AMORE++

pre-alpha (active development aiming to release a beta version this summer (2011))

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Chapter 1

The AMORE++ package

1.1 Introduction

Here you will find the documentation of the C++ component of the AMORE++ R package.

The AMORE++ package is a new version of the publicly available AMORE package for neural network training and simulation under R

1.2 Motivation

Since the release of the previous version of the AMORE many things have changed in the R programming world.

The advent of the Reference Classes and of packages like Rcpp, inline and RUnit compel us to write a better version of the package in order to provide a more useful framework for neural network training and simulation.

1.3 Road Map

This project is currently very active and the development team intends to provide a beta version as soon as this summer (2011)

Chapter 2

Class Index

2.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

- Con 25
- Container< T > 31
  - SimpleContainer< T > 62
- Iterator< T > 34
  - SimpleContainerIterator< T > 69
- NeuralCreator 47
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- NeuralFactory 48
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Chapter 3

Class Index

3.1 Class List

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

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pkg/AMORE/src/dia/TrainingBehavior.h 109

Chapter 5

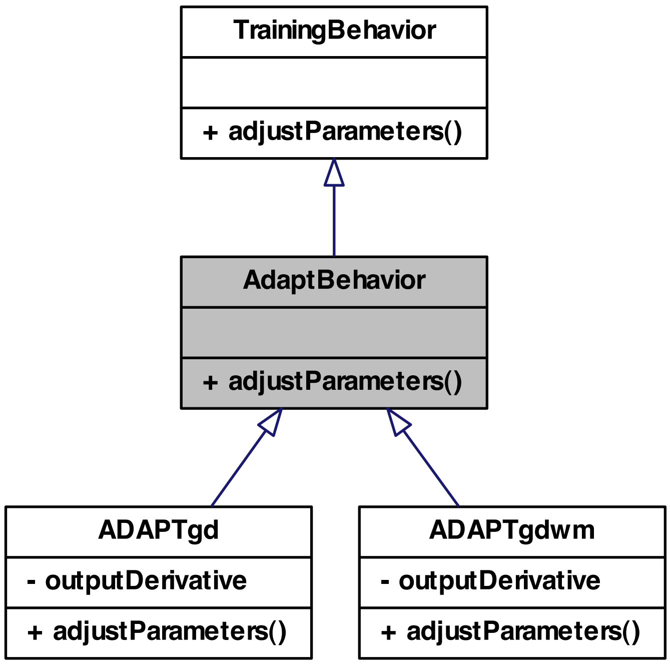
Class Documentation

5.1 AdaptBehavior Class Reference

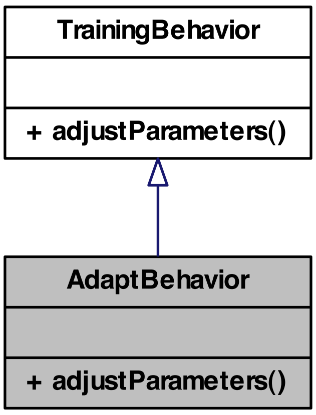
class AdaptBehavior -

```
#include <AdaptBehavior.h>
```

Inheritance diagram for AdaptBehavior:



Collaboration diagram for AdaptBehavior:



Public Member Functions

- virtual void adjustParameters ()=0

5.1.1 Detailed Description

class AdaptBehavior -

Definition at line 5 of file AdaptBehavior.h.

5.1.2 Member Function Documentation

5.1.2.1 virtual void AdaptBehavior::adjustParameters ( ) `[pure virtual]`

Reimplemented from TrainingBehavior.

Implemented in ADAPTgd, and ADAPTgdwm.

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

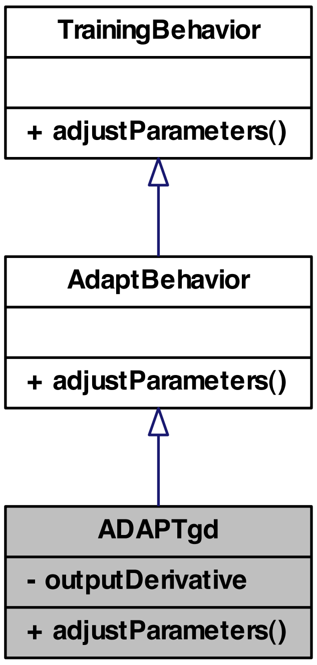
- pkg/AMORE/src/dia/AdaptBehavior.h

5.2 ADAPTgd Class Reference

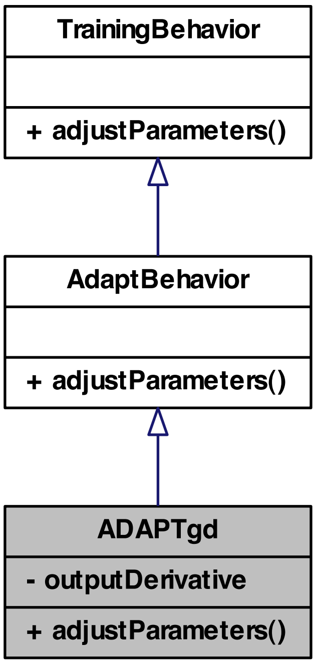
class ADAPTgd -

`#include <ADAPTgd.h>`

Inheritance diagram for ADAPTgd:



Collaboration diagram for ADAPTgd:



Public Member Functions

- void adjustParameters ()

Private Attributes

- double outputDerivative

5.2.1 Detailed Description

class ADAPTgd -

Definition at line 5 of file ADAPTgd.h.

5.2.2 Member Function Documentation

5.2.2.1 void ADAPTgd::adjustParameters ( ) `[virtual]`

Implements AdaptBehavior.

5.2.3 Member Data Documentation

5.2.3.1 double **ADAPTgd::outputDerivative** `[private]`

Definition at line 8 of file ADAPTgd.h.

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

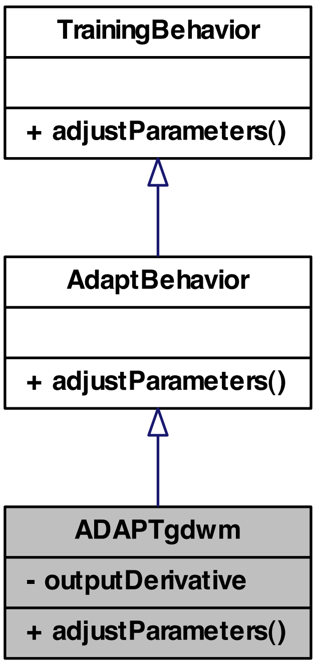
- pkg/AMORE/src/dia/ADAPTgd.h

5.3 ADAPTgdwm Class Reference

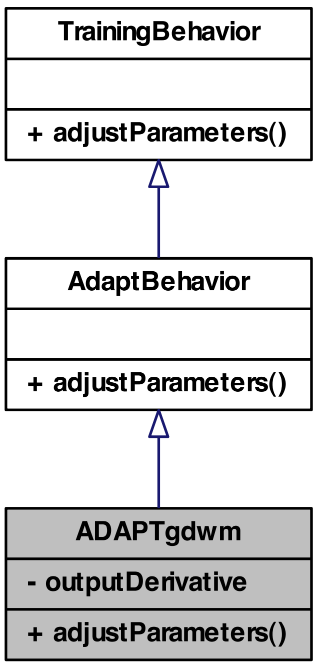
class ADAPTgdwm -

`#include <ADAPTgdwm.h>`

Inheritance diagram for ADAPTgdwm:



Collaboration diagram for ADAPTgdwm:



Public Member Functions

- void adjustParameters ()

Private Attributes

- double outputDerivative

5.3.1 Detailed Description

class ADAPTgdwm -

Definition at line 5 of file ADAPTgdwm.h.

5.3.2 Member Function Documentation

5.3.2.1 void ADAPTgdwm::adjustParameters ( ) `[virtual]`

Implements AdaptBehavior.

5.3.3 Member Data Documentation

5.3.3.1 double **ADAPTgdwm::outputDerivative** `[private]`

Definition at line 8 of file ADAPTgdwm.h.

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

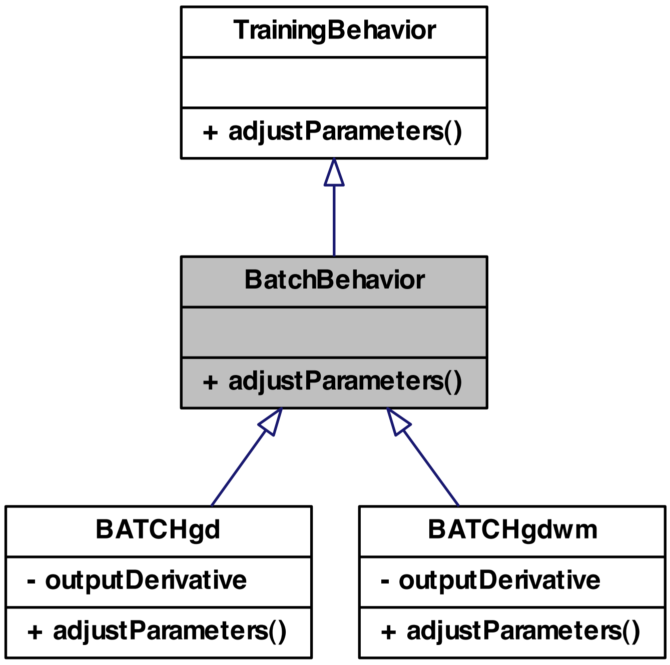
- pkg/AMORE/src/dia/ADAPTgdwm.h

5.4 BatchBehavior Class Reference

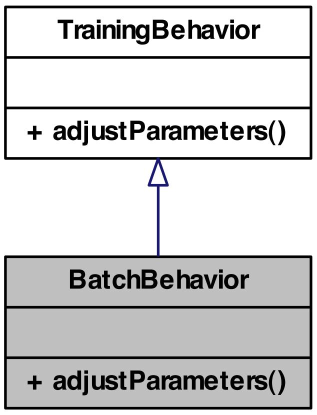
class BatchBehavior -

`#include <BatchBehavior.h>`

Inheritance diagram for BatchBehavior:



Collaboration diagram for BatchBehavior:



Public Member Functions

- virtual void adjustParameters ()=0

5.4.1 Detailed Description

class BatchBehavior -

Definition at line 5 of file BatchBehavior.h.

5.4.2 Member Function Documentation

5.4.2.1 virtual void BatchBehavior::adjustParameters ( ) [pure virtual]

Reimplemented from TrainingBehavior.

Implemented in BATCHgd, and BATCHgdwm.

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

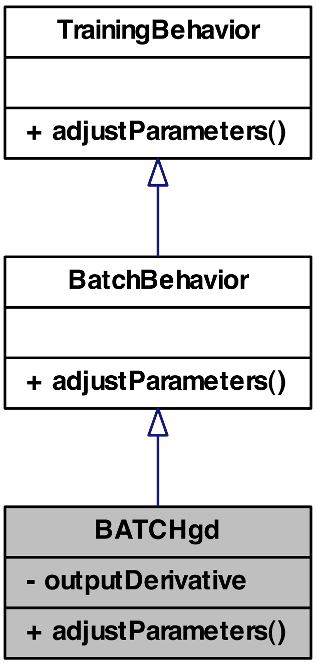
- pkg/AMORE/src/dia/BatchBehavior.h

5.5 BATCHgd Class Reference

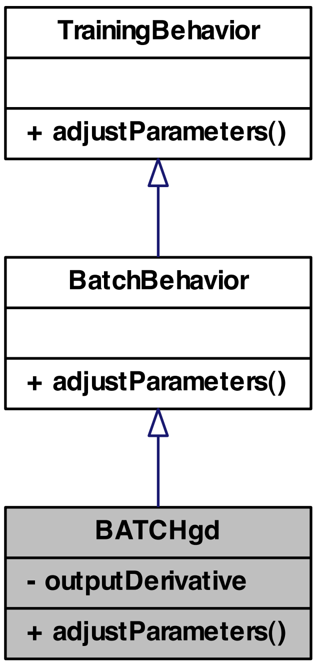
class BATCHgd -

`#include <BATCHgd.h>`

Inheritance diagram for BATCHgd:



Collaboration diagram for BATCHgd:



Public Member Functions

- void adjustParameters ()

Private Attributes

- double outputDerivative

5.5.1 Detailed Description

class BATCHgd -

Definition at line 5 of file BATCHgd.h.

5.5.2 Member Function Documentation

5.5.2.1 void BATCHgd::adjustParameters ( ) `[virtual]`

Implements BatchBehavior.

5.5.3 Member Data Documentation

5.5.3.1 double BATCHgd::outputDerivative `[private]`

Definition at line 8 of file BATCHgd.h.

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

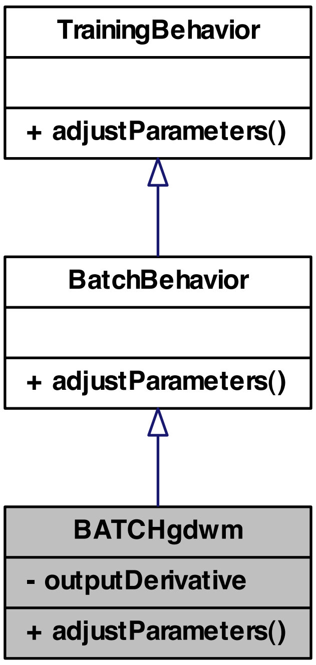
- pkg/AMORE/src/dia/BATCHgd.h

5.6 BATCHgdwm Class Reference

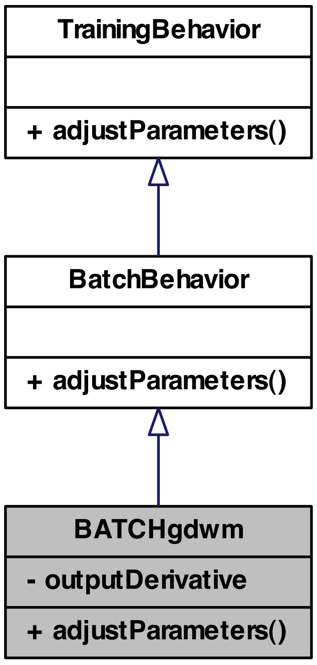
class BATCHgdwm -

`#include <BATCHgdwm.h>`

Inheritance diagram for BATCHgdwm:



Collaboration diagram for BATCHgdwm:



Public Member Functions

- void adjustParameters ()

Private Attributes

- double outputDerivative

5.6.1 Detailed Description

class BATCHgdwm -

Definition at line 5 of file BATCHgdwm.h.

5.6.2 Member Function Documentation

5.6.2.1 void BATCHgdwm::adjustParameters ( ) `[virtual]`

Implements BatchBehavior.

5.6.3 Member Data Documentation

5.6.3.1 double **BATCHgdwm::outputDerivative** `[private]`

Definition at line 8 of file BATCHgdwm.h.

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

- pkg/AMORE/src/dia/BATCHgdwm.h

5.7 Con Class Reference

class Con -

`#include <Con.h>`

Public Member Functions

- Con (Neuron &neuron)

  Constructor.
- Con (Neuron &neuron, double weight)

  Constructor.
- Handler Id ()

  A getter of the Id of the Neuron pointed by the from field.
- Neuron & getNeuron ()

  from field accessor.
- void setNeuron (Neuron &neuron)
- double getWeight ()

  weight field accessor.
- void setWeight (double weight)
- void show ()

  Pretty print of the Con information.
- bool validate ()

  Object validator.

Private Attributes

- NeuronRef d_neuron
- double d_weight

5.7.1 Detailed Description

class Con -

Definition at line 3 of file Con.h.

