Package: sigmoid (via r-universe)

September 5, 2024

Title Sigmoid Functions for Machine Learning

Version 2.0.0

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

Depends R (>= 3.2.2), attention, transformer

Encoding UTF-8

License GPL-3

LazyData true

RoxygenNote 7.2.3

Suggests covr, knitr, rmarkdown, ggplot2, testthat

VignetteBuilder knitr

Repository https://bquast.r-universe.dev

RemoteUrl https://github.com/bquast/sigmoid

RemoteRef HEAD

RemoteSha 52f91997a21b57cb94ec059d4153b588c8efc30a

Contents

`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)
```

---

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

Index