AMORE++

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

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Contents

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

Todo List

Member Neuron::outputValue restore vecCon<Con> listCon;

Chapter 3

Class Index

3.1 Class Hierarchy

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

Chapter 4

Class Index

4.1 Class List

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

Chapter 5

File Index

5.1 File List

Here is a list of all files with brief descriptions:

Chapter 6

Class Documentation

6.1 CompareId Struct Reference

Public Member Functions

- bool operator() (const ConSharedPtr a, const ConSharedPtr b)
- bool operator() (const ConSharedPtr a, const int b)
- bool operator() (const int a, const ConSharedPtr b)
- bool operator() (const int a, const int b)

6.1.1 Detailed Description

Definition at line 359 of file vecCon.cpp.

6.1.2 Member Function Documentation

6.1.2.1 bool CompareId::operator() (const ConSharedPtr *a*, const ConSharedPtr *b*) [inline]

Definition at line 361 of file vecCon.cpp.

```
                                                                              {
        return a->getFromId() < b->getFromId();
    };
```

6.1.2.2 bool CompareId::operator() (const int *a*, const int *b*) [inline]

Definition at line 373 of file vecCon.cpp.

```
                                                         {
            return a < b;
        };
```

6.1.2.3 bool CompareId::operator() (const int *a*, const ConSharedPtr *b*) [inline]

Definition at line 369 of file vecCon.cpp.

```
                                                                    {
        return a < b->getFromId();
    };
```

6.1.2.4 bool CompareId::operator() (const ConSharedPtr *a*, const int *b*) [inline]

Definition at line 365 of file vecCon.cpp.

```
                                                                    {
        return a->getFromId() < b   ;
    };
```

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

- pkg/AMORE/src/vecCon.cpp

6.2 Con Class Reference

A class to handle the information needed to describe an input connection.

`#include <Con.h>`

Public Member Functions

- Con ()

  Default Constructor.
- Con (NeuronSharedPtr f)

  Constructor.
- Con (NeuronSharedPtr f, double w)

  Constructor.
- ∼Con ()

  Default Destructor.
- NeuronSharedPtr getFromNeuron ()

  from field accessor.
- void setFromNeuron (NeuronSharedPtr f)

  from field accessor.
- int getFromId ()

  A getter of the Id of the Neuron pointed by the from field.
- double getWeight ()

  weight field accessor.

- void setWeight (double w)

  weight field accessor.
- bool show ()

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

  Object validator.

Private Attributes

- NeuronWeakPtr from

  A smart pointer to the Neuron used as input during simulation or training.
- double weight

  A double variable that contains the weight of the connection.

6.2.1 Detailed Description

A class to handle the information needed to describe an input connection.

The Con class provides a simple class for a connection described by a pair of values: a pointer to a Neuron object used as the from field and the weight used to propagate the value of that Neuron object.

Definition at line 16 of file Con.h.

6.2.2 Constructor & Destructor Documentation

6.2.2.1 Con::Con ( )

Default Constructor.

Definition at line 18 of file Con.cpp.

```
                : weight(0), from() {
        };
```

6.2.2.2 Con::Con (NeuronSharedPtr *f*)

Constructor.

Definition at line 36 of file Con.cpp.

```
: from(f), weight(0) {};
```

6.2.2.3 Con::Con (NeuronSharedPtr *f*, double *w*)

Constructor.

Definition at line 28 of file Con.cpp.

```
: from(f), weight(w) {};
```

6.2.2.4 Con::∼Con ( )

Default Destructor.

Definition at line 41 of file Con.cpp.

```
{};
```

6.2.3 Member Function Documentation

6.2.3.1 int Con::getFromId ( )

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
                    NeuronSharedPtr ptShNeuron ( new Neuron(16) );  // Neuron
 Id is set to 16
                    ConSharedPtr ptShCon( new Con(ptShNeuron) );    // from p
oints to ptShNeuron and weight is set to 0
    // Test
                    int result = ptShCon->getFromId();

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

See also

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

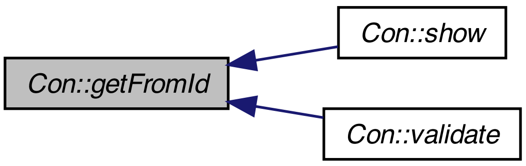
Definition at line 117 of file Con.cpp.

References from.

Referenced by show(), and validate().

```
                    {
        if (from.use_count() !=0 ){
                NeuronSharedPtr ptNeuron(from);
                return(  ptNeuron->getId() );
        } else {
                return(NA_INTEGER);
        }
}
```

Here is the caller graph for this function:



6.2.3.2 NeuronSharedPtr Con::getFromNeuron ( )

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
                        NeuronSharedPtr ptShNeuron ( new Neuron(1) );    // Neuron
       Id is set 1
                        ConSharedPtr ptShCon( new Con(ptShNeuron) );     // from p
      oints to ptShNeuron and weight is set to 0
        // Test
                        ptShNeuron = ptShCon->getFromNeuron() ;
                        int result = ptShNeuron->getId();

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

See also

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

Definition at line 65 of file Con.cpp.