5.7.2 Constructor & Destructor Documentation

5.7.2.1 Con::Con (Neuron & *neuron*)

Constructor.

Definition at line 19 of file Con.cpp.

```
                          :
  d_neuron( boost::ref(neuron) ), d_weight(0)
{
}
```

5.7.2.2 Con::Con (Neuron & *neuron,* double *weight*)

Constructor.

Definition at line 30 of file Con.cpp.

```
                                         :
  d_neuron(boost::ref(neuron)), d_weight(weight)
{
}
```

5.7.3 Member Function Documentation

5.7.3.1 Neuron & Con::getNeuron ( )

from field accessor.

This method allows access to the address stored in the private from field (a pointer to a Neuron object).∗

Returns

A pointer to the Neuron object referred to by the from field.

```
      //================
      //Usage example:
      //================
      // Data set up
                      NeuronPtr ptShNeuron ( new Neuron(1) );         // Neuron
     Id is set 1
                      ConPtr ptShCon( new Con(ptShNeuron) );          // from p
    oints to ptShNeuron and weight is set to 0
```

```
        // Test
                        ptShNeuron = ptShCon->getFrom() ;
                        int result = ptShNeuron->getId();

        // Now, result is equal to 1.
```

See also

getId and the unit test files, e.g., runit.Cpp.Con.R, for further examples.

Definition at line 56 of file Con.cpp.

References d_neuron.

```
{
  return d_neuron;
}
```

5.7.3.2 double Con::getWeight ( )

weight field accessor.

This method allows access to the value stored in the private field weight

Returns

The value of weight (double)

```
  //================
  //Usage example:
  //================
  // Data set up
                        std::vector<double> result;
                        NeuronPtr ptShNeuron ( new Neuron(16) );                 /
      / Neuron Id is set to 16
                        ConPtr ptShCon( new Con(ptShNeuron, 12.4) );  // from poi
      nts to ptShNeuron and weight is set to 12.4
        // Test
                        result.push_back( ptShCon->getWeight() );
                        ptShCon->setWeight(2.2);
                        result.push_back( ptShCon->getWeight() );

        // Now, result is a numeric vector that contains the values 12.4 and 2.2
      .
```

See also

setWeight and the unit test files, e.g., runit.Cpp.Con.R, for further examples.

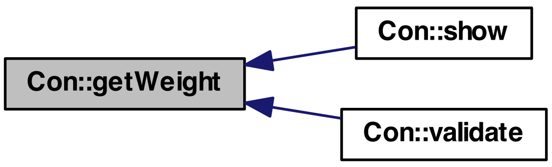
Definition at line 116 of file Con.cpp.

References d_weight.

Referenced by show(), and validate().

```
{
  return d_weight;
}
```

Here is the caller graph for this function:



5.7.3.3 int Con::Id ( )

A getter of the Id of the Neuron pointed by the from field.

This method gets the Id of the Neuron referred to by the from field

Returns

The value of the Id (an integer).

```
//================
//Usage example:
//================
// Data set up
                NeuronPtr ptShNeuron ( new Neuron(16) );        // Neuron I
d is set to 16
                ConPtr ptShCon( new Con(ptShNeuron) );          // from poi
nts to ptShNeuron and weight is set to 0
// Test
                int result = ptShCon->getId();

// Now, result is equal to 16.
```

See also

getFrom, setFrom and the unit test files, e.g., runit.Cpp.Con.R, for further examples.

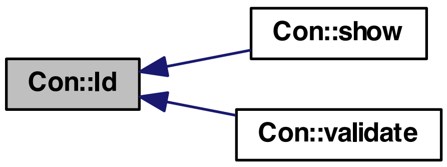
Definition at line 88 of file Con.cpp.

References d_neuron.

Referenced by show(), and validate().

```
{
  return d_neuron.get().getId();
}
```

Here is the caller graph for this function:



5.7.3.4 void Con::setNeuron (Neuron & *neuron*)

Definition at line 63 of file Con.cpp.

References d_neuron.

```
{
  d_neuron=boost::ref(neuron);
}
```

5.7.3.5 void Con::setWeight (double *weight*)

Definition at line 123 of file Con.cpp.

References d_weight.

```
{
  d_weight=weight;
}
```

5.7.3.6 void Con::show ( )

Pretty print of the Con information.

This method outputs in the R terminal the contents of the Con fields.

Returns

true in case everything works without throwing an exception

See also

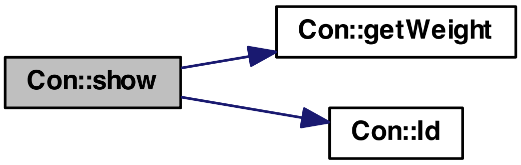
setWeight and the unit test files, e.g., runit.Cpp.Con.R, for usage examples.

Definition at line 135 of file Con.cpp.

References getWeight(), and Id().

```
{
  int id = Id();
  if (id == NA_INTEGER)
    {
      Rprintf("From: NA\t Invalid Connection \n");
    }
  else
    {
      Rprintf("From:\t %d \t Weight= \t %lf \n", id , getWeight() );
    }
}
```

Here is the call graph for this function:



5.7.3.7 bool Con::validate ( )

Object validator.

This method checks the object for internal coherence. A try / catch mechanism exits normal execution and returns control to the R terminal in case the contents of the Con object are identified as corrupted.

Returns

true in case the checks are Ok.

Exceptions

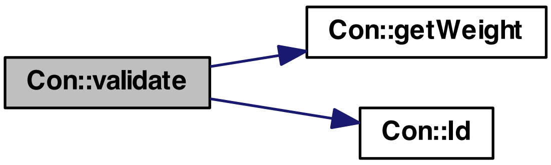
An	std::range error if weight or from are not finite.

Definition at line 155 of file Con.cpp.

References getWeight(), and Id().

```
{
  BEGIN_RCPP
  if (! R_FINITE(getWeight()) ) throw std::range_error("weight is not finite.");
  if (Id() == NA_INTEGER)
    throw std::range_error("fromId is not finite.");
  return (true);
END_RCPP}
```

Here is the call graph for this function:



5.7.4 Member Data Documentation

5.7.4.1 NeuronRef Con::d_neuron [private]

Definition at line 6 of file Con.h.

Referenced by getNeuron(), Id(), and setNeuron().

5.7.4.2 double Con::d_weight [private]

Definition at line 7 of file Con.h.

Referenced by getWeight(), and setWeight().

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

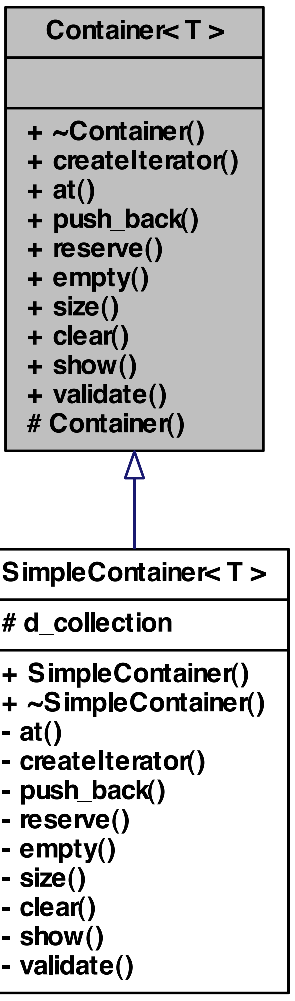
- pkg/AMORE/src/dia/Con.h
- pkg/AMORE/src/Con.cpp

5.8 Container< T > Class Template Reference

class Container -

`#include <Container.h>`

Inheritance diagram for Container< T >:



Public Member Functions

- virtual ~Container ()
- virtual boost::shared_ptr< Iterator< T > > createIterator ()=0
- virtual T at (size_type element)=0
- virtual void push_back (T const &const_reference)=0
- virtual void reserve (int n)=0

- virtual bool empty ()=0
- virtual size_type size ()=0
- virtual void clear ()=0
- virtual void show ()=0
- virtual bool validate ()=0

Protected Member Functions

- Container ()

5.8.1 Detailed Description

template<typename T>class Container< T >

class Container -

Definition at line 5 of file Container.h.

5.8.2 Constructor & Destructor Documentation

5.8.2.1 template<typename T > Container< T >::∼Container ( ) [virtual]

Definition at line 20 of file Container.cpp.

```
{
}
```

5.8.2.2 template<typename T > Container< T >::Container ( ) [protected]

Definition at line 14 of file Container.cpp.

```
{
}
```

5.8.3 Member Function Documentation

5.8.3.1 template<typename T > virtual T Container< T >::at (size_type *element*) [pure virtual]

Implemented in SimpleContainer< T >.

5.8.3.2 template<typename T > virtual void Container< T >::clear ( ) [pure virtual]

Implemented in SimpleContainer< T >.

5.8.3.3 template<typename T > virtual boost::shared_ptr< Iterator<T> > Container< T >::createIterator ( ) [pure virtual]

Implemented in SimpleContainer< T >.

5.8.3.4 template<typename T > virtual bool Container< T >::empty ( ) [pure virtual]

Implemented in SimpleContainer< T >.

5.8.3.5 template<typename T > virtual void Container< T >::push_back (T const & *const_reference*) [pure virtual]

Implemented in SimpleContainer< T >.

5.8.3.6 template<typename T > virtual void Container< T >::reserve (int *n*) [pure virtual]

Implemented in SimpleContainer< T >.

5.8.3.7 template<typename T > virtual void Container< T >::show ( ) [pure virtual]

Implemented in SimpleContainer< T >.

5.8.3.8 template<typename T > virtual size_type Container< T >::size ( ) [pure virtual]

Implemented in SimpleContainer< T >.

5.8.3.9 template<typename T > virtual bool Container< T >::validate ( ) [pure virtual]

Implemented in SimpleContainer< T >.

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

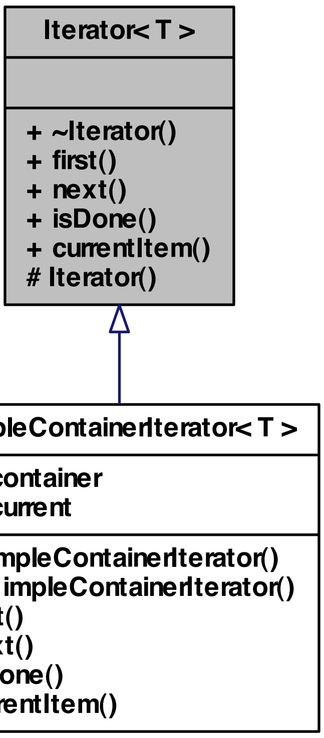
- pkg/AMORE/src/dia/Container.h
- pkg/AMORE/src/Container.cpp

5.9 Iterator< T > Class Template Reference

class Iterator -

```
#include <Iterator.h>
```

Inheritance diagram for Iterator< T >:



Public Member Functions

- virtual ~Iterator ()
- virtual void first ()=0
- virtual void next ()=0
- virtual bool isDone ()=0
- virtual T currentItem ()=0

Protected Member Functions

- Iterator ()

5.9.1 Detailed Description

template$<$typename T$>$class Iterator$<$ T $>$

class Iterator -

Definition at line 5 of file Iterator.h.

5.9.2 Constructor & Destructor Documentation

5.9.2.1 template$<$typename T $>$ Iterator$<$ T $>$::~Iterator ( ) [virtual]

Definition at line 20 of file Iterator.cpp.

```
{
}
```

5.9.2.2 template$<$typename T $>$ Iterator$<$ T $>$::Iterator ( ) [protected]

Definition at line 14 of file Iterator.cpp.

```
{
}
```

5.9.3 Member Function Documentation

5.9.3.1 template$<$typename T $>$ virtual T Iterator$<$ T $>$::currentItem ( ) [pure virtual]

Implemented in SimpleContainerIterator$<$ T $>$.

5.9.3.2 template$<$typename T $>$ virtual void Iterator$<$ T $>$::first ( ) [pure virtual]

Implemented in SimpleContainerIterator$<$ T $>$.

5.9.3.3 template$<$typename T $>$ virtual bool Iterator$<$ T $>$::isDone ( ) [pure virtual]

Implemented in SimpleContainerIterator$<$ T $>$.

5.9.3.4 template$<$typename T $>$ virtual void Iterator$<$ T $>$::next ( ) [pure virtual]

Implemented in SimpleContainerIterator$<$ T $>$.

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

- pkg/AMORE/src/dia/Iterator.h

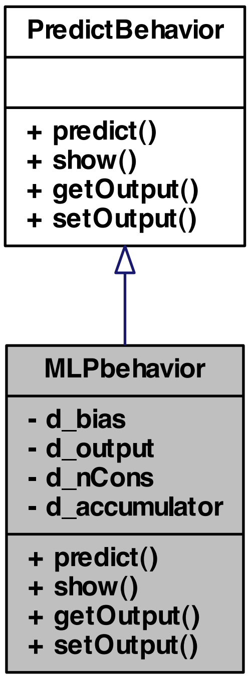
- pkg/AMORE/src/Iterator.cpp

5.10 MLPbehavior Class Reference

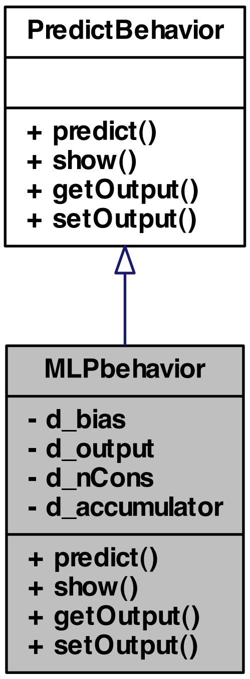
class MLPbehavior -

`#include <MLPbehavior.h>`

Inheritance diagram for MLPbehavior:



Collaboration diagram for MLPbehavior:



Public Member Functions

- void predict ()
- void show ()
- double getOutput ()
- void setOutput (double output)

Private Attributes

- double d_bias
- double d_output
- ConContainerPtr d_nCons
- double d_accumulator

Friends

- class MLPfactory

5.10.1 Detailed Description

class MLPbehavior -

Definition at line 5 of file MLPbehavior.h.

5.10.2 Member Function Documentation

5.10.2.1 double MLPbehavior::getOutput ( ) [virtual]

Implements PredictBehavior.

Definition at line 54 of file MLPbehavior.cpp.

References d_output.

```
{
      return d_output;
}
```

5.10.2.2 void MLPbehavior::predict ( ) [virtual]

Implements PredictBehavior.

Definition at line 15 of file MLPbehavior.cpp.

References d_accumulator, d_nCons, and d_output.

```
{
       d_accumulator = 0.0;
       ConIteratorPtr  conIterator = d_nCons->createIterator();
       for ( conIterator->first(); !conIterator->isDone(); conIterator->next() )
      {
          d_accumulator += conIterator->currentItem()->getWeight()  *  conIterato
      r->currentItem()->getNeuron().getOutput() ;
       }
       d_output=d_accumulator; // Still needs an activation function

}
```

5.10.2.3 void MLPbehavior::setOutput (double *output*) [virtual]

Implements PredictBehavior.

Definition at line 47 of file MLPbehavior.cpp.

References d_output.

```
{
        d_output=output;
}
```

5.10.2.4 void MLPbehavior::show ( ) [virtual]

Implements PredictBehavior.

Definition at line 28 of file MLPbehavior.cpp.

