.2.0

Author Santiago I. Hurtado <santih@carina.fcaglp.unlp.edu.ar>

Maintainer Santiago I. Hurtado <santih@carina.fcaglp.unlp.edu.ar>

Description Provides an easy way to compute the Theil Sehn Regression method and also the Siegel Regression Method which are both robust methods based on the median of slopes between all pairs of data. In contrast with the least squared linear regression, these methods are not sensitive to outliers. Theil, H. (1992) <doi:10.1007/978-94-011-2546-8_20>, Sen, P. K. (1968) <doi:10.1080/01621459.1968.10480934>.

License GPL-3

Depends R (>= 3.1.0)

ByteCompile yes

Encoding UTF-8

LazyData true

NeedsCompilation no

Repository CRAN

Date/Publication 2020-06-12 10:20:05 UTC

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Theil Sen Regression

Description

Compute Theil Sen Regression and Repeated Medians Regression (Siegel)

Usage

theil_sen_regression(formula, data = NULL)

siegel_regression(formula, data = NULL)

Arguments

formula object of type formula, must be linear
data optional data frame with the data used in formula in columns

Details

theil_sen_regression compute linear regression using the Theil–Sen estimator base on the median of the slopes. siegel_regression compute linear regression using the repeated median estimator for the slope, propose by Siegel (1982). The main difference is that siegel_regression is less sensitive to outliers in the data.

Value

Returns an object of type "lm"

References


Examples

# create x axis (t)
t <- 1:100
# create values that follow a linear relation with the x axis
x <- rnorm(100,35,4)*t/100
# add some outliers
x[c(10,12,76,34,21)] <- x[c(10,12,76,34,21)] + 40
model <- theil_sen_regression(x~t)
lm_model <- lm(x~t)
# compare linear regression with theil_sen_regression
plot(x~t)
abline(model,col='blue')
abline(lm_model,col='red')
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