Package 'sigmoid'

October 14, 2022

Title Sigmoid Functions for Machine Learning

Version 1.4.0

Description Several different sigmoid functions are implemented, including a wrapper function, SoftMax preprocessing and inverse functions.

Depends R (>= 3.2.2)

Encoding UTF-8

License GPL-3

RoxygenNote 7.2.0

Suggests covr, knitr, rmarkdown, ggplot2, testthat

VignetteBuilder knitr

NeedsCompilation no

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Repository CRAN

Date/Publication 2022-06-18 14:40:02 UTC

R topics documented:

Gompertz *Gompertz*

Description

maps numeric vector using Gompertz function

Usage

```
Gompertz(x, a = 1, b = 1, c = 1)
```

Arguments

x	input vector
a	see details
b	see details
c	see details

inverse_Gompertz *Inverse Gompertz*

Description

maps numeric vector using Gompertz function

Usage

```
inverse_Gompertz(x)
```

Arguments

x	input vector Gompertz values

leakyrelu *Leaky Rectified Linear Unit*

Description

maps numeric vector using leaky ReLU function

Usage

```
leakyrelu(x)
```

Arguments

x	input vector

logistic *Standard Logistic*

Description

maps numeric vector using logistic function

Usage

```
logistic(x, k = 1, x0 = 0)
```

Arguments

x	input vector
k	see details
x0	see details

logit *Logit*

Description

maps numeric vector using logit function

Usage

```
logit(x)
```

Arguments

x	input vector

relu *Rectified Linear Unit*

Description

maps numeric vector using ReLU function

Usage

```
relu(x)
```

Arguments

x	input vector

`relu_output_to_derivative` *ReLU Derivative*

Description

Converts output of ReLU function to its derivative.

Usage

```
relu_output_to_derivative(x)
```

Arguments

`x`	vector or ReLU values

`sigmoid` *Sigmoid*

Description

computes sigmoid nonlinearity

Usage

```
sigmoid(
  x,
  method = c("logistic", "Gompertz", "tanh", "ReLU", "leakyReLU"),
  inverse = FALSE,
  SoftMax = FALSE,
  ...
)
```

Arguments

`x`	numeric vector
`method`	type of sigmoid function
`inverse`	use the inverse of the method (reverses)
`SoftMax`	use SoftMax preprocessing
`...`	arguments to pass on the method

Examples

```
# create input vector
a <- seq(-10,10)

# use sigmoid with default standard logistic
( b <- sigmoid(a) )

# show shape
plot(b)

# inverse
hist( a - sigmoid(b, inverse=TRUE) )

# with SoftMax
( c <- sigmoid(a, SoftMax=TRUE) )

# show difference
hist(b-c)
```

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sigmoid_output_to_derivative *Sigmoid Derivative*

Description

Convert output of sigmoid function to its derivative.

Usage

```
sigmoid_output_to_derivative(x)
```

Arguments

x	vector of sigmoid values

SoftMax *SoftMax*

Description

SoftMax preprocessing

Usage

```
SoftMax(x, lambda = 2)
```

Arguments

x	input vector
lambda	see details

`SoftPlus` *SoftPlus*

Description

maps numeric input vector using SoftPlus function

Usage

```
softplus(x)
```

Arguments

x	input vector

`softplus_output_to_derivative` *SoftPlus Derivative*

Description

Convert output of SoftPlus function to its derivative.

Usage

```
softplus_output_to_derivative(x)
```

Arguments

x	vector of SoftPlus values

`tanh_output_to_derivative` *Tanh Derivative*

Description

Convert output of tanh function to its derivative.

Usage

```
tanh_output_to_derivative(x)
```

Arguments

x	vector of tanh values

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