reference:

Automatic extraction of relevant features from time series

<http://tsfresh.readthedocs.io>

<https://github.com/blue-yonder/tsfresh>

<https://media.readthedocs.org/pdf/tsfresh/latest/tsfresh.pdf>

#### quantile



#### skewness



#### kurtosis



#### energy

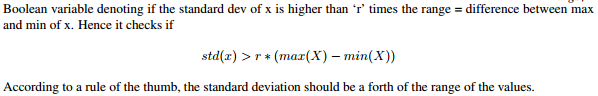


#### symmetry\_looking



#### standard\_deviation

##### large\_standard\_deviation



##### variance\_larger\_than\_standard\_deviation

#### duplicate

##### has\_duplicate

##### has\_duplicate\_max

##### has\_duplicate\_min

#### count

##### count\_above\_mean

##### count\_below\_mean

##### range count



##### value\_count

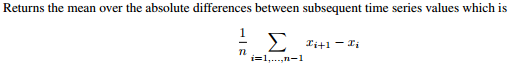


#### change

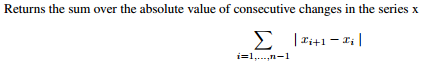
##### sum\_values



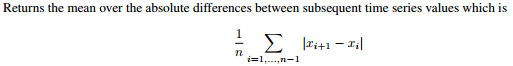
##### mean change



##### abs sum of change



##### mean abs sum of change



##### mean abs change quantiles



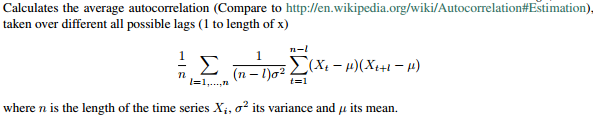


#### correlation

##### auto-correlation



##### mean\_autocorrelation



#### unit root



#### peaks

##### number\_peaks



##### number\_cwt\_peaks



##### large\_number\_of\_peaks



示例：

find\_peaks <- function (x, m = 3){

shape <- diff(sign(diff(x, na.pad = FALSE)))

pks <- sapply(which(shape < 0), FUN = function(i){

z <- i - m + 1

z <- ifelse(z > 0, z, 1)

w <- i + m + 1

w <- ifelse(w < length(x), w, length(x))

if(all(x[c(z : i, (i + 2) : w)] <= x[i + 1])) return(i + 1) else return(numeric(0))

})

pks <- unlist(pks)

pks

}

<https://stats.stackexchange.com/questions/22974/how-to-find-local-peaks-valleys-in-a-series-of-data>