References d_bias, d_nCons, and d_output.

```
{
  Rprintf("\n bias: %lf", d_bias);
  Rprintf("\n output: %lf", d_output);
  Rprintf("\n------------------------\n");
 if (d_nCons->size() == 0)
   {
     Rprintf("\n No connections defined");
   }
 else
   {
     d_nCons->show();
   }
 Rprintf("\n------------------------\n");
}
```

5.10.3 Friends And Related Function Documentation

5.10.3.1 friend class MLPfactory [friend]

Definition at line 14 of file MLPbehavior.h.

5.10.4 Member Data Documentation

5.10.4.1 double MLPbehavior::d_accumulator [private]

Definition at line 11 of file MLPbehavior.h.

Referenced by MLPfactory::makePredictBehavior(), and predict().

5.10.4.2 double MLPbehavior::d_bias [private]

Definition at line 8 of file MLPbehavior.h.

Referenced by MLPfactory::makePredictBehavior(), and show().

5.10.4.3 ConContainerPtr MLPbehavior::d_nCons [private]

Definition at line 10 of file MLPbehavior.h.

Referenced by MLPfactory::makePredictBehavior(), predict(), and show().

5.10.4.4 double MLPbehavior::d_output `[private]`

Definition at line 9 of file MLPbehavior.h.

Referenced by getOutput(), MLPfactory::makePredictBehavior(), predict(), setOutput(), and show().

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

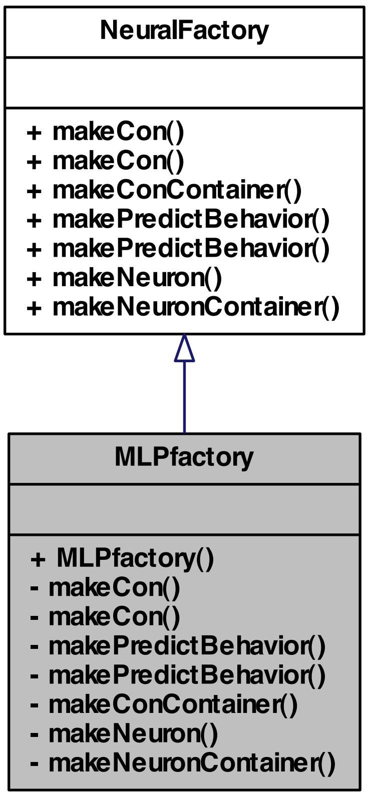
- pkg/AMORE/src/dia/MLPbehavior.h
- pkg/AMORE/src/MLPbehavior.cpp

5.11 MLPfactory Class Reference

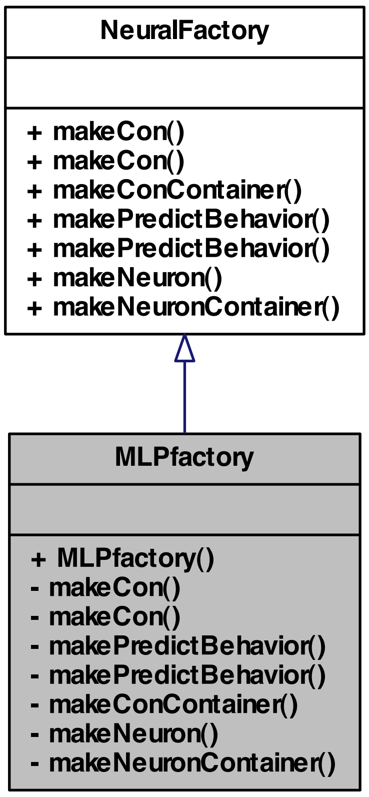
class MLPfactory -

`#include <MLPfactory.h>`

Inheritance diagram for MLPfactory:



Collaboration diagram for MLPfactory:



Public Member Functions

- MLPfactory ()

Private Member Functions

- ConPtr makeCon (Neuron &neuron)
- ConPtr makeCon (Neuron &neuron, double weight)
- PredictBehaviorPtr makePredictBehavior ()
- PredictBehaviorPtr makePredictBehavior (ConContainerPtr conContainerPtr)
- ConContainerPtr makeConContainer ()
- NeuronPtr makeNeuron ()
- NeuronContainerPtr makeNeuronContainer ()

5.11.1 Detailed Description

class MLPfactory -

Definition at line 5 of file MLPfactory.h.

5.11.2 Constructor & Destructor Documentation

5.11.2.1 MLPfactory::MLPfactory ( )

Definition at line 13 of file MLPfactory.cpp.

```
{
}
```

5.11.3 Member Function Documentation

5.11.3.1 **ConPtr** MLPfactory::makeCon (**Neuron** & *neuron*) [private, virtual]

Implements NeuralFactory.

Definition at line 19 of file MLPfactory.cpp.

```
{
  ConPtr conPtr( new Con(neuron) );
  return conPtr;
}
```

5.11.3.2 **ConPtr** MLPfactory::makeCon (**Neuron** & *neuron*, double *weight*) [private, virtual]

Implements NeuralFactory.

Definition at line 26 of file MLPfactory.cpp.

```
{
  ConPtr conPtr( new Con(neuron, weight) );
  return conPtr;
}
```

5.11.3.3 **ConContainerPtr** MLPfactory::makeConContainer ( ) [private, virtual]

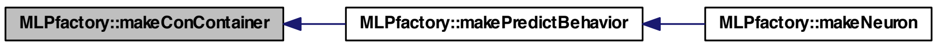
Implements NeuralFactory.

Definition at line 33 of file MLPfactory.cpp.

Referenced by makePredictBehavior().

```
{
  ConContainerPtr conContainerPtr( new SimpleContainer<ConPtr> );
  return conContainerPtr;
}
```

Here is the caller graph for this function:



5.11.3.4 NeuronPtr MLPfactory::makeNeuron ( ) [private, virtual]

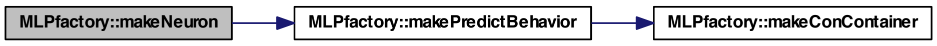
Implements NeuralFactory.

Definition at line 71 of file MLPfactory.cpp.

References makePredictBehavior().

```
{
  NeuronPtr neuronPtr( new SimpleNeuron() );
  neuronPtr->setPredictBehavior( makePredictBehavior() );
  return neuronPtr;
}
```

Here is the call graph for this function:



5.11.3.5 NeuronContainerPtr MLPfactory::makeNeuronContainer ( ) [private, virtual]

Implements NeuralFactory.

Definition at line 81 of file MLPfactory.cpp.

```
{
  NeuronContainerPtr neuronContainerPtr(new SimpleContainer<NeuronPtr>);
  return neuronContainerPtr ;
}
```

5.11.3.6 PredictBehaviorPtr MLPfactory::makePredictBehavior ( ) [private, virtual]

Implements NeuralFactory.

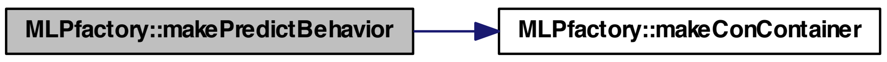
Definition at line 41 of file MLPfactory.cpp.

References MLPbehavior::d_accumulator, MLPbehavior::d_bias, MLPbehavior::d_nCons, MLPbehavior::d_output, and makeConContainer().

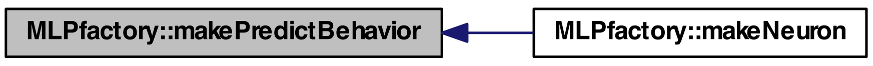
Referenced by makeNeuron().

```
{

  MLPbehavior* mlpBehavior( new MLPbehavior() );
  mlpBehavior->d_bias=0.0;
  mlpBehavior->d_output=0.0;
  mlpBehavior->d_accumulator=0.0;
  mlpBehavior->d_nCons=makeConContainer();

  PredictBehaviorPtr predictBehavior( mlpBehavior);
  return  predictBehavior;
}
```

Here is the call graph for this function:



Here is the caller graph for this function:



5.11.3.7 PredictBehaviorPtr MLPfactory::makePredictBehavior (ConContainerPtr *conContainerPtr*) [private, virtual]

Implements NeuralFactory.

Definition at line 56 of file MLPfactory.cpp.

References MLPbehavior::d_accumulator, MLPbehavior::d_bias, MLPbehavior::d_nCons, and MLPbehavior::d_output.

```
{
  MLPbehavior* mlpBehavior( new MLPbehavior() );
  mlpBehavior->d_bias=0.0;
  mlpBehavior->d_output=0.0;
  mlpBehavior->d_accumulator=0.0;
  mlpBehavior->d_nCons=conContainerPtr;

  PredictBehaviorPtr predictBehavior( mlpBehavior);
  return  predictBehavior;

}
```

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

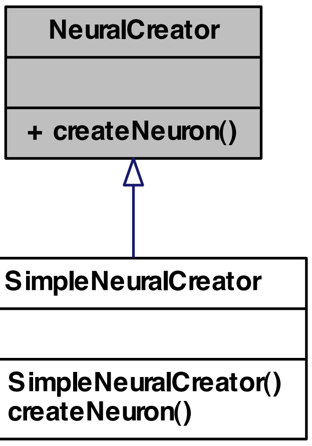
- pkg/AMORE/src/dia/MLPfactory.h
- pkg/AMORE/src/MLPfactory.cpp

5.12 NeuralCreator Class Reference

class NeuralCreator -

`#include <NeuralCreator.h>`

Inheritance diagram for NeuralCreator:



Public Member Functions

- virtual NeuronPtr createNeuron (NeuralFactoryPtr neuralFactoryPtr)=0

5.12.1 Detailed Description

class NeuralCreator -

Definition at line 4 of file NeuralCreator.h.

5.12.2 Member Function Documentation

5.12.2.1 virtual **NeuronPtr** NeuralCreator::createNeuron (**NeuralFactoryPtr** *neuralFactoryPtr*) `[pure virtual]`

Implemented in SimpleNeuralCreator.

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

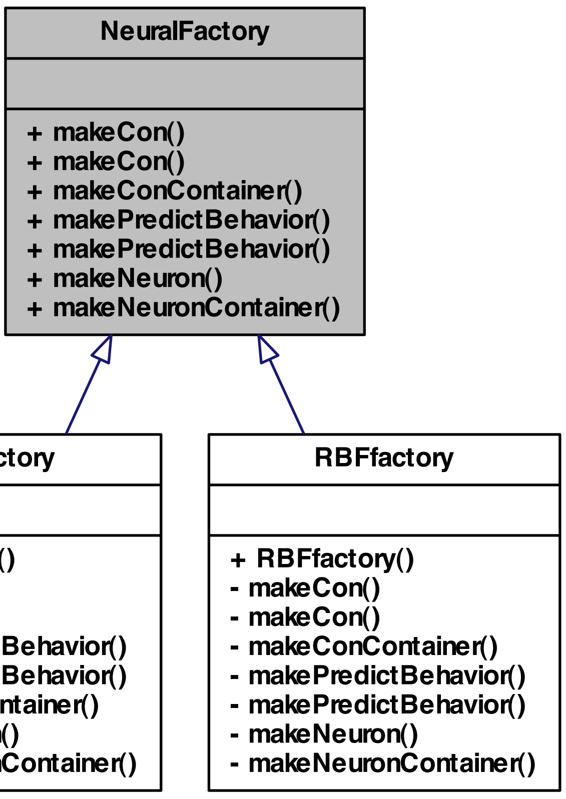
- pkg/AMORE/src/dia/NeuralCreator.h

5.13 NeuralFactory Class Reference

class NeuralFactory -

`#include <NeuralFactory.h>`

Inheritance diagram for NeuralFactory:



Public Member Functions

- virtual ConPtr makeCon (Neuron &neuron)=0
- virtual ConPtr makeCon (Neuron &neuron, double weight)=0
- virtual ConContainerPtr makeConContainer ()=0
- virtual PredictBehaviorPtr makePredictBehavior ()=0
- virtual PredictBehaviorPtr makePredictBehavior (ConContainerPtr conContainerPtr)=0
- virtual NeuronPtr makeNeuron ()=0
- virtual NeuronContainerPtr makeNeuronContainer ()=0

5.13.1 Detailed Description

class NeuralFactory -

Definition at line 4 of file NeuralFactory.h.

5.13.2 Member Function Documentation

5.13.2.1 virtual **ConPtr** NeuralFactory::makeCon (**Neuron** & *neuron*) `[pure virtual]`

Implemented in MLPfactory, and RBFfactory.

5.13.2.2 virtual **ConPtr** NeuralFactory::makeCon (**Neuron** & *neuron*, double *weight*) `[pure virtual]`

Implemented in MLPfactory.

5.13.2.3 virtual **ConContainerPtr** NeuralFactory::makeConContainer ( ) `[pure virtual]`

Implemented in MLPfactory, and RBFfactory.

5.13.2.4 virtual **NeuronPtr** NeuralFactory::makeNeuron ( ) `[pure virtual]`

Implemented in MLPfactory, and RBFfactory.

5.13.2.5 virtual **NeuronContainerPtr** NeuralFactory::makeNeuronContainer ( ) `[pure virtual]`

Implemented in MLPfactory, and RBFfactory.

5.13.2.6 virtual **PredictBehaviorPtr** NeuralFactory::makePredictBehavior (**ConContainerPtr** *conContainerPtr*) `[pure virtual]`

Implemented in MLPfactory, and RBFfactory.

5.13.2.7 virtual **PredictBehaviorPtr** NeuralFactory::makePredictBehavior ( ) `[pure virtual]`

Implemented in MLPfactory, and RBFfactory.

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

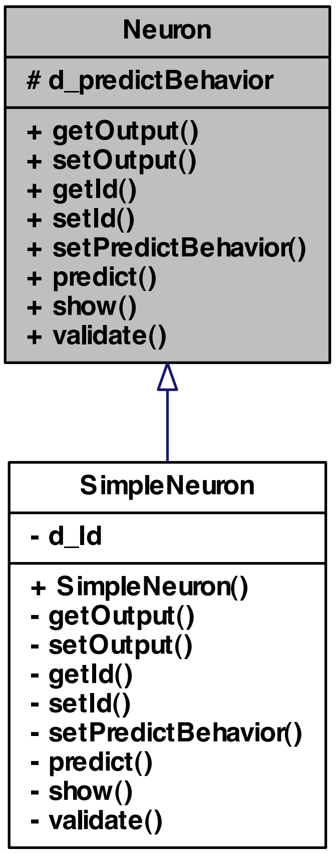
- pkg/AMORE/src/dia/NeuralFactory.h

5.14 Neuron Class Reference

class Neuron -

```
#include <Neuron.h>
```

Inheritance diagram for Neuron:



Public Member Functions

- virtual double getOutput ()=0
- virtual void setOutput (double output)=0
- virtual Handler getId ()=0
- virtual void setId (Handler Id)=0

- virtual void setPredictBehavior (PredictBehaviorPtr predictBehaviorPtr)=0
- virtual void predict ()=0
- virtual void show ()=0
- virtual bool validate ()=0

Protected Attributes

- PredictBehaviorPtr d_predictBehavior

5.14.1 Detailed Description

class Neuron -

Definition at line 3 of file Neuron.h.

5.14.2 Member Function Documentation

5.14.2.1 virtual **Handler** Neuron::getId ( ) `[pure virtual]`

Implemented in SimpleNeuron.

5.14.2.2 virtual double Neuron::getOutput ( ) `[pure virtual]`

Implemented in SimpleNeuron.

5.14.2.3 virtual void Neuron::predict ( ) `[pure virtual]`

Implemented in SimpleNeuron.

5.14.2.4 virtual void Neuron::setId (**Handler** *Id*) `[pure virtual]`

Implemented in SimpleNeuron.

