

## Package leaps and GenSA

*Created By Soo Young Kim on Tuesday, September 23, 2014 9:13:43 PM MDT*

*last modified by Soo Young Kim on Tuesday, September 23, 2014 11:54:31 PM MDT*

Packages 'leaps' and 'GenSA'

Package 'leaps': leaps() and regsubsets() functions

leaps() performs an exhaustive search for the best subsets of the variables in x for predicting y in linear regression based on  $C_p$ ,  $R^2$  and  $adj-R^2$ , using an efficient branch-and-bound algorithm. regsubsets() is similar to leaps(), but it is more flexible. We can restrict nvmax (maximum size of subsets to examine) to speed up exhaustive searches. Also it can specify variables to be included in all models and to be excluded from all models (force.in/force.out).

Package 'GenSA':

GenSA(): R functions for Generalized Simulated Annealing

This function searches for global minimum of a very complex non-linear objective function with a very large number of local minima. The kernel function of GenSA is written in C++ to ensure the package runs as efficiently as possible.

Usage: GenSA(par, fn, lower, upper, control=list(), ...)

The arguments are:

- par: Numeric vector. Initial values for the parameters to be optimized over. Default is NULL, in which case initial values will be generated automatically.
- lower: Numeric vector with length of par. Lower bounds for the parameters to be optimized over.
- upper: Numeric vector with length of par. Upper bounds for the parameters to be optimized over.
- fn: A function to be minimized, with first argument the vector of parameters over which minimization is to take place. It should return a scalar result.

Examples: [example.R](#)

The references are :

<http://cran.r-project.org/web/packages/leaps/leaps.pdf>

<http://cran.r-project.org/web/packages/GenSA/GenSA.pdf>

The article: Generalized Simulated Annealing for Global Optimization: The GenSA Package :  
by Yang Xiang, Sylvain Gubian, Brian Suomela and Julia Hoeng