References from.

```
                                                                      {
        return(from.lock());
}
```

6.2.3.3 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;
                        NeuronSharedPtr ptShNeuron ( new Neuron(16) );          /
      / Neuron Id is set to 16
                        ConSharedPtr ptShCon( new Con(ptShNeuron, 12.4) );  // fr
      om points 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.

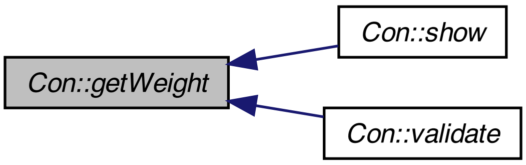
Definition at line 151 of file Con.cpp.

References weight.

Referenced by show(), and validate().

```
                        {
        return(weight);
}
```

Here is the caller graph for this function:



6.2.3.4 void Con::setFromNeuron (NeuronSharedPtr *f*)

from field accessor.

This method sets the value of the from field with the address used as parameter.

Parameters

f	A pointer to the neuron that is to be inserted in the from field.

```
        //================
        //Usage example:
        //================
        // Data set up
                        NeuronSharedPtr ptShNeuron ( new Neuron(1) );   // Neuron
       Id is set to 1
                        ConSharedPtr ptShCon( new Con() );
                        ptShCon->setFromNeuron( ptShNeuron );
        // Test
                        ptShNeuron = ptShCon->getFromNeuron() ;
                        int result = ptShNeuron->getId();

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

See also

getFromNeuron and getFromId contain usage examples. For further examples see the unit test files, e.g., runit.Cpp.Con.R

Definition at line 92 of file Con.cpp.

References from.

```
                                                {
        from=f;
}
```

6.2.3.5 void Con::setWeight (double *w*)

weight field accessor.

This method sets the value of the weight field.

Parameters

w	The new value (double) to be set in the weight field.

```
//================
//Usage example:
//================
// Data set up
                    std::vector<double> result;
                    NeuronSharedPtr ptShNeuron ( new Neuron(16) );          /
    / Neuron Id is set to 16
                    ConSharedPtr ptShCon( new Con(ptShNeuron, 12.4) );  // fr
    om points to ptShNeuron and weight is set to 12.4
                    result.push_back(ptShCon->getWeight());
      // Test
                    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

getWeight and the unit test files (e.g. runit.Cpp.Con.R)

Definition at line 180 of file Con.cpp.

References weight.

```
                                    {
        weight = w;
}
```

6.2.3.6 bool 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

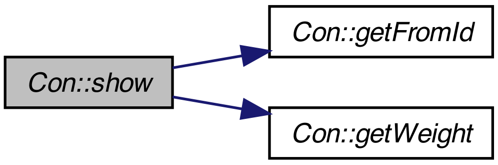
setWeight and the unit test files, e.g., runit.Cpp.Con.R, for usage examples.

Definition at line 192 of file Con.cpp.

References getFromId(), and getWeight().

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

Here is the call graph for this function:



6.2.3.7 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.

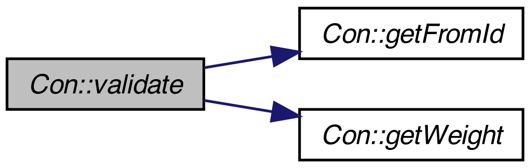
Definition at line 211 of file Con.cpp.

References getFromId(), and getWeight().

```
                    {
        BEGIN_RCPP
        if (! R_FINITE(getWeight()) )           throw std::range_error("weight is
       not finite.");
        if (getFromId() == NA_INTEGER )         throw std::range_error("fromId is
       not finite.");
```

```
        return(true);
        END_RCPP
};
```

Here is the call graph for this function:



6.2.4 Member Data Documentation

6.2.4.1 NeuronWeakPtr Con::from [private]

A smart pointer to the Neuron used as input during simulation or training.

The from field contains the address of the Neuron whose output will be used as input by the Neuron containing the Con object.

Definition at line 21 of file Con.h.

Referenced by getFromId(), getFromNeuron(), and setFromNeuron().

6.2.4.2 double Con::weight [private]

A double variable that contains the weight of the connection.

The weight field contains the factor by which the output value of the Neuron addressed by the from field is multiplied during simulation or training.

Definition at line 26 of file Con.h.

Referenced by getWeight(), and setWeight().

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

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

6.3 Neuron Class Reference

A class to handle the information contained in a general Neuron.