5.14.2.5 virtual void Neuron::setOutput (double *output*) `[pure virtual]`

Implemented in SimpleNeuron.

5.14.2.6 virtual void Neuron::setPredictBehavior (**PredictBehaviorPtr** *predictBehaviorPtr*) `[pure virtual]`

Implemented in SimpleNeuron.

5.14.2.7 virtual void Neuron::show ( ) `[pure virtual]`

Implemented in SimpleNeuron.

5.14.2.8 virtual bool Neuron::validate ( ) `[pure virtual]`

Implemented in SimpleNeuron.

5.14.3 Member Data Documentation

5.14.3.1 PredictBehaviorPtr Neuron::d_predictBehavior `[protected]`

Definition at line 6 of file Neuron.h.

Referenced by SimpleNeuron::getOutput(), SimpleNeuron::predict(), SimpleNeuron::setOutput(), SimpleNeuron::setPredictBehavior(), and SimpleNeuron::show().

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

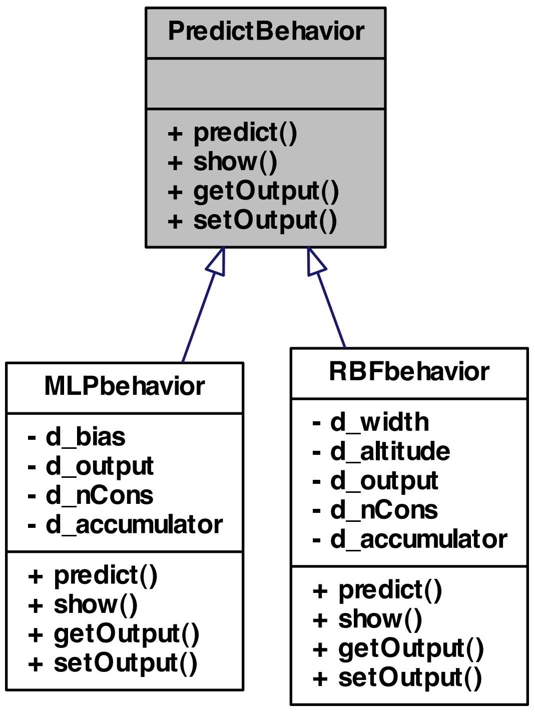
- pkg/AMORE/src/dia/Neuron.h

5.15 PredictBehavior Class Reference

class PredictBehavior -

`#include <PredictBehavior.h>`

Inheritance diagram for PredictBehavior:



Public Member Functions

- virtual void predict ()=0
- virtual void show ()=0
- virtual double getOutput ()=0
- virtual void setOutput (double output)=0

5.15.1 Detailed Description

class PredictBehavior -

Definition at line 4 of file PredictBehavior.h.

5.15.2 Member Function Documentation

5.15.2.1 virtual double PredictBehavior::getOutput ( ) `[pure virtual]`

Implemented in MLPbehavior, and RBFbehavior.

5.15.2.2 virtual void PredictBehavior::predict ( ) `[pure virtual]`

Implemented in MLPbehavior, and RBFbehavior.

5.15.2.3 virtual void PredictBehavior::setOutput (double *output*) `[pure virtual]`

Implemented in MLPbehavior, and RBFbehavior.

5.15.2.4 virtual void PredictBehavior::show ( ) `[pure virtual]`

Implemented in MLPbehavior, and RBFbehavior.

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

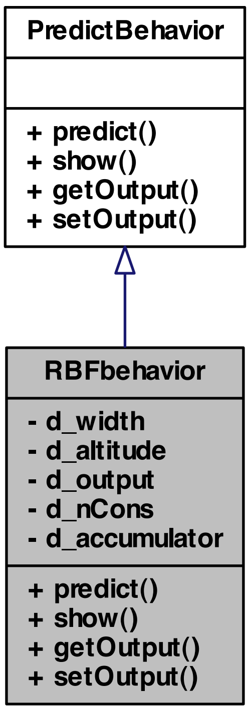
- pkg/AMORE/src/dia/PredictBehavior.h

5.16 RBFbehavior Class Reference

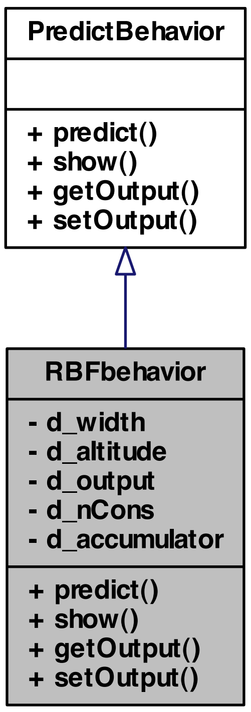
class RBFbehavior -

`#include <RBFbehavior.h>`

Inheritance diagram for RBFbehavior:



Collaboration diagram for RBFbehavior:



Public Member Functions

- void predict ()
- void show ()
- double getOutput ()
- void setOutput (double output)

Private Attributes

- double d_width
- double d_altitude
- double d_output
- ConContainerPtr d_nCons
- double d_accumulator

5.16.1 Detailed Description

class RBFbehavior -

Definition at line 5 of file RBFbehavior.h.

5.16.2 Member Function Documentation

5.16.2.1 double RBFbehavior::getOutput ( ) [virtual]

Implements PredictBehavior.

5.16.2.2 void RBFbehavior::predict ( ) [virtual]

Implements PredictBehavior.

5.16.2.3 void RBFbehavior::setOutput (double *output*) [virtual]

Implements PredictBehavior.

5.16.2.4 void RBFbehavior::show ( ) [virtual]

Implements PredictBehavior.

5.16.3 Member Data Documentation

5.16.3.1 double RBFbehavior::d_accumulator [private]

Definition at line 12 of file RBFbehavior.h.

5.16.3.2 double RBFbehavior::d_altitude [private]

Definition at line 9 of file RBFbehavior.h.

5.16.3.3 ConContainerPtr RBFbehavior::d_nCons [private]

Definition at line 11 of file RBFbehavior.h.

5.16.3.4 double RBFbehavior::d_output [private]

Definition at line 10 of file RBFbehavior.h.

5.16.3.5 double RBFbehavior::d_width [private]

Definition at line 8 of file RBFbehavior.h.

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

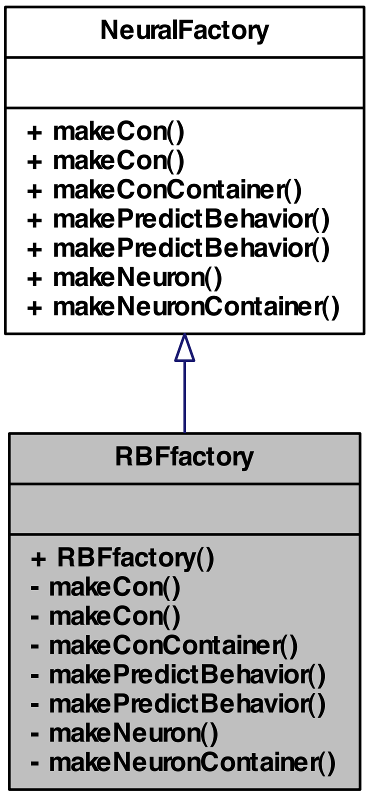
- pkg/AMORE/src/dia/RBFbehavior.h

5.17 RBFfactory Class Reference

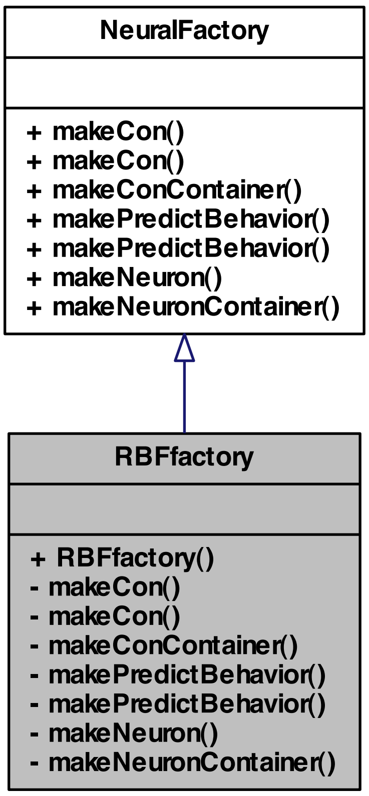
class RBFfactory -

`#include <RBFfactory.h>`

Inheritance diagram for RBFfactory:



Collaboration diagram for RBFfactory:



Public Member Functions

- RBFfactory ()

Private Member Functions

- ConPtr makeCon (Neuron ∗neuron, double weight)
- ConPtr makeCon (Neuron &neuron)
- ConContainerPtr makeConContainer ()
- PredictBehaviorPtr makePredictBehavior ()
- PredictBehaviorPtr makePredictBehavior (ConContainerPtr conContainerPtr)
- NeuronPtr makeNeuron ()
- NeuronContainerPtr makeNeuronContainer ()

5.17.1 Detailed Description

class RBFfactory -

Definition at line 5 of file RBFfactory.h.

5.17.2 Constructor & Destructor Documentation

5.17.2.1 RBFfactory::RBFfactory ( )

5.17.3 Member Function Documentation

5.17.3.1 ConPtr RBFfactory::makeCon (Neuron ∗ *neuron*, double *weight*) [private]

5.17.3.2 ConPtr RBFfactory::makeCon (Neuron & *neuron*) [private, virtual]

Implements NeuralFactory.

5.17.3.3 ConContainerPtr RBFfactory::makeConContainer ( ) [private, virtual]

Implements NeuralFactory.

5.17.3.4 NeuronPtr RBFfactory::makeNeuron ( ) [private, virtual]

Implements NeuralFactory.

5.17.3.5 NeuronContainerPtr RBFfactory::makeNeuronContainer ( ) [private, virtual]

Implements NeuralFactory.

5.17.3.6 PredictBehaviorPtr RBFfactory::makePredictBehavior (ConContainerPtr *conContainerPtr*) [private, virtual]

Implements NeuralFactory.

5.17.3.7 PredictBehaviorPtr RBFfactory::makePredictBehavior ( ) [private, virtual]

Implements NeuralFactory.

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

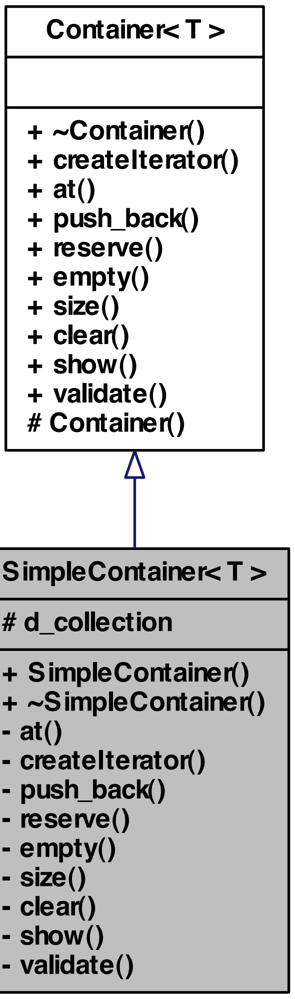
- pkg/AMORE/src/dia/RBFfactory.h

5.18 SimpleContainer< T > Class Template Reference

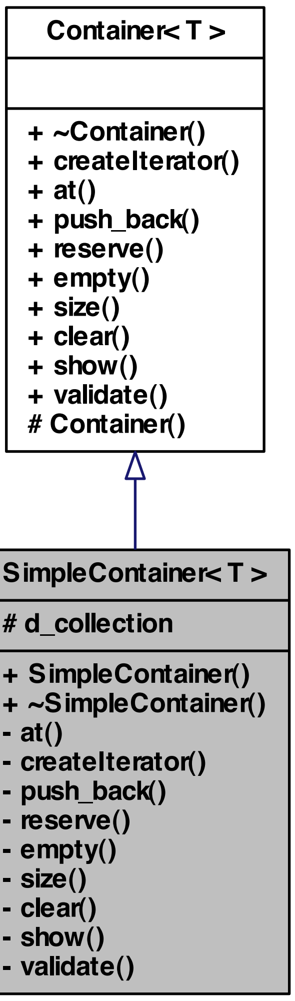
class SimpleContainer -

`#include <SimpleContainer.h>`

Inheritance diagram for SimpleContainer< T >:



Collaboration diagram for SimpleContainer< T >:



Public Member Functions

- SimpleContainer ()
- ∼SimpleContainer ()

Protected Attributes

- std::vector< T > d_collection

Private Member Functions

- T at (size_type element)

  Append a shared_ptr at the end of collection.
- boost::shared_ptr< Iterator< T > > createIterator ()
- void push_back (T const &const_reference)
- void reserve (int n)
- bool empty ()
- size_type size ()

  Returns the size or length of the vector.
- void clear ()
- void show ()

  Pretty print of the SimpleContainer<T>
- bool validate ()

  Object validator.

Friends

- class SimpleContainerIterator< T >

5.18.1 Detailed Description

template<typename T>class SimpleContainer< T >

class SimpleContainer -

Definition at line 6 of file SimpleContainer.h.

5.18.2 Constructor & Destructor Documentation

5.18.2.1 template<typename T > SimpleContainer< T >::SimpleContainer ( )

Definition at line 11 of file SimpleContainer.cpp.

```
{

}
```

5.18.2.2 template<typename T > SimpleContainer< T >::~SimpleContainer ( )

Definition at line 17 of file SimpleContainer.cpp.

```
{
}
```

5.18.3 Member Function Documentation

5.18.3.1 template<typename T > T SimpleContainer< T >::at (size_type *element*) [private, virtual]

Append a shared_ptr at the end of collection.

Implements push_back for the Container class

Parameters

TsharedPtr	A shared_ptr pointer to be inserted at the end of collection

```
                //================
                //Usage example:
                //================
                // Data set up
                        Neuron N1, N2, N3;
                        Container<Con> conContainer;
                        std::vector<ConPtr> vc;
                        std::vector<int> result;
                        N1.setId(10);
                        N2.setId(20);
                        N3.setId(30);
                // Test
                        ConPtr ptCon( new Con(&N1, 1.13) );     // Create new Con
 and initialize ptCon
                        conContainer.push_back(ptCon);                          /
/ push_back
                        ptCon.reset(  new Con(&N2, 2.22) );             // create
 new Con and assign to ptCon
                        conContainer.push_back(ptCon);                          /
/ push_back
                        ptCon.reset(  new Con(&N3, 3.33) );             // create
 new Con and assign to ptCon
                        conContainer.push_back(ptCon);                          /
/ push_back

                        vc = conContainer.load();

                        result.push_back(vc.at(0)->getId());
                        result.push_back(vc.at(1)->getId());
                        result.push_back(vc.at(2)->getId());
  // After execution of this code, result contains a numeric vector with va
lues 10, 20 and 30.
```

See also

C++ documentation for std::vector::push_back and the unit test files, e.g., runit.Cpp.Container.R, for usage examples.

Implements Container< T >.

Definition at line 69 of file SimpleContainer.cpp.

```
{
return d_collection.at(element);
}
```

5.18.3.2 template<typename T > void SimpleContainer< T >::clear ( ) [private, virtual]

Implements Container< T >.

Definition at line 182 of file SimpleContainer.cpp.

```
{
d_collection.clear();
}
```

5.18.3.3 template<typename T > boost::shared_ptr< Iterator< T > > SimpleContainer< T >::createIterator ( ) [private, virtual]

Implements Container< T >.

