Package 'Pijavski'

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Type Package

Title Global Univariate Minimization

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Description Global univariate minimization of Lipschitz functions is performed by using Pijavski method, which was published in Pijavski (1972) <DOI:10.1016/0041-5553(72)90115-2>.

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LazyData TRUE

Imports Rcpp (>= 0.12.3)

LinkingTo Rcpp

RoxygenNote 5.0.1

NeedsCompilation yes

Copyright Implementation of the binary heap is by Hewlett-Packard
Company (1994), Silicon Graphics Computer Systems,
Inc.(1996-1999). Modifications to the code by Johnathan Wells
(2002)

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R topics documented:

Pijavski	*Global univariate minimization of Lipschitz functions using Pijavski method*

Description

Pijavski performs global univariate optimization of a Lipschitz function fn. The return value is a list containing x,val=fn(x), precision reached and number of iterations made. Pijavski code in C++ is being called from R environment with multiple arguments

Usage

```
Pijavski( fn, Lips, a, b, iter, prec, env)
```

Arguments

fn	input, a pointer to the objective function fn
Lips	input, an overestimate of the Lipschitz constant of fn
a,b	input, left and right boundaries of the interval of minimization
iter	input and output, the maximum number of function evaluations, on return, the number of iterations made
prec	input and output, the desired precision in terms of the value of fn, on return the difference between best fn and the lower estimate on the minimum. If negative, the Lipschitz constant is too small
env	input, environment variable passed from R containing a reference to fn, should be defined as new.env(list(fn = myfunction))

Value

A list with components

x	The global minimizer of fn.
value	The final value of the function being optimized.
precision	The precision of the result in terms of the difference of value and the lower estimate on fn.
iterations	Number of function evaluations performed.

Author(s)

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Examples

```
optimize_funcR <- function(x,y){
  y <- x * x
  return(y)
}

output<-Pijavski(optimize_funcR, 5, -2.0, 1.0, 1000, 10^-3,
        new.env(list(fn = optimize_funcR)))
output

# named parameters
output<-Pijavski(fn= optimize_funcR, Lips=4, a=-2.0, b=1.0,
    iter=1000, prec=10^-3, env=new.env(list(fn = optimize_funcR)))

output
```

Pijavski.example	*Illustrates using Pijavski method*

Description

Pijavski.example illustrates using Pijavski algorithm

Usage

```
Pijavski.example()
```

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