Package: cinterpolate (via r-universe)

<div align="center">September 17, 2024</div>

Title Interpolation From C

Version 1.0.2

Description Simple interpolation methods designed to be used from C
code. Supports constant, linear and spline interpolation. An R
wrapper is included but this package is primarily designed to
be used from C code using 'LinkingTo'. The spline calculations
are classical cubic interpolation, e.g., Forsythe, Malcolm and
Moler (1977) <ISBN: 9780131653320>.

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Encoding UTF-8

URL https://github.com/mrc-ide/cinterpolate

BugReports https://github.com/mrc-ide/cinterpolate/issues

RoxygenNote 7.2.3

Roxygen list(markdown = TRUE)

Suggests knitr, rmarkdown, testthat

VignetteBuilder knitr

Language en-GB

Repository https://mrc-ide.r-universe.dev

RemoteUrl https://github.com/mrc-ide/cinterpolate

RemoteRef master

RemoteSha 4b06d8b46210b7479eaf1ae0cb311423fb6f37a2

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interpolation_function

Create an interpolation function

Description

Create an interpolation function, using the same implementation as would be available from C code. This will give very similar answers to R's [splinefun](#) function. This is not the primary intended use of the package, which is mostly designed for use from C/C++. This function primarily exists for testing this package, and for exploring the interface without writing C code.

Usage

```
interpolation_function(x, y, type, scalar = FALSE, fail_on_extrapolate = FALSE)
```

Arguments

x	Independent variable
y	Dependent variable
type	Character string indicating the interpolation type ("constant", "linear" or "spline").
scalar	Return a function that will compute only a single x input at a time. This is more similar to the C interface and is equivalent to dropping the first dimension of the output.
fail_on_extrapolate	
	Logical, indicating if extrapolation should cause an failure (rather than an NA value)

Value

A function that can be used to interpolate the function(s) defined by x and y to new values of x.

Examples

```
# Some data to interpolate
x <- seq(0, 8, length.out = 20)
y <- sin(x)
xx <- seq(min(x), max(x), length.out = 500)

# Spline interpolation
f <- cinterpolate::interpolation_function(x, y, "spline")
plot(f(xx) ~ xx, type = "l")
lines(sin(xx) ~ xx, col = "grey", lty = 2)
points(y ~ x, col = "red", pch = 19, cex = 0.5)

# Linear interpolation
f <- cinterpolate::interpolation_function(x, y, "linear")
plot(f(xx) ~ xx, type = "l")
```

```
lines(sin(xx) ~ xx, col = "grey", lty = 2)
points(y ~ x, col = "red", pch = 19, cex = 0.5)

# Piecewise constant interpolation
f <- cinterpolate::interpolation_function(x, y, "constant")
plot(f(xx) ~ xx, type = "s")
lines(sin(xx) ~ xx, col = "grey", lty = 2)
points(y ~ x, col = "red", pch = 19, cex = 0.5)

# Multiple series can be interpolated at once by providing a
# matrix for 'y'.  Each series is interpolated independently but
# simultaneously.
y <- cbind(sin(x), cos(x))
f <- cinterpolate::interpolation_function(x, y, "spline")
matplot(xx, f(xx), type = "l", lty = 1)
```

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