Definition at line 23 of file SimpleContainer.cpp.

```
{
  boost::shared_ptr < SimpleContainerIterator<T> > iteratorPtr(  new
    SimpleContainerIterator<T> ());
  iteratorPtr->d_container = this;
  iteratorPtr->d_current= 0;
  return iteratorPtr;
}
```

5.18.3.4 template<typename T > bool SimpleContainer< T >::empty ( ) [private, virtual]

Implements Container< T >.

Definition at line 168 of file SimpleContainer.cpp.

```
{
  return (d_collection.empty());
}
```

5.18.3.5 template<typename T > void SimpleContainer< T >::push_back (T const & *const_reference*) [private, virtual]

Implements Container< T >.

Definition at line 77 of file SimpleContainer.cpp.

```
{
d_collection.push_back(reference);
}
```

5.18.3.6 template<typename T > void SimpleContainer< T >::reserve (int *n*) [private, virtual]

Implements Container< T >.

Definition at line 175 of file SimpleContainer.cpp.

```
{
d_collection.reserve(n);
}
```

5.18.3.7 template<typename T > void SimpleContainer< T >::show ( ) [private, virtual]

Pretty print of the SimpleContainer<T>

This method outputs in the R terminal the contents of Container::collection.

Returns

true in case everything works without throwing an exception

*

```
                //=================
                //Usage example:
                //=================
                // Data set up
                        ContainerNeuronPtr      neuronContainerPtr( new
      Container<Neuron>() );
                        ContainerConPtr conContainerPtr( new Container<Con>() );
                        ConPtr  ptC;
                        NeuronPtr ptN;
                        int ids[]= {10, 20, 30};
                        double weights[] = {1.13, 2.22, 3.33 };

                        for (int i=0; i<=2 ; i++) {                             /
      / Let's create a vector with three neurons
                                ptN.reset( new Neuron( ids[i] ) );
                                neuronContainerPtr->push_back(ptN);
                        }
```

```
                    for (int i=0; i<=2 ; i++) {                              /
      / and a vector with three connections
                            ptC.reset( new Con( neuronContainerPtr->load().at
      (i), weights[i]) );
                            conContainerPtr->push_back(ptC);
                    }

            // Test
                    conContainerPtr->show() ;

            // The output at the R terminal would display:
            //
            //      # From:  10      Weight=         1.130000
            //      # From:  20      Weight=         2.220000
            //      # From:  30      Weight=         3.330000
            //
```

See also

The unit test files, e.g., runit.Cpp.Container.R, for usage examples.

Implements Container< T >.

Definition at line 127 of file SimpleContainer.cpp.

```
{
    boost::shared_ptr< Iterator <T> >  itr = createIterator();
    for ( itr->first(); !itr->isDone(); itr->next() ) {
       itr->currentItem()->show();
    }
}
```

5.18.3.8 template<typename T > size_type SimpleContainer< T >::size ( ) [private, virtual]

Returns the size or length of the vector.

This method returns the size of the vector. In the classes derived from SimpleContainer<T> this is aliased as numOfCons, numOfNeurons and numOfLayers. The unit test files, e.g., runit.Cpp.Container.R, for usage examples.

Implements Container< T >.

Definition at line 160 of file SimpleContainer.cpp.

```
{
  return d_collection.size();
}
```

5.18.3.9 template<typename T > bool SimpleContainer< T >::validate ( ) [private, virtual]

Object validator.

This method checks the object for internal coherence. This method calls the validate method for each element in collection,

See also

The unit test files, e.g., runit.Cpp.Container.R, for usage examples.

Implements Container< T >.

Definition at line 142 of file SimpleContainer.cpp.

```
{
   boost::shared_ptr< Iterator <T> >  itr = createIterator();
   for ( itr->first(); !itr->isDone(); itr->next() ) {
      itr->currentItem()->validate();
   }
return true;
}
```

5.18.4 Friends And Related Function Documentation

5.18.4.1 template<typename T > friend class SimpleContainerIterator< T > [friend]

Definition at line 12 of file SimpleContainer.h.

5.18.5 Member Data Documentation

5.18.5.1 template<typename T > std::vector< T > SimpleContainer< T >::d_collection [protected]

Definition at line 9 of file SimpleContainer.h.

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

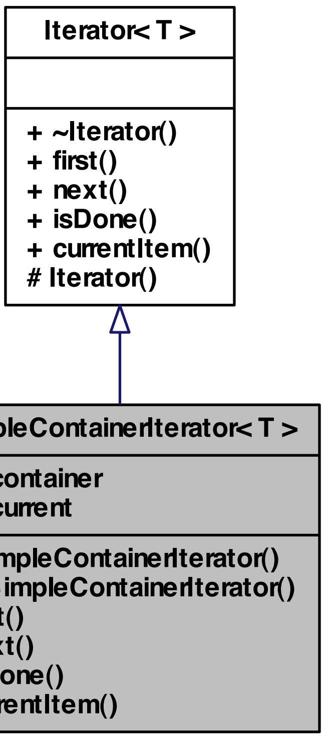
- pkg/AMORE/src/dia/SimpleContainer.h
- pkg/AMORE/src/SimpleContainer.cpp

5.19 SimpleContainerIterator< T > Class Template Reference

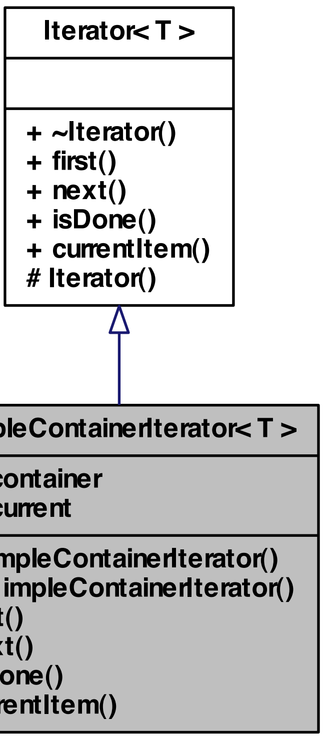
class SimpleContainerIterator -

`#include <SimpleContainerIterator.h>`

Inheritance diagram for SimpleContainerIterator< T >:



Collaboration diagram for SimpleContainerIterator< T >:



Public Member Functions

- SimpleContainerIterator ()
- ~SimpleContainerIterator ()

Private Member Functions

- void first ()
- void next ()
- bool isDone ()
- T currentItem ()

Private Attributes

- Container< T > ∗ d_container
- size_type d_current

Friends

- class SimpleContainer< T >

5.19.1 Detailed Description

template<typename T>class SimpleContainerIterator< T >

class SimpleContainerIterator -

Definition at line 6 of file SimpleContainerIterator.h.

5.19.2 Constructor & Destructor Documentation

5.19.2.1 template<typename T > SimpleContainerIterator< T >::SimpleContainerIterator ( )

Definition at line 4 of file SimpleContainerIterator.cpp.

```
{
}
```

5.19.2.2 template<typename T > SimpleContainerIterator< T >::~SimpleContainerIterator ( )

Definition at line 9 of file SimpleContainerIterator.cpp.

```
{
}
```

5.19.3 Member Function Documentation

5.19.3.1 template<typename T > T SimpleContainerIterator< T >::currentItem ( ) [private, virtual]

Implements Iterator< T >.

Definition at line 37 of file SimpleContainerIterator.cpp.

```
{
    if (isDone()) throw std::range_error("SimpleContainerIterator::currentItem
     Error: IteratorOutOfBounds");
    return d_container->at(d_current);
}
```

5.19.3.2 template<typename T > void SimpleContainerIterator< T >::first ( ) [private, virtual]

Implements Iterator< T >.

Definition at line 15 of file SimpleContainerIterator.cpp.

```
{
  d_current = 0;
}
```

5.19.3.3 template<typename T > bool SimpleContainerIterator< T >::isDone ( ) [private, virtual]

Implements Iterator< T >.

Definition at line 29 of file SimpleContainerIterator.cpp.

```
{
  bool IteratorIsDone(d_current == d_container->size());
  return IteratorIsDone;
}
```

5.19.3.4 template<typename T > void SimpleContainerIterator< T >::next ( ) [private, virtual]

Implements Iterator< T >.

Definition at line 22 of file SimpleContainerIterator.cpp.

```
{
  ++d_current;
}
```

5.19.4 Friends And Related Function Documentation

5.19.4.1 template<typename T > friend class SimpleContainer< T > [friend]

Definition at line 13 of file SimpleContainerIterator.h.

5.19.5 Member Data Documentation

5.19.5.1 template<typename T > Container<T>* SimpleContainerIterator< T >::d_container [private]

Definition at line 9 of file SimpleContainerIterator.h.

5.19.5.2 template<typename T > size_type SimpleContainerIterator< T >::d_current [private]

Definition at line 10 of file SimpleContainerIterator.h.

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

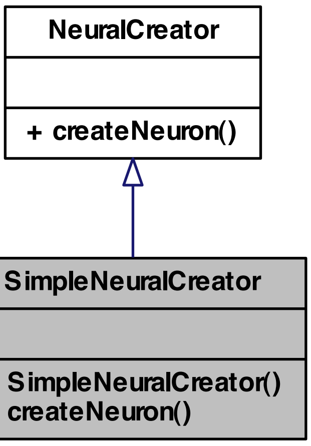
- pkg/AMORE/src/dia/SimpleContainerIterator.h
- pkg/AMORE/src/SimpleContainerIterator.cpp

5.20 SimpleNeuralCreator Class Reference

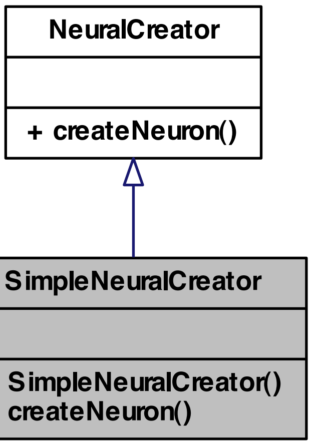
class SimpleNeuralCreator -

`#include <SimpleNeuralCreator.h>`

Inheritance diagram for SimpleNeuralCreator:



Collaboration diagram for SimpleNeuralCreator:



Public Member Functions

- SimpleNeuralCreator ()
- NeuronPtr createNeuron (NeuralFactoryPtr neuralFactoryPtr)

5.20.1 Detailed Description

class SimpleNeuralCreator -

Definition at line 5 of file SimpleNeuralCreator.h.

5.20.2 Constructor & Destructor Documentation

5.20.2.1 SimpleNeuralCreator::SimpleNeuralCreator ( )

Definition at line 15 of file SimpleNeuralCreator.cpp.

```
{
}
```

5.20.3 Member Function Documentation

5.20.3.1 NeuronPtr SimpleNeuralCreator::createNeuron (NeuralFactoryPtr *neuralFactoryPtr*) [virtual]

Implements NeuralCreator.

Definition at line 22 of file SimpleNeuralCreator.cpp.

```
{
  return neuralFactoryPtr->makeNeuron();
}
```

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

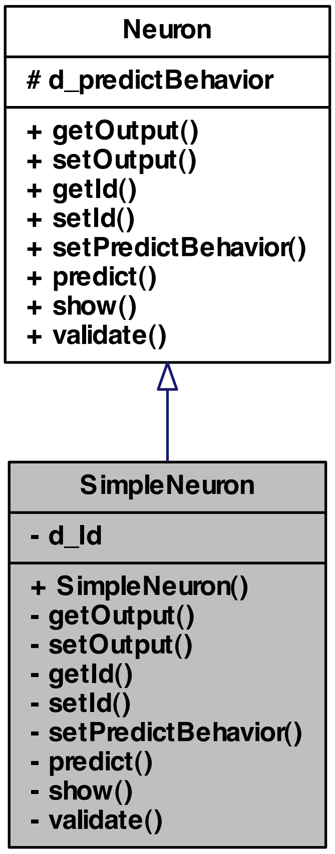
- pkg/AMORE/src/dia/SimpleNeuralCreator.h
- pkg/AMORE/src/SimpleNeuralCreator.cpp

5.21 SimpleNeuron Class Reference

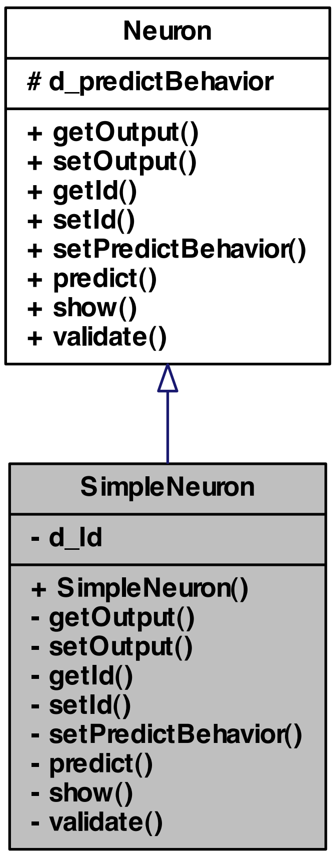
class SimpleNeuron -

`#include <SimpleNeuron.h>`

Inheritance diagram for SimpleNeuron:



Collaboration diagram for SimpleNeuron:



Public Member Functions

- SimpleNeuron ()

Private Member Functions

- double getOutput ()
- void setOutput (double output)
- Handler getId ()
- void setId (Handler Id)
- void setPredictBehavior (PredictBehaviorPtr predictBehaviorPtr)

- void predict ()
- void show ()
- bool validate ()

Private Attributes

- int d_Id

5.21.1 Detailed Description

class SimpleNeuron -

Definition at line 5 of file SimpleNeuron.h.

5.21.2 Constructor & Destructor Documentation

5.21.2.1 SimpleNeuron::SimpleNeuron ( )

Definition at line 10 of file SimpleNeuron.cpp.

```
                                   :
  d_Id(NA_INTEGER)
{
}
```

5.21.3 Member Function Documentation

5.21.3.1 Handler SimpleNeuron::getId ( ) [private, virtual]

Implements Neuron.

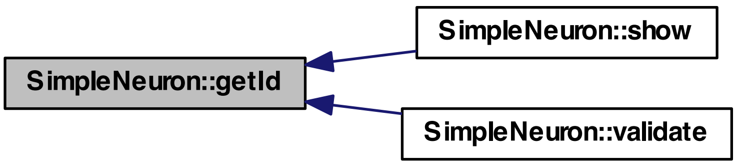
Definition at line 32 of file SimpleNeuron.cpp.

References d_Id.

Referenced by show(), and validate().

```
{
  return d_Id;
}
```

Here is the caller graph for this function:



5.21.3.2 double SimpleNeuron::getOutput ( ) `[private, virtual]`

Implements Neuron.

Definition at line 17 of file SimpleNeuron.cpp.

References Neuron::d_predictBehavior.

```
{
  return d_predictBehavior->getOutput();
}
```

5.21.3.3 void SimpleNeuron::predict ( ) `[private, virtual]`

Implements Neuron.

Definition at line 48 of file SimpleNeuron.cpp.

References Neuron::d_predictBehavior.

```
{
   d_predictBehavior->predict();
}
```

5.21.3.4 void SimpleNeuron::setId (Handler *Id*) `[private, virtual]`

Implements Neuron.

Definition at line 40 of file SimpleNeuron.cpp.

References d_Id.

```
{
   d_Id=Id;
}
```

5.21.3.5 void SimpleNeuron::setOutput (double *output*) [private, virtual]

Implements Neuron.

Definition at line 24 of file SimpleNeuron.cpp.

References Neuron::d_predictBehavior.

```
{
  d_predictBehavior->setOutput(output);
}
```

5.21.3.6 void SimpleNeuron::setPredictBehavior (PredictBehaviorPtr *predictBehaviorPtr*) [private, virtual]

Implements Neuron.

