Package ‘b6e6rl’

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Type Package
Title Adaptive differential evolution, b6e6rl variant
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Description This package contains b6e6rl algorithm, adaptive differential evolution for global optimization.
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R topics documented:

b6e6rl .............................................................. 1
f_dejong .......................................................... 3
f_rastrigin ....................................................... 3
f_rosenbrock .................................................... 3

Index

b6e6rl Adaptive differential evolution, b6e6rl algorithm

Description

This function searches for the global minimum using b6e6rl variant of adaptive differential evolution.

Usage

b6e6rl(fn_name, a, b, N, my_eps, max_evals, n0, delta)
Arguments

fn_name  Name of function which minimum is to find
a        Vector of lower bounds of the search space (length=dimension of the search space)
b        Vector of upper bounds of the search space (length=dimension of the search space)
N        Size of population
my_eps   Small positive value, the algorithm stops when fmax-fmin < my_eps
max_evals Maximum count of function evaluations per one dimension of the problem
n0       Input parameter controlling the competition of the strategies, usually n0=2
delta    Input parameter (critical probability), usually delta=1/60

Value

x_star   Approximation of the global minimum point found by search (vector of length=d)
fn_star  Functional value at x_star
func_evals Count of function evaluations
success  Count of successful generations of the trial point
nrst     Count of resets, when any probability value is less than delta
cni      Counts of successful selection of each strategy (vector of length=12)

Author(s)

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References


Examples

```r
# Example of the b6e6r1 call

fn_name <- "f_dejong"
a <- c(-30, -30, -30)
b <- c(30, 30, 30)
N <- 60
max_evals <- 20000
my_eps <- 0.000001
n0 <- 2
delta <- 1/(5*12)
b6e6r1(fn_name, a, b, N, my_eps, max_evals, n0, delta)
```
**f_dejong**  
*Test function*

**Description**
First deJong problem (sphere). The global minimum: \( f(x) = 0 \), \( x(i) = 0 \), \( i = 1:n \); \( n \) is dimension of the search space.

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**f_rastrigin**  
*Test function*

**Description**
Rastring (multimodal separable). The global minimum: \( f(x) = 0 \); \( x(i) = 0 \), \( i = 1:n \); \( n \) is dimension of the search space.

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**f_rosenbrock**  
*Test function*

**Description**
Rosenbrock (nonseparable). The global minimum: \( f(x) = 0 \); \( x(i) = 1 \), \( i = 1:n \); \( n \) is dimension of the search space.
Index

*Topic adaptive
  b6e6rl, 1
*Topic b6e6rl
  b6e6rl, 1
*Topic differential
  b6e6rl, 1
*Topic evolution
  b6e6rl, 1

b6e6rl, 1

f_dejong, 3
f_rastrigin, 3
f_rosenbrock, 3