

## MultiLayerPerceptron Class Reference

Multilayer perceptron class for 2 layer neural networks. [More...](#)

```
#include <multilayerperceptron.h>
```

### Public Member Functions

**MultiLayerPerceptron** (int inputDimension, int hiddenLayerSize, int outputDimension, double \*inputs, double \*outputs, double lr, double error, int sampleSize)  
Constructor. [More...](#)

**~MultiLayerPerceptron** ()  
Destructor.

void **randomWeights** ()  
set weights with random values

void **learn** ()  
trains network

void **learnWithMoment** ()  
trains network with moment

void **setWeightsV** (double \*value)  
sets weight vector between input layer and hidden layer [More...](#)

void **setWeightW** (double \*value)  
sets weight vector between hidden layer and output layer [More...](#)

void **copyWeightsV** (double \*value)  
copies weight vector between input layer and hidden layer [More...](#)

void **copyWeightW** (double \*value)  
copies weight vector between hidden layer and output layer [More...](#)

void **setInputs** (double \*value)  
sets input vector [More...](#)

void **setOutputs** (double \*value)  
sets output vector [More...](#)

void **setLr** (double value)  
set learning rate [More...](#)

void **setError** (double value)  
set error rate [More...](#)

int **getHowManyCycle** () const  
returns number of cycles in training [More...](#)

void **setSampleSize** (int value)  
sets number of test sample [More...](#)

void **setHiddenLayerSize** (int value)  
sets neuron size of hidden layer [More...](#)

void **setOutputDimension** (int value)  
sets output dimension, should be class size [More...](#)

void **setInputDimension** (int value)  
sets dimension of input [More...](#)

double \* **test** (double \*inp, double \*out)  
tests data and returns calculated output vector [More...](#)

double \* **getWeightsV** () const  
returns weight vector between input layer and hidden layer [More...](#)

double \* **getWeightW** () const  
returns weight vector between hidden layer and output layer [More...](#)

## Detailed Description

Multilayer perceptron class for 2 layer neural networks.

## Constructor & Destructor Documentation

### ◆ MultiLayerPerceptron()

```
MultiLayerPerceptron::MultiLayerPerceptron ( int      inputDimension,  
                                              int      hiddenLayerSize,  
                                              int      outputDimension,  
                                              double * inputs,  
                                              double * outputs,  
                                              double   lr,  
                                              double   error,  
                                              int      sampleSize  
                                              )
```

Constructor.

#### Parameters

**inputDimension** dimension of input  
**hiddenLayerSize** number of neurons for hidden layer  
**outputDimension** dimension of output, should be number of class  
**inputs** input vector  
**outputs** ououtput vector, must be {1,-1,-1,...} for 3 class. Only one neuron's output can be 1.  
**lr** learning rate  
**error** error rate  
**sampleSize** number of samples

## Member Function Documentation

### ◆ copyWeightsV()

```
void MultiLayerPerceptron::copyWeightsV ( double * value )
```

copies weight vector between input layer and hidden layer

#### Parameters

**value**

## ◆ copyWeightW()

```
void MultiLayerPerceptron::copyWeightW ( double * value )
```

copies weight vector between hidden layer and output layer

**Parameters**

**value**

## ◆ getHowManyCycle()

```
int MultiLayerPerceptron::getHowManyCycle ( ) const
```

returns number of cycles in training

**Returns**

int

## ◆ getWeightsV()

```
double * MultiLayerPerceptron::getWeightsV ( ) const
```

returns weight vector between input layer and hidden layer

**Returns**

double

## ◆ getWeightW()

```
double * MultiLayerPerceptron::getWeightW ( ) const
```

returns weight vector between hidden layer and output layer

**Returns**

double

## ◆ setError()

```
void MultiLayerPerceptron::setError ( double value )
```

set error rate

**Parameters**

**value**

## ◆ setHiddenLayerSize()

```
void MultiLayerPerceptron::setHiddenLayerSize ( int value )
```

sets neuron size of hidden layer

**Parameters**

**value**

◆ setInputDimension()

```
void MultiLayerPerceptron::setInputDimension ( int value )
```

sets dimension of input

**Parameters**

**value**

◆ setInputs()

```
void MultiLayerPerceptron::setInputs ( double * value )
```

sets input vector

**Parameters**

**value**

◆ setLr()

```
void MultiLayerPerceptron::setLr ( double value )
```

set learning rate

**Parameters**

**value**

◆ setOutputDimension()

```
void MultiLayerPerceptron::setOutputDimension ( int value )
```

sets output dimension, should be class size

**Parameters**

**value**

◆ setOutputs()

```
void MultiLayerPerceptron::setOutputs ( double * value )
```

sets output vector

**Parameters**

**value**

◆ setSampleSize()

```
void MultiLayerPerceptron::setSampleSize ( int value )
```

sets number of test sample

**Parameters**

**value**

◆ setWeightsV()

```
void MultiLayerPerceptron::setWeightsV ( double * value )
```

sets weight vector between input layer and hidden layer

**Parameters**

**value**

◆ setWeightW()

```
void MultiLayerPerceptron::setWeightW ( double * value )
```

sets weight vector between hidden layer and output layer

**Parameters**

**value**

◆ test()

```
double * MultiLayerPerceptron::test ( double * inp,  
                                     double * out  
                                     )
```

tests data and returns calculated output vector

**Parameters**

**inp**

**out**

**Returns**

double

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

- [multilayerperceptron.h](#)
- multilayerperceptron.cpp

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