

ANN_cpp

Generated by Doxygen 1.9.1

1 Class Index	1
1.1 Class List	1
2 Class Documentation	3
2.1 Layer Class Reference	3
2.1.1 Detailed Description	3
2.1.2 Constructor & Destructor Documentation	4
2.1.2.1 Layer() [1/2]	4
2.1.2.2 Layer() [2/2]	4
2.1.3 Member Function Documentation	4
2.1.3.1 getActivationFunction()	4
2.1.3.2 getNbInput()	5
2.1.3.3 getNbNodes()	5
2.1.3.4 getNode()	5
2.1.3.5 operator=()	5
2.1.3.6 processOutputs()	6
2.2 Network Class Reference	6
2.3 Node Class Reference	6
2.3.1 Detailed Description	7
2.3.2 Constructor & Destructor Documentation	7
2.3.2.1 Node()	7
2.3.3 Member Function Documentation	7
2.3.3.1 getActivationFunction()	7
2.3.3.2 getBias()	7
2.3.3.3 getNbInput()	8
2.3.3.4 getWeight()	8
2.3.3.5 operator=()	8
2.3.3.6 processOutputs()	8
Index	11

Chapter 1

Class Index

1.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

Layer	Class Layer	3
Network	6
Node	Class Node	6

Chapter 2

Class Documentation

2.1 Layer Class Reference

Class [Layer](#).

```
#include <layer.hpp>
```

Public Member Functions

- [Layer](#) ()
Construct a new empty [Layer](#) object.
- [Layer](#) (activationFunction function, int nbInput, int nbNodes)
Construct a new [Layer](#) object.
- [Layer](#) & [operator=](#) (const [Layer](#) &)=default
Equal operator for the [Layer](#) object.
- std::vector< double > [processOutputs](#) (std::vector< double > inputs)
process the outputs of this layer
- int [getNbInput](#) ()
Get the NbInput object.
- int [getNbNodes](#) ()
Get the NbNodes object.
- [Node](#) [getNode](#) (int index)
Get the [Node](#) object at the position index.
- activationFunction [getActivationFunction](#) ()
Get the Activation Function object.

2.1.1 Detailed Description

Class [Layer](#).

which implements all the behaviour of a layer

2.1.2 Constructor & Destructor Documentation

2.1.2.1 Layer() [1/2]

```
Layer::Layer ( )
```

Construct a new empty [Layer](#) object.

Activation function used by the nodes of this layer

2.1.2.2 Layer() [2/2]

```
Layer::Layer (
    activationFunction function,
    int nbInput,
    int nbNodes )
```

Construct a new [Layer](#) object.

Parameters

<i>function</i>	: activation function used by the nodes of this layer
<i>nbInput</i>	: number of inputs in this layer
<i>nbNodes</i>	: number of nodes in this layer

2.1.3 Member Function Documentation

2.1.3.1 getActivationFunction()

```
activationFunction Layer::getActivationFunction ( )
```

Get the Activation Function object.

Returns

activationFunction

2.1.3.2 getNbInput()

```
int Layer::getNbInput ( )
```

Get the NbInput object.

Returns

int

2.1.3.3 getNbNodes()

```
int Layer::getNbNodes ( )
```

Get the NbNodes object.

Returns

int

2.1.3.4 getNode()

```
Node Layer::getNode (
    int index )
```

Get the [Node](#) object at the position index.

Parameters

<i>index</i>	: the position of the node we want to access.
--------------	---

Returns

[Node](#)

2.1.3.5 operator=()

```
Layer& Layer::operator= (
    const Layer & ) [default]
```

Equal operator for the [Layer](#) object.

