

Package: Rcppautodiff (via r-universe)

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Type Package

Title An Interface to the C++ Automatic Differentiation Library
'autodiff'

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URL <https://github.com/sn248/Rcppautodiff>,
<https://sn248.github.io/Rcppautodiff/>

BugReports <https://github.com/sn248/Rcppautodiff/issues>

Description Provides an interface from R to the 'autodiff' library
<<https://autodiff.github.io/>>, a modern header-only C++ library
for automatic differentiation. Unlike numerical
differentiation, automatic differentiation computes derivatives
of functions to machine precision without truncation error,
using either forward or reverse mode. The 'autodiff' header
files are shipped with this package so that other R packages
can use them by including 'Rcppautodiff' in the 'LinkingTo'
field of their 'DESCRIPTION' file. Example programs demonstrate
computing derivatives of single-variable and multi-variable
functions, gradient vectors, Jacobian matrices and derivatives
with respect to parameters, using 'Rcpp' and 'RcppEigen'.

License GPL (>= 2)

Suggests knitr, rmarkdown, tinytest

Encoding UTF-8

Imports Rcpp (>= 1.0.8.3), RcppEigen

LinkingTo Rcpp, RcppEigen

VignetteBuilder knitr

Config/roxygen2/version 8.0.0

NeedsCompilation yes

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Description

Example function to show differentiation w.r.t. a single variable

Usage

autodiff_single_var(input)

Arguments

input Value of independent variable (must be greater than 0)

Value

A named list with two elements, value (the function $f(x) = 1 + x + x^2 + 1/x + \log(x)$ evaluated at input) and derivative (the derivative of f evaluated at input).

Examples

```
res <- autodiff_single_var(2.0)
res$value      # f(2)  = 1 + 2 + 4 + 0.5 + log(2)
res$derivative # f'(2) = 1 + 4 - 0.25 + 0.5 = 5.25
```

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