

Package ‘DamiaNN’

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Type Package

Title Neural Network Numerai

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Author Damian Siniakowicz

Maintainer Damian Siniakowicz <DamianSiniakowicz@gmail.com>

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Description Interactively train neural networks on Numerai, <<https://numer.ai/>>, data. Generate tournament predictions and write them to a CSV.

Imports caret, methods, testthat

License GPL-3

LazyData FALSE

RoxygenNote 5.0.1

NeedsCompilation no

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Contents

back_propogation,Neural_Network,numeric,numeric,numeric-method	2
forward_propogation,Neural_Network,matrix-method	2
Get_Cost,Neural_Network,numeric-method	3
Get_LogLoss	3
Get_Number_Observations,Neural_Network-method	4
initialize,Neural_Network-method	4
Neural_Network-class	5
Predict,Neural_Network,data.frame-method	5
Start	6
Train,Neural_Network,data.frame,numeric,numeric,numeric-method	6

Index	7
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back_propagation,Neural_Network,numeric,numeric,numeric-method
back_prop

Description

updates connection strengths using results of last forward prop

Usage

```
## S4 method for signature 'Neural_Network,numeric,numeric,numeric'
back_propagation(object,
  target, regularization_parameter, learning_rate)
```

Arguments

object is a Neural_Network
target is a numeric vector
regularization_parameter
 is non-negative number punishes strong connections
learning_rate is a positive number that controls the rate at which connections are adjusted

Value

Neural_Network

forward_propagation,Neural_Network,matrix-method
f_prop

Description

... part of the training program

Usage

```
## S4 method for signature 'Neural_Network,matrix'
forward_propagation(object, dataset)
```

Arguments

object is a Neural_Network
dataset is a matrix not containing the target vector

Value

Neural_Network

Get_Cost,Neural_Network,numeric-method
cost

Description

get the logarithmic loss for a set of predictions

Usage

```
## S4 method for signature 'Neural_Network,numeric'  
Get_Cost(object, target)
```

Arguments

object ... a Neural_Network that has run forward_prop at least once
target ... a numeric vector ... the target ...

Value

Numeric

Get_LogLoss *log loss*

Description

get log loss

Usage

```
Get_LogLoss(predictions, target)
```

Arguments

predictions is a numeric vector
target is a numeric vector

Value

Numeric

Get_Number_Observations,Neural_Network-method
num observs

Description

returns the number of observations that the network has processed

Usage

```
## S4 method for signature 'Neural_Network'
Get_Number_Observations(object)
```

Arguments

object ... a Neural Network that has called fprop. ie. that has called train/predict

Value

Numeric

initialize,Neural_Network-method
init

Description

initializes a neural network capable of studying datasets with ncol = to the ncol(sample_dataset) and making predictions on such datasets

Usage

```
## S4 method for signature 'Neural_Network'
initialize(.Object, number_predictors,
  hidden_layer_lengths)
```

Arguments

.Object ... a Neural_Network object
number_predictors
 ... a numeric telling how many predictors there are
hidden_layer_lengths
 ... a numeric telling the number of layers and the number of neurons in each layer

Details

NN is parametrized by its connection_strength matrices

Value

Neural_Network

Neural_Network-class *Neural Network implementation*

Description

Neural Network implementation

Predict,Neural_Network,data.frame-method
predict stuff

Description

returns predictions

Usage

```
## S4 method for signature 'Neural_Network,data.frame'  
Predict(object, dataset)
```

Arguments

object : a neural network
dataset : a dataframe of features and observations

Value

Numeric

Start	<i>start script</i>
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Description

main function that runs the interactive script

Usage

Start()

Details

takes your numerai training data and trains a neural network to your architectural specifications. provides you with the out of sample error offers to retrain with a new architecture or predict on a numerai tournament dataset. Can then write the predictions to a CSV

Train,Neural_Network,data.frame,numeric,numeric,numeric-method	<i>train the NN</i>
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Description

gets NN parameters that minimize cost on dataset using optimization_method

Usage

```
## S4 method for signature 'Neural_Network,data.frame,numeric,numeric,numeric'
Train(object,
      dataset, regularization_constant, learning_rate, tolerable_error)
```

Arguments

object	is a Neural Network
dataset	is a data.frame, the original data frame that includes the target
regularization_constant	is a numeric
learning_rate	is a numeric
tolerable_error	is a numeric, units : log loss

Value

Neural_Network

Index

back_propogation,Neural_Network,numeric,numeric,numeric-method,
[2](#)

forward_propogation,Neural_Network,matrix-method,
[2](#)

Get_Cost,Neural_Network,numeric-method,
[3](#)

Get_LogLoss, [3](#)

Get_Number_Observations,Neural_Network-method,
[4](#)

initialize,Neural_Network-method, [4](#)

Neural_Network-class, [5](#)

Predict,Neural_Network,data.frame-method,
[5](#)

Start, [6](#)

Train,Neural_Network,data.frame,numeric,numeric,numeric-method,
[6](#)