Returns

[Layer&](#)

2.1.3.6 processOutputs()

```
std::vector< double > Layer::processOutputs (
    std::vector< double > inputs )
```

process the outputs of this layer

Parameters

<i>inputs</i>	: vector of inputs
---------------	--------------------

Returns

std::vector<double> : vector of outputs

The documentation for this class was generated from the following files:

- /home/marc/Documents/1. Développement/4. C++/1. Neural Network/ANN_cpp/src/layer.hpp
- /home/marc/Documents/1. Développement/4. C++/1. Neural Network/ANN_cpp/src/layer.cpp

2.2 Network Class Reference

The documentation for this class was generated from the following file:

- /home/marc/Documents/1. Développement/4. C++/1. Neural Network/ANN_cpp/src/network.hpp

2.3 Node Class Reference

Class [Node](#).

```
#include <node.hpp>
```

Public Member Functions

- [Node](#) (activationFunction function, int nbIn)
Construct a new [Node](#) object.
- [Node](#) ()
Empty constructor for [Node](#) object.
- [Node](#) & operator= (const [Node](#) &)=default
Equal operator for the node object.
- double [processOutputs](#) (std::vector< double > inputs)
Method to process the outputs of the node.
- double [getWeight](#) (int index)
Get one of the weight.
- double [getBias](#) ()
Get the Bias.
- int [getNbInput](#) ()
Get the number of input.
- activationFunction [getActivationFunction](#) ()
Get the Activation Function of the [Node](#).

2.3.1 Detailed Description

Class [Node](#).

Class which represent the behaviour of a [Node](#) in an Artificial Neural [Network](#).

2.3.2 Constructor & Destructor Documentation

2.3.2.1 Node()

```
Node::Node (
    activationFunction function,
    int nbIn )
```

Construct a new [Node](#) object.

Construct a new [Node](#) object by creating random weights and a random bias.

Parameters

<i>nbIn</i>	corresponds to the number of inputs of the created Node .
-------------	---

2.3.3 Member Function Documentation

2.3.3.1 getActivationFunction()

```
activationFunction Node::getActivationFunction ( )
```

Get the Activation Function of the [Node](#).

Returns

activationFunction : the [Node](#) Activation Function.

2.3.3.2 getBias()

```
double Node::getBias ( )
```

Get the Bias.

Returns

double : the bias.

2.3.3.3 getNbInput()

```
int Node::getNbInput ( )
```

Get the number of input.

Returns

int : the number of input.

2.3.3.4 getWeight()

```
double Node::getWeight (
    int index )
```

Get one of the weight.

Parameters

<i>index</i>	of the weight we want.
--------------	------------------------

Returns

double : the weight.

2.3.3.5 operator=()

```
Node& Node::operator= (
    const Node & ) [default]
```

Equal operator for the node object.

Returns

the address [Node](#) of the left sided [Node](#) object.

2.3.3.6 processOutputs()

```
double Node::processOutputs (
    std::vector< double > inputs )
```

Method to process the outputs of the node.

Method which realise the calculation of the output by doing the dot product of the weights by the inputs. Then it add the bias and finally it use the Activation Function on the resulting scalar.

Parameters

<i>inputs</i>	: the inputs of the node.
---------------	---------------------------

Returns

double : the state of the node after the calculation.

The documentation for this class was generated from the following files:

- /home/marc/Documents/1. Développement/4. C++/1. Neural Network/ANN_cpp/src/node.hpp
- /home/marc/Documents/1. Développement/4. C++/1. Neural Network/ANN_cpp/src/node.cpp

Index

getActivationFunction

Layer, [4](#)

Node, [7](#)

getBias

Node, [7](#)

getNbInput

Layer, [4](#)

Node, [7](#)

getNbNodes

Layer, [5](#)

getNode

Layer, [5](#)

getWeight

Node, [8](#)

Layer, [3](#)

getActivationFunction, [4](#)

getNbInput, [4](#)

getNbNodes, [5](#)

getNode, [5](#)

Layer, [4](#)

operator=, [5](#)

processOutputs, [5](#)

Network, [6](#)

Node, [6](#)

getActivationFunction, [7](#)

getBias, [7](#)

getNbInput, [7](#)

getWeight, [8](#)

Node, [7](#)

operator=, [8](#)

processOutputs, [8](#)

operator=

Layer, [5](#)

Node, [8](#)

processOutputs

Layer, [5](#)

Node, [8](#)