Definition at line 55 of file SimpleNeuron.cpp.

References Neuron::d_predictBehavior.

```
{
   d_predictBehavior=predictBehaviorPtr;
}
```

5.21.3.7 void SimpleNeuron::show ( ) [private, virtual]

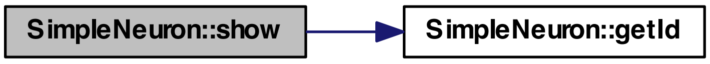
Implements Neuron.

Definition at line 62 of file SimpleNeuron.cpp.

References Neuron::d_predictBehavior, and getId().

```
{
  int id = getId();
  Rprintf("\n------------------------\n");
  if (id == NA_INTEGER)
    {
      Rprintf("\n Id: NA, Invalid neuron Id");
    }
  else
    {
      Rprintf("\n Id: %d", id);
    }
  Rprintf("\n------------------------\n");
  d_predictBehavior->show();

}
```

Here is the call graph for this function:



5.21.3.8 bool SimpleNeuron::validate ( ) [private, virtual]

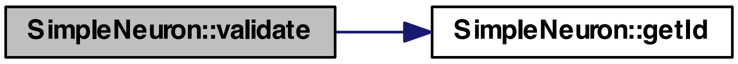
Implements Neuron.

Definition at line 80 of file SimpleNeuron.cpp.

References getId().

```
{
  BEGIN_RCPP
  if (getId() == NA_INTEGER ) throw std::range_error("[C++ SimpleNeuron::validate
      ]: Error, Id is NA.");
 // nCons.validate();
  return (TRUE);
END_RCPP}
```

Here is the call graph for this function:



5.21.4 Member Data Documentation

5.21.4.1 int SimpleNeuron::d_Id [private]

Definition at line 8 of file SimpleNeuron.h.

Referenced by getId(), and setId().

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

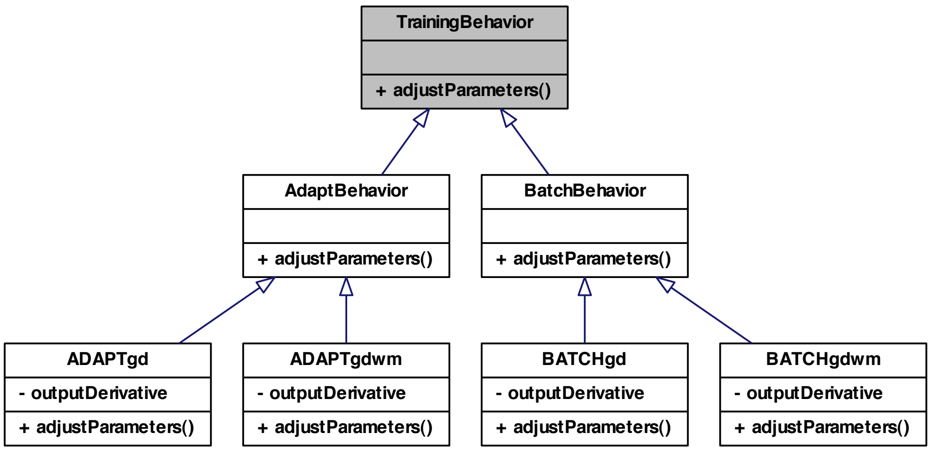
- pkg/AMORE/src/dia/SimpleNeuron.h
- pkg/AMORE/src/SimpleNeuron.cpp

5.22 TrainingBehavior Class Reference

class TrainingBehavior -

`#include <TrainingBehavior.h>`

Inheritance diagram for TrainingBehavior:



Public Member Functions

- void adjustParameters ()

5.22.1 Detailed Description

class TrainingBehavior -

Definition at line 4 of file TrainingBehavior.h.

5.22.2 Member Function Documentation

5.22.2.1 void TrainingBehavior::adjustParameters ( )

Reimplemented in AdaptBehavior, ADAPTgd, ADAPTgdwm, BatchBehavior, BATCHgd, and BATCHgdwm.

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

- pkg/AMORE/src/dia/TrainingBehavior.h

Chapter 6

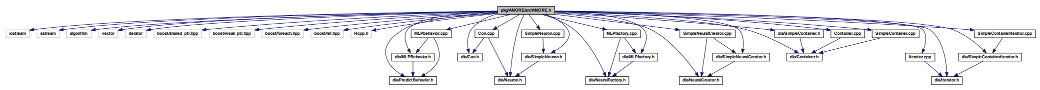
File Documentation

6.1 pkg/AMORE/src/AMORE.h File Reference

```
#include <iostream>
#include <sstream>
#include <algorithm>
#include <vector>
#include <iterator>
#include <boost/shared_ptr.hpp>
#include <boost/weak_ptr.hpp>
#include <boost/foreach.hpp>
#include <boost/ref.hpp>
#include <Rcpp.h>
#include "dia/Con.h"
#include "dia/PredictBehavior.h"
#include "dia/MLPBehavior.h"
#include "dia/Neuron.h"
#include "dia/SimpleNeuron.h"
#include "dia/NeuralFactory.h"
#include "dia/MLPfactory.h"
#include "dia/NeuralCreator.h"
#include "dia/SimpleNeuralCreator.h"
#include "dia/Container.h"
#include "dia/SimpleContainer.h"
```

```
#include "dia/Iterator.h"
#include "dia/SimpleContainerIterator.h"
#include "Con.cpp"
#include "MLPbehavior.cpp"
#include "SimpleNeuron.cpp"
#include "MLPfactory.cpp"
#include "SimpleNeuralCreator.cpp"
#include "Container.cpp"
#include "Iterator.cpp"
#include "SimpleContainer.cpp"
#include "SimpleContainerIterator.cpp"
```

Include dependency graph for AMORE.h:



Defines

- #define foreach BOOST_FOREACH
- #define size_type unsigned int

Typedefs

- typedef int Handler
- typedef boost::reference_wrapper< PredictBehavior > PredictBehaviorRef
- typedef boost::reference_wrapper< TrainingBehavior > TrainingBehaviorRef
- typedef boost::reference_wrapper< Neuron > NeuronRef
- typedef boost::shared_ptr< PredictBehavior > PredictBehaviorPtr
- typedef boost::shared_ptr< Neuron > NeuronPtr
- typedef boost::shared_ptr< Con > ConPtr
- typedef boost::shared_ptr< Iterator< NeuronPtr > > NeuronIteratorPtr
- typedef boost::shared_ptr< Iterator< ConPtr > > ConIteratorPtr
- typedef boost::shared_ptr< Container< NeuronPtr > > NeuronContainerPtr
- typedef boost::shared_ptr< Container< ConPtr > > ConContainerPtr
- typedef boost::shared_ptr< NeuralFactory > NeuralFactoryPtr
- typedef boost::shared_ptr< NeuralCreator > NeuralCreatorPtr

6.1.1 Define Documentation

6.1.1.1 #define foreach BOOST_FOREACH

Definition at line 61 of file AMORE.h.

6.1.1.2 #define size_type unsigned int

Definition at line 64 of file AMORE.h.

6.1.2 Typedef Documentation

6.1.2.1 typedef boost::shared_ptr< Container<ConPtr> > ConContainerPtr

Definition at line 81 of file AMORE.h.

6.1.2.2 typedef boost::shared_ptr< Iterator<ConPtr> > ConIteratorPtr

Definition at line 78 of file AMORE.h.

6.1.2.3 typedef boost::shared_ptr<Con> ConPtr

Definition at line 75 of file AMORE.h.

6.1.2.4 typedef int Handler

Definition at line 67 of file AMORE.h.

6.1.2.5 typedef boost::shared_ptr< NeuralCreator > NeuralCreatorPtr

Definition at line 84 of file AMORE.h.

6.1.2.6 typedef boost::shared_ptr< NeuralFactory > NeuralFactoryPtr

Definition at line 83 of file AMORE.h.

6.1.2.7 typedef boost::shared_ptr< Container<NeuronPtr> > NeuronContainerPtr

Definition at line 80 of file AMORE.h.

6.1.2.8 typedef boost::shared_ptr< Iterator<NeuronPtr> > NeuronIteratorPtr

Definition at line 77 of file AMORE.h.

6.1.2.9 typedef boost::shared_ptr<Neuron> NeuronPtr

Definition at line 74 of file AMORE.h.

6.1.2.10 typedef boost::reference_wrapper<Neuron> NeuronRef

Definition at line 71 of file AMORE.h.

6.1.2.11 typedef boost::shared_ptr<PredictBehavior> PredictBehaviorPtr

Definition at line 73 of file AMORE.h.

6.1.2.12 typedef boost::reference_wrapper<PredictBehavior> PredictBehaviorRef

Definition at line 69 of file AMORE.h.

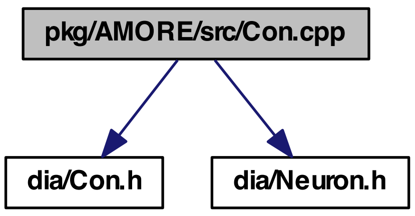
6.1.2.13 typedef boost::reference_wrapper<TrainingBehavior> TrainingBehaviorRef

Definition at line 70 of file AMORE.h.

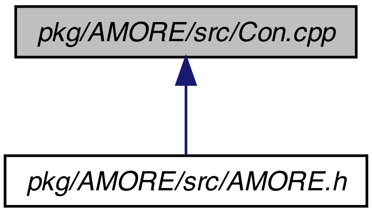
6.2 pkg/AMORE/src/Con.cpp File Reference

```
#include "dia/Con.h"
#include "dia/Neuron.h"
```

Include dependency graph for Con.cpp:



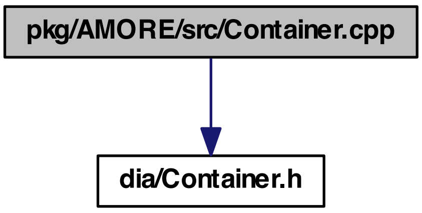
This graph shows which files directly or indirectly include this file:



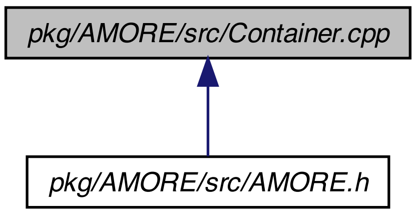
6.3 pkg/AMORE/src/Container.cpp File Reference

```
#include "dia/Container.h"
```

Include dependency graph for Container.cpp:



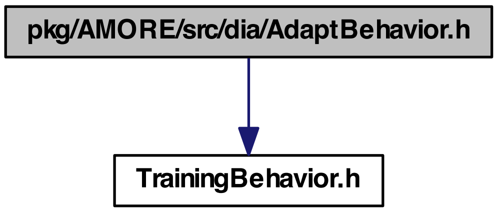
This graph shows which files directly or indirectly include this file:



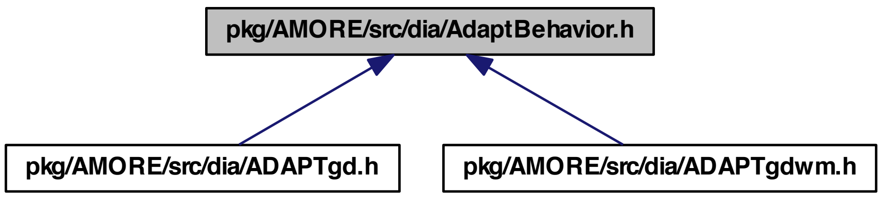
6.4 pkg/AMORE/src/dia/AdaptBehavior.h File Reference

```
#include "TrainingBehavior.h"
```

Include dependency graph for AdaptBehavior.h:



This graph shows which files directly or indirectly include this file:


pkg/AMORE/src/dia/AdaptBehavior.h
pkg/AMORE/src/dia/ADAPTgd.h
pkg/AMORE/src/dia/ADAPTgdwm.h

Classes

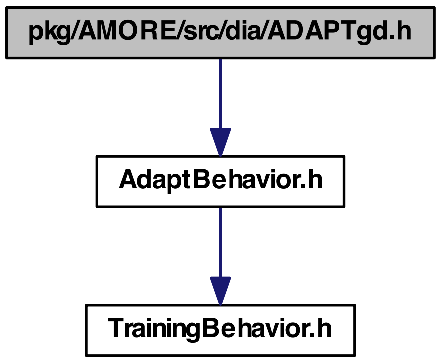
- class AdaptBehavior

    class AdaptBehavior -

6.5 pkg/AMORE/src/dia/ADAPTgd.h File Reference

```
#include "AdaptBehavior.h"
```

Include dependency graph for ADAPTgd.h:



Classes

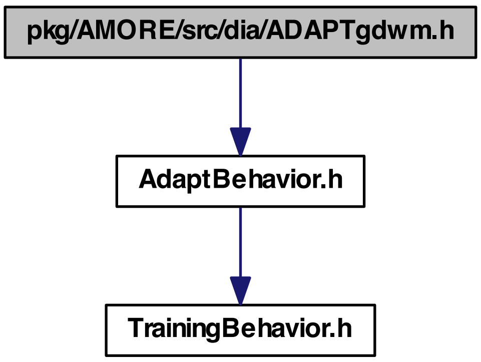
- class ADAPTgd

    class ADAPTgd -

6.6 pkg/AMORE/src/dia/ADAPTgdwm.h File Reference

```
#include "AdaptBehavior.h"
```

Include dependency graph for ADAPTgdwm.h:



Classes

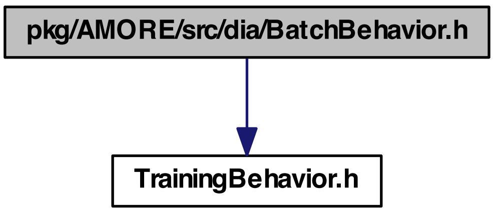
- class ADAPTgdwm

    class ADAPTgdwm -

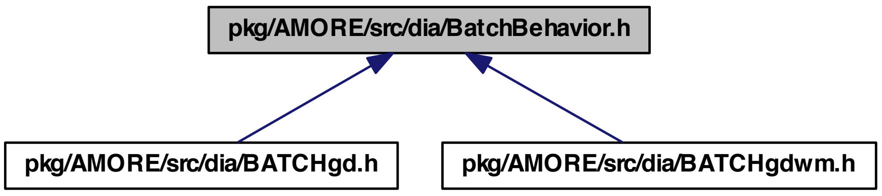
6.7 pkg/AMORE/src/dia/BatchBehavior.h File Reference

```
#include "TrainingBehavior.h"
```

Include dependency graph for BatchBehavior.h:



This graph shows which files directly or indirectly include this file:


pkg/AMORE/src/dia/BatchBehavior.h
pkg/AMORE/src/dia/BATCHgd.h
pkg/AMORE/src/dia/BATCHgdwm.h

Classes

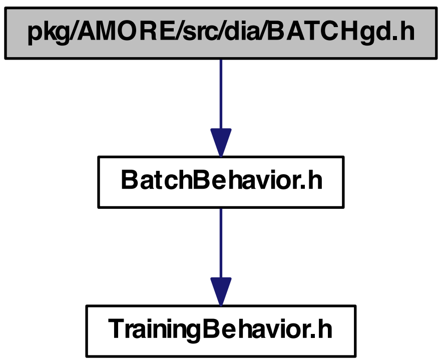
- class BatchBehavior

    class BatchBehavior -

6.8 pkg/AMORE/src/dia/BATCHgd.h File Reference

```
#include "BatchBehavior.h"
```

Include dependency graph for BATCHgd.h:



