Package ‘DamiaNN’

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Type Package

Title Neural Network Numerai

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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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R topics documented:

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

Index 7
**Description**

updates connection strengths using results of last forward prop

**Usage**

```r
## 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 a non-negative number that punishes strong connections
- `learning_rate`: is a positive number that controls the rate at which connections are adjusted

**Value**

Neural_Network

---

**Description**

... part of the training program

**Usage**

```r
## 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

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**Get_Cost, Neural_Network, numeric-method**

*cost*

---

**Description**

get the logarithmic loss for a set of predictions

**Usage**

```r
## 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**

```r
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**

```r
## 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**

```r
## 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

Description

Neural Network implementation

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

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

Description

Train, Neural_Network, data.frame, numeric, numeric, numeric-method

train the NN

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