Classes

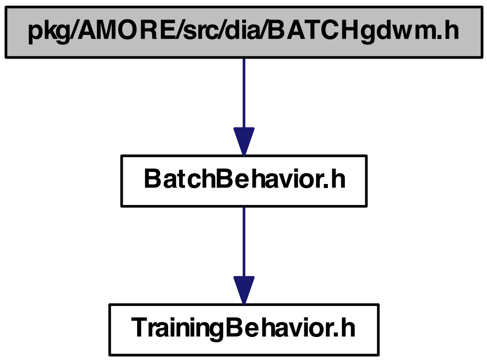
- class BATCHgd

    class BATCHgd -

6.9 pkg/AMORE/src/dia/BATCHgdwm.h File Reference

```
#include "BatchBehavior.h"
```

Include dependency graph for BATCHgdwm.h:



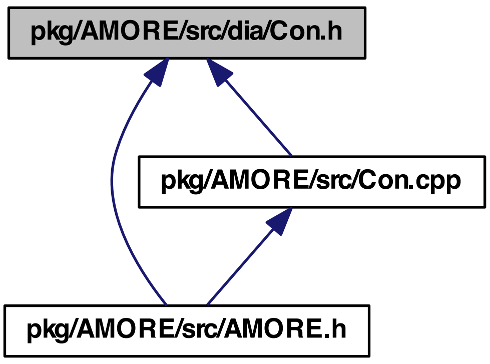
Classes

- class BATCHgdwm

class BATCHgdwm -

6.10 pkg/AMORE/src/dia/Con.h File Reference

This graph shows which files directly or indirectly include this file:



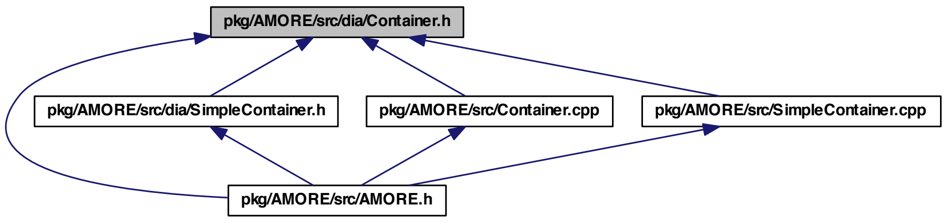
Classes

- class Con

  class Con -

6.11 pkg/AMORE/src/dia/Container.h File Reference

This graph shows which files directly or indirectly include this file:


pkg/AMORE/src/dia/Container.h
pkg/AMORE/src/dia/SimpleContainer.h
pkg/AMORE/src/Container.cpp
pkg/AMORE/src/SimpleContainer.cpp
pkg/AMORE/src/AMORE.h

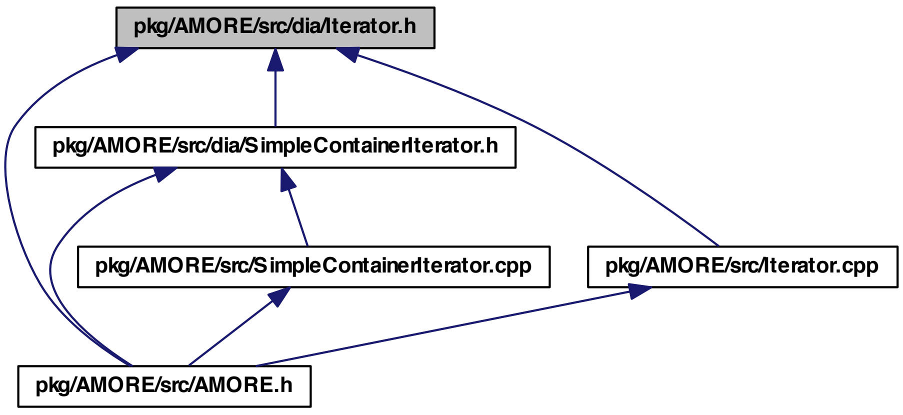
Classes

- class Container< T >

  class Container -

6.12 pkg/AMORE/src/dia/Iterator.h File Reference

This graph shows which files directly or indirectly include this file:


pkg/AMORE/src/dia/Iterator.h
pkg/AMORE/src/dia/SimpleContainerIterator.h
pkg/AMORE/src/SimpleContainerIterator.cpp
pkg/AMORE/src/Iterator.cpp
pkg/AMORE/src/AMORE.h

Classes

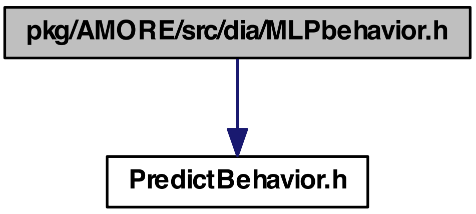
- class Iterator< T >

  class Iterator -

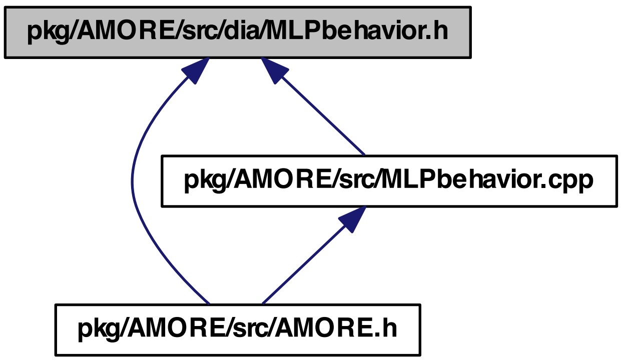
6.13 pkg/AMORE/src/dia/MLPbehavior.h File Reference

```
#include "PredictBehavior.h"
```

Include dependency graph for MLPbehavior.h:



This graph shows which files directly or indirectly include this file:


pkg/AMORE/src/dia/MLPbehavior.h
pkg/AMORE/src/MLPbehavior.cpp
pkg/AMORE/src/AMORE.h

Classes

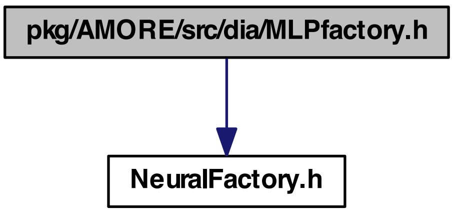
- class MLPbehavior

  class MLPbehavior -

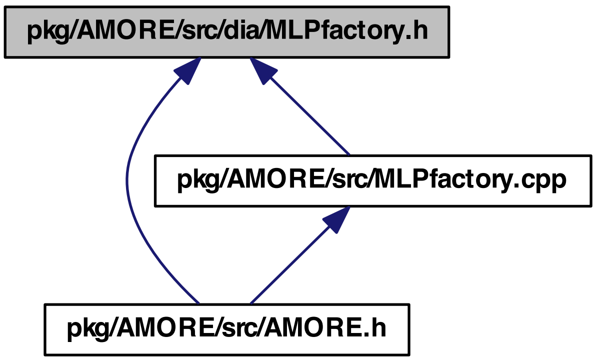
6.14 pkg/AMORE/src/dia/MLPfactory.h File Reference

```
#include "NeuralFactory.h"
```

Include dependency graph for MLPfactory.h:



This graph shows which files directly or indirectly include this file:



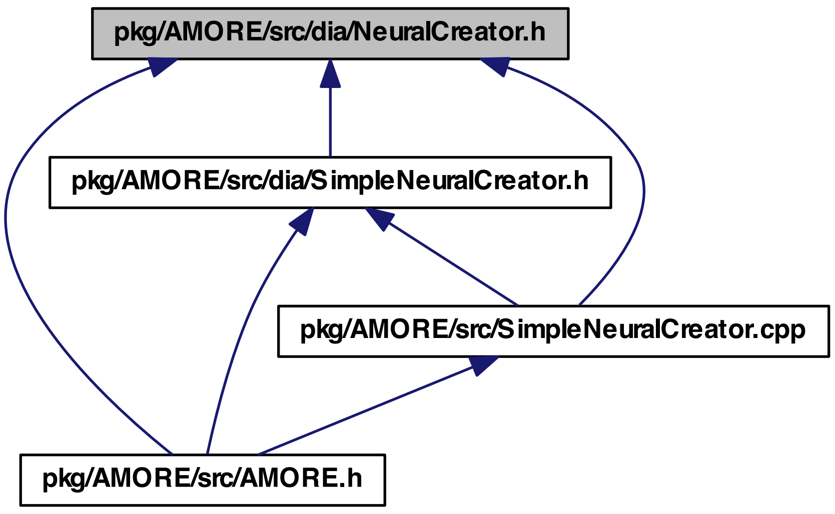
Classes

- class MLPfactory

  class MLPfactory -

6.15 pkg/AMORE/src/dia/NeuralCreator.h File Reference

This graph shows which files directly or indirectly include this file:


pkg/AMORE/src/dia/NeuralCreator.h
pkg/AMORE/src/dia/SimpleNeuralCreator.h
pkg/AMORE/src/SimpleNeuralCreator.cpp
pkg/AMORE/src/AMORE.h

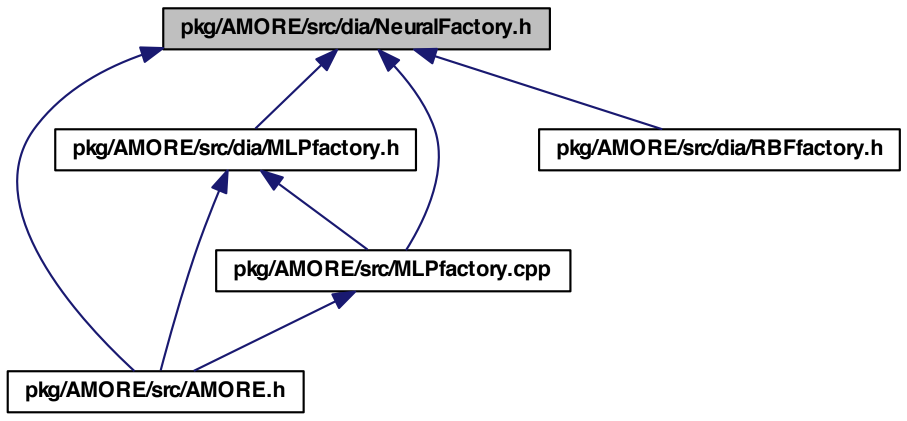
Classes

- class NeuralCreator

class NeuralCreator -

6.16 pkg/AMORE/src/dia/NeuralFactory.h File Reference

This graph shows which files directly or indirectly include this file:


pkg/AMORE/src/dia/NeuralFactory.h
pkg/AMORE/src/dia/MLPfactory.h
pkg/AMORE/src/dia/RBFfactory.h
pkg/AMORE/src/MLPfactory.cpp
pkg/AMORE/src/AMORE.h

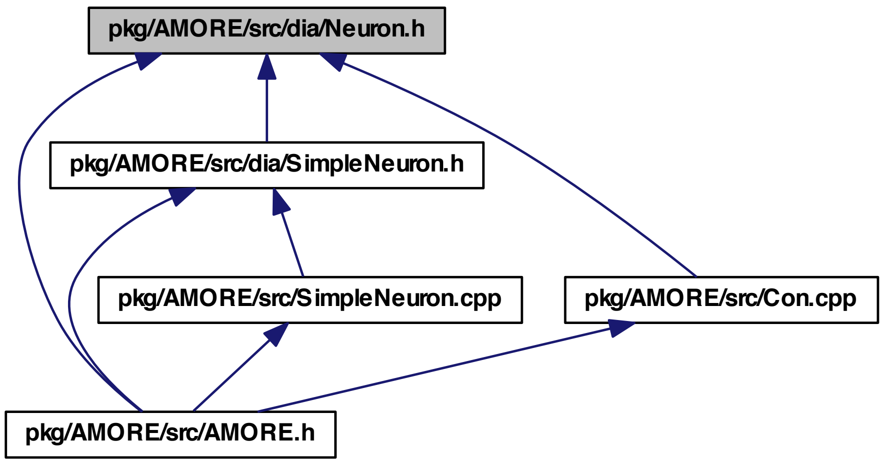
Classes

- class NeuralFactory

class NeuralFactory -

6.17 pkg/AMORE/src/dia/Neuron.h File Reference

This graph shows which files directly or indirectly include this file:


pkg/AMORE/src/dia/Neuron.h
pkg/AMORE/src/dia/SimpleNeuron.h
pkg/AMORE/src/SimpleNeuron.cpp
pkg/AMORE/src/Con.cpp
pkg/AMORE/src/AMORE.h

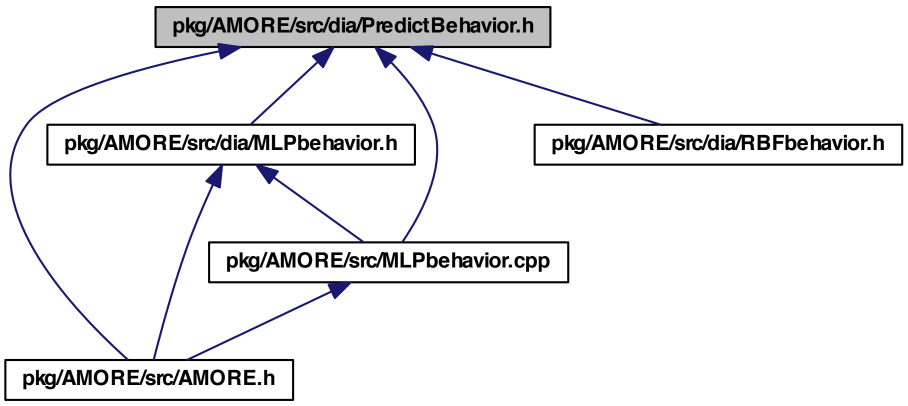
Classes

- class Neuron

  class Neuron -

6.18 pkg/AMORE/src/dia/PredictBehavior.h File Reference

This graph shows which files directly or indirectly include this file:


pkg/AMORE/src/dia/PredictBehavior.h
pkg/AMORE/src/dia/MLPbehavior.h
pkg/AMORE/src/dia/RBFbehavior.h
pkg/AMORE/src/MLPbehavior.cpp
pkg/AMORE/src/AMORE.h

Classes

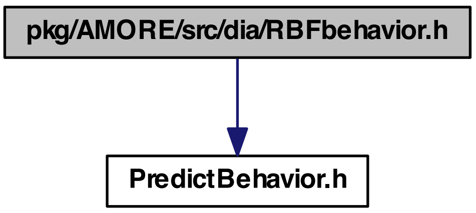
- class PredictBehavior

    class PredictBehavior -

6.19 pkg/AMORE/src/dia/RBFbehavior.h File Reference

```
#include "PredictBehavior.h"
```

Include dependency graph for RBFbehavior.h:



Classes

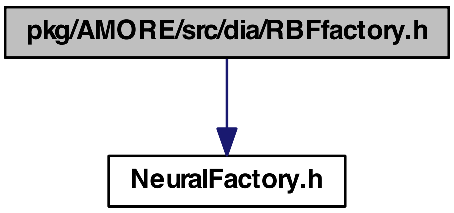
- class RBFbehavior

  class RBFbehavior -

6.20 pkg/AMORE/src/dia/RBFfactory.h File Reference

```
#include "NeuralFactory.h"
```

Include dependency graph for RBFfactory.h:



Classes

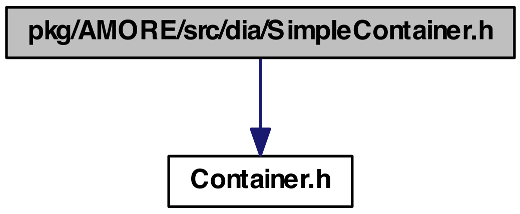
- class RBFfactory

  class RBFfactory -

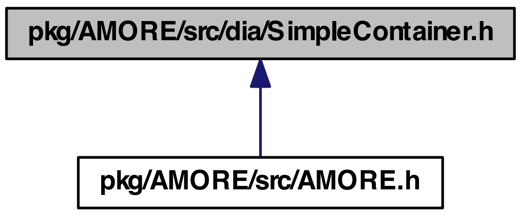
6.21 pkg/AMORE/src/dia/SimpleContainer.h File Reference

```
#include "Container.h"
```

Include dependency graph for SimpleContainer.h:



This graph shows which files directly or indirectly include this file:



Classes

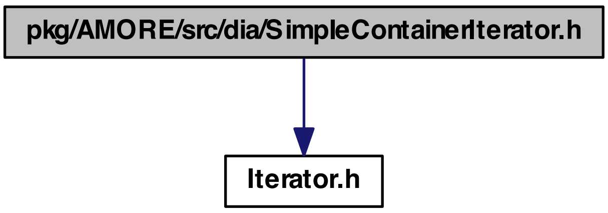
- class SimpleContainer< T >

    class SimpleContainer -

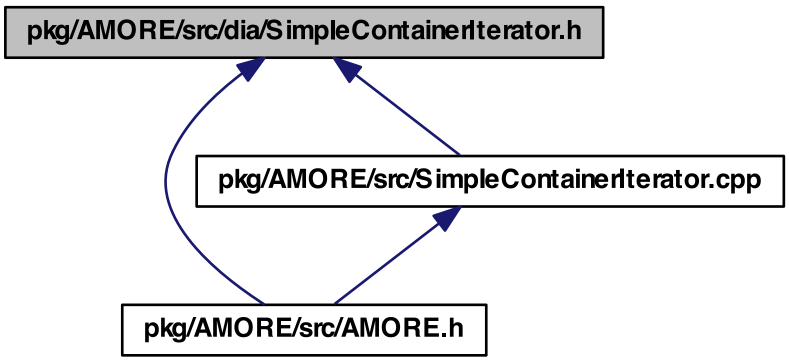
6.22 pkg/AMORE/src/dia/SimpleContainerIterator.h File Reference

```
#include "Iterator.h"
```

Include dependency graph for SimpleContainerIterator.h:



This graph shows which files directly or indirectly include this file:


pkg/AMORE/src/dia/SimpleContainerIterator.h
pkg/AMORE/src/SimpleContainerIterator.cpp
pkg/AMORE/src/AMORE.h

Classes

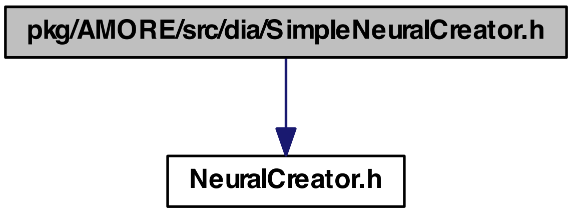
- class SimpleContainerIterator< T >

  class SimpleContainerIterator -

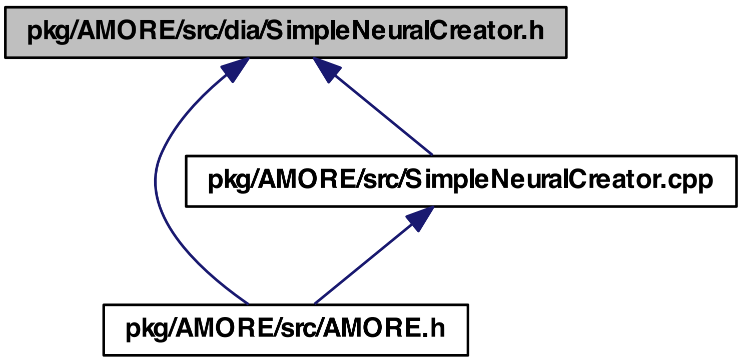
6.23 pkg/AMORE/src/dia/SimpleNeuralCreator.h File Reference

```
#include "NeuralCreator.h"
```

Include dependency graph for SimpleNeuralCreator.h:



This graph shows which files directly or indirectly include this file:


pkg/AMORE/src/dia/SimpleNeuralCreator.h
pkg/AMORE/src/SimpleNeuralCreator.cpp
pkg/AMORE/src/AMORE.h

Classes

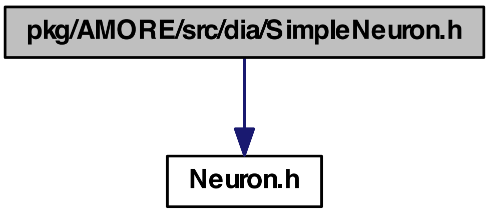
- class SimpleNeuralCreator

  class SimpleNeuralCreator -

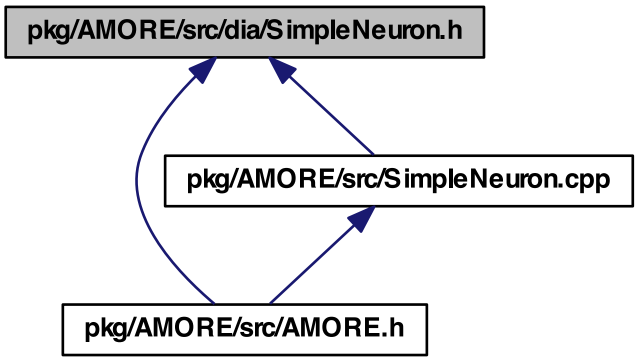
6.24 pkg/AMORE/src/dia/SimpleNeuron.h File Reference

```
#include "Neuron.h"
```

Include dependency graph for SimpleNeuron.h:



This graph shows which files directly or indirectly include this file:


pkg/AMORE/src/dia/SimpleNeuron.h
pkg/AMORE/src/SimpleNeuron.cpp
pkg/AMORE/src/AMORE.h

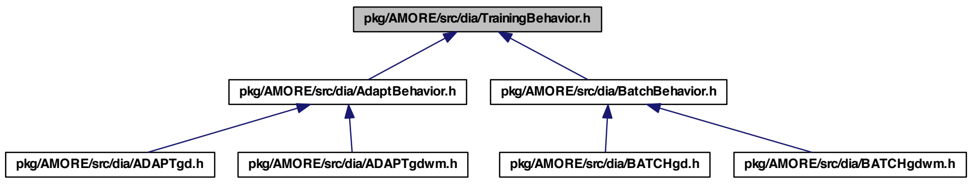
Classes

- class SimpleNeuron

    class SimpleNeuron -

6.25 pkg/AMORE/src/dia/TrainingBehavior.h File Reference

This graph shows which files directly or indirectly include this file:


pkg/AMORE/src/dia/TrainingBehavior.h
pkg/AMORE/src/dia/AdaptBehavior.h
pkg/AMORE/src/dia/BatchBehavior.h
pkg/AMORE/src/dia/ADAPTgd.h
pkg/AMORE/src/dia/ADAPTgdwm.h
pkg/AMORE/src/dia/BATCHgd.h
pkg/AMORE/src/dia/BATCHgdwm.h

Classes

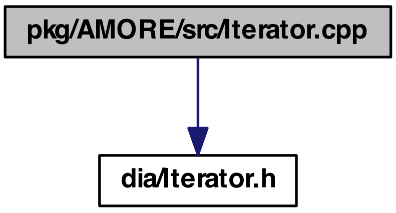
- class TrainingBehavior

  class TrainingBehavior -

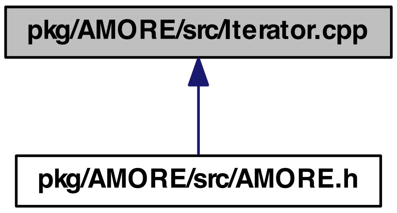
6.26 pkg/AMORE/src/Iterator.cpp File Reference

```
#include "dia/Iterator.h"
```

Include dependency graph for Iterator.cpp:



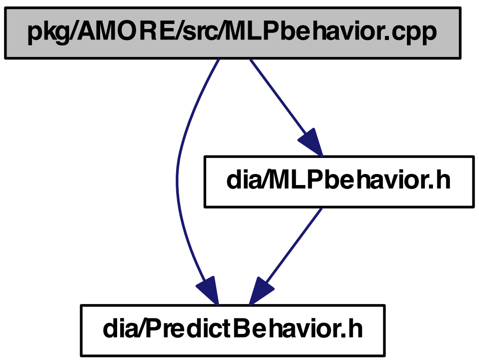
This graph shows which files directly or indirectly include this file:



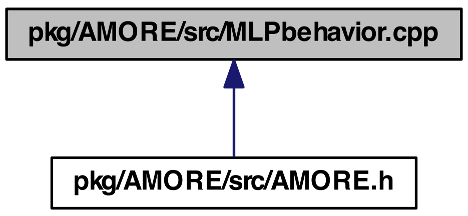
6.27 pkg/AMORE/src/MLPbehavior.cpp File Reference

```
#include "dia/PredictBehavior.h"
#include "dia/MLPbehavior.h"
```

Include dependency graph for MLPbehavior.cpp:



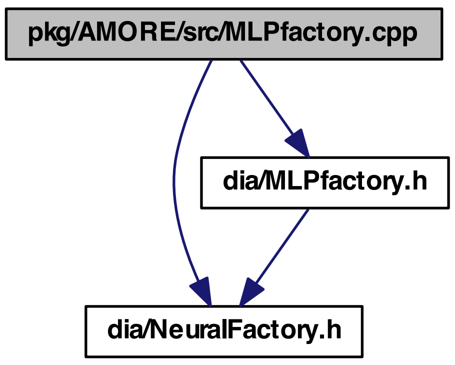
This graph shows which files directly or indirectly include this file:



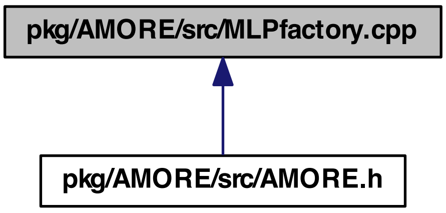
6.28 pkg/AMORE/src/MLPfactory.cpp File Reference

```
#include "dia/NeuralFactory.h"
#include "dia/MLPfactory.h"
```

Include dependency graph for MLPfactory.cpp:



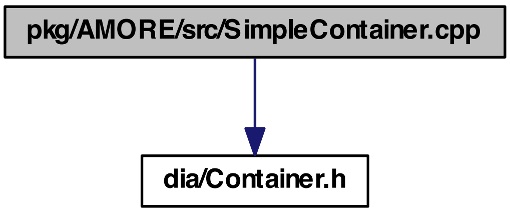
This graph shows which files directly or indirectly include this file:



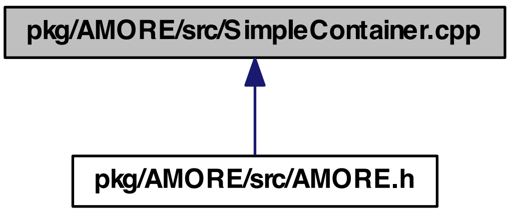
6.29 pkg/AMORE/src/SimpleContainer.cpp File Reference

```
#include "dia/Container.h"
```

Include dependency graph for SimpleContainer.cpp:



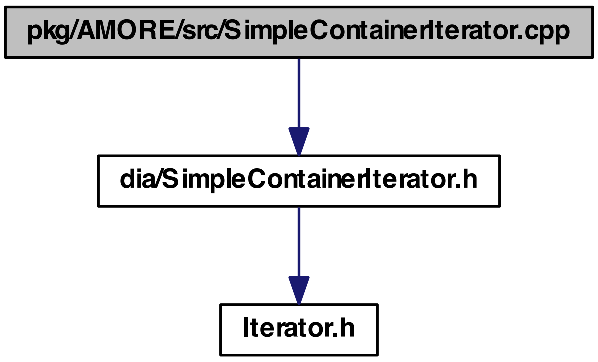
This graph shows which files directly or indirectly include this file:



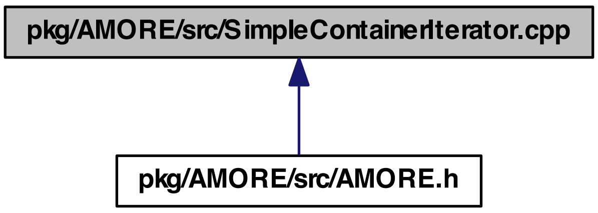
6.30 pkg/AMORE/src/SimpleContainerIterator.cpp File Reference

```
#include "dia/SimpleContainerIterator.h"
```

Include dependency graph for SimpleContainerIterator.cpp:


pkg/AMORE/src/SimpleContainerIterator.cpp
dia/SimpleContainerIterator.h
Iterator.h

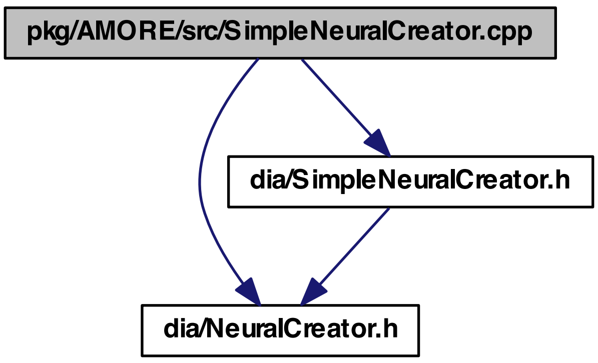
This graph shows which files directly or indirectly include this file:



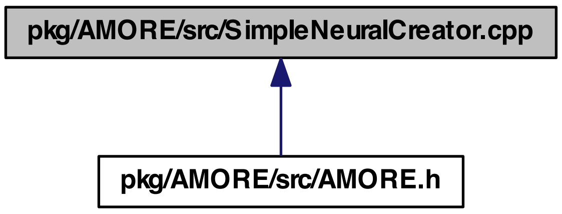
6.31 pkg/AMORE/src/SimpleNeuralCreator.cpp File Reference

```
#include "dia/NeuralCreator.h"
#include "dia/SimpleNeuralCreator.h"
```

Include dependency graph for SimpleNeuralCreator.cpp:


pkg/AMORE/src/SimpleNeuralCreator.cpp
dia/SimpleNeuralCreator.h
dia/NeuralCreator.h

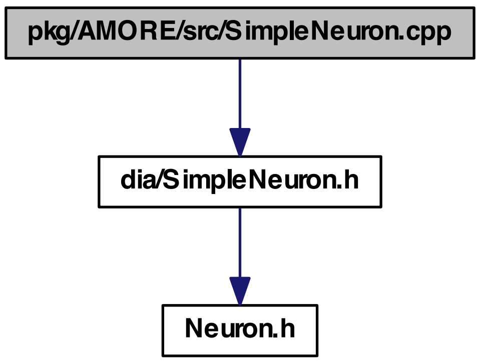
This graph shows which files directly or indirectly include this file:



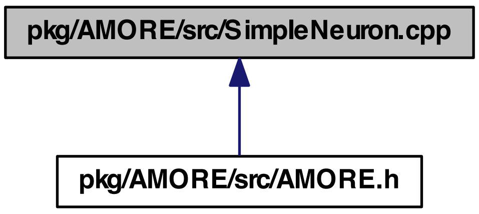
6.32 pkg/AMORE/src/SimpleNeuron.cpp File Reference

```
#include "dia/SimpleNeuron.h"
```

Include dependency graph for SimpleNeuron.cpp:



This graph shows which files directly or indirectly include this file:



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