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

Public Member Functions

- Neuron ()
- Neuron (int Id)
- ~Neuron ()
- int getId ()
- void setId (int id)

Private Attributes

- int Id

  An integer variable with the Neuron Id.
- double outputValue

  A vector of input connections.

6.3.1 Detailed Description

A class to handle the information contained in a general Neuron.

A general class for neurons. The MLPneuron and RBFneuron classes will specialize this general class

Definition at line 16 of file Neuron.h.

6.3.2 Constructor & Destructor Documentation

6.3.2.1 Neuron::Neuron ( )

Definition at line 12 of file Neuron.cpp.

```
{};
```

6.3.2.2 Neuron::Neuron (int *Id*)

Definition at line 13 of file Neuron.cpp.

```
: Id(Id), outputValue(0.0) {};
```

6.3.2.3 Neuron::∼Neuron ( )

Definition at line 14 of file Neuron.cpp.

```
{};
```

6.3.3 Member Function Documentation

6.3.3.1 int Neuron::getId ( )

Definition at line 17 of file Neuron.cpp.

References Id.

```
                 {
        return Id;
}
```

6.3.3.2 void Neuron::setId (int *id*)

Definition at line 21 of file Neuron.cpp.

References Id.

```
                        {
        Id=id;
}
```

6.3.4 Member Data Documentation

6.3.4.1 int **Neuron::Id** [private]

An integer variable with the Neuron Id.

The Neuron Id provides a name to the neuron. This value is not expected to be used neither during simulation nor training but it provides an easy reference for human readers.

Definition at line 21 of file Neuron.h.

Referenced by getId(), and setId().

6.3.4.2 double **Neuron::outputValue** [private]

A vector of input connections.

Todo

restore vecCon<Con> listCon;

Definition at line 30 of file Neuron.h.

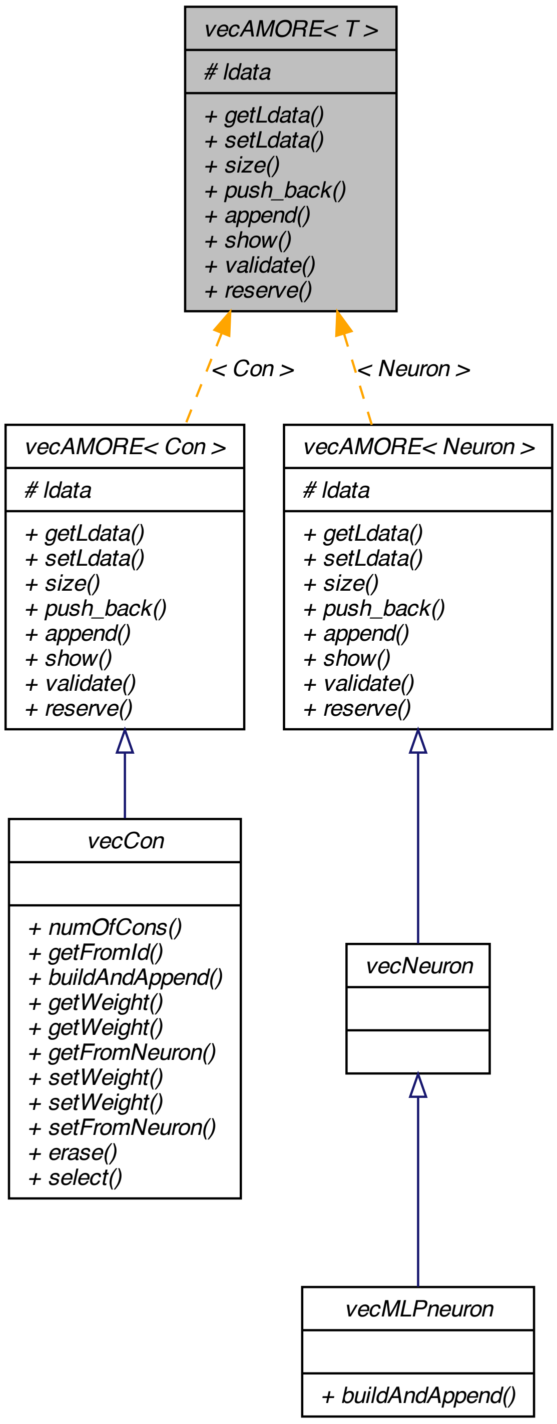
The documentation for this class was generated from the following files:

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

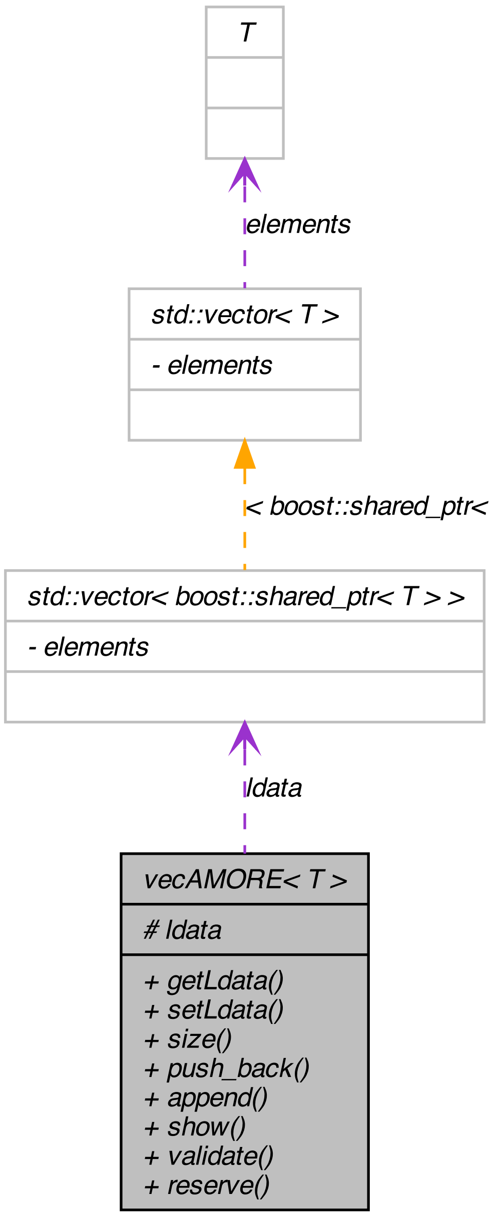
6.4 vecAMORE< T > Class Template Reference

```
#include <vecAMORE.h>
```

Inheritance diagram for vecAMORE< T >:



Collaboration diagram for vecAMORE< T >:



Public Member Functions

- std::vector< boost::shared_ptr< T > > getLdata ()

  ldata field accessor function
- void setLdata (typename std::vector< boost::shared_ptr< T > >)

  ldata field accessor function
- int size ()

  Returns the size or length of the vector.
- void push_back (boost::shared_ptr< T > element)

  Append a shared_ptr at the end of ldata.
- void append (vecAMORE< T > v)

  Appends a vecAMORE<T> object.
- bool show ()

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

  Object validator.
- void reserve (int n)

Protected Attributes

- std::vector< boost::shared_ptr< T > > ldata

6.4.1 Detailed Description

template<typename T>class vecAMORE< T >

Definition at line 12 of file vecAMORE.h.

6.4.2 Member Function Documentation

6.4.2.1 template<typename T> void vecAMORE< T >::append (vecAMORE< T > *v*)

Appends a vecAMORE<T> object.

This method inserts the ldata field of a second object at the end of the ldata field of the calling object.

Parameters

v	The vecAMORE<T> object to be added to the current one

See also

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

```
//================
//Usage example:
//================
// Data set up
                        std::vector<int> result;
                        std::vector<ConSharedPtr> vcA, vcB;
                        vecAMOREneuronSharedPtr ptShvNeuron( new
 vecAMORE<Neuron>() );
                        vecAMOREconSharedPtr    ptShvConA( new
 vecAMORE<Con>() );
                        vecAMOREconSharedPtr    ptShvConB( new
 vecAMORE<Con>() );
                        ConSharedPtr    ptC;
                        NeuronSharedPtr ptN;
                        int ids[]= {1, 2, 3, 4, 5, 6};
                        double weights[] = {1.13, 2.22, 3.33, 5.6, 4.2, 3
 .6 };
                        for (int i=0; i<=5 ; i++) {                    /
 / Let's create a vector with six neurons
                                ptN.reset( new Neuron( ids[i] ) );
                                ptShvNeuron->push_back(ptN);
                        }
                        for (int i=0; i<=2 ; i++) {                    /
 / A vector with three connections
                                ptC.reset( new Con( ptShvNeuron->getLdata
 ().at(i), weights[i]) );
                                ptShvConA->push_back(ptC);
                        }
                        for (int i=3; i<=5 ; i++) {                    /
 / Another vector with three connections
                                ptC.reset( new Con( ptShvNeuron->getLdata
 ().at(i), weights[i]) );
                                ptShvConB->push_back(ptC);
                        }
// Test
                        ptShvConA->append(*ptShvConB);
                        ptShvConA->validate();
                        ptShvConA->show() ;

// After execution of the code above, the output at the R terminal would
 display:
//
//  From:       1       Weight=        1.130000
//      From:   2       Weight=        2.220000
//      From:   3       Weight=        3.330000
//      From:   4       Weight=        5.600000
//      From:   5       Weight=        4.200000
//      From:   6       Weight=        3.600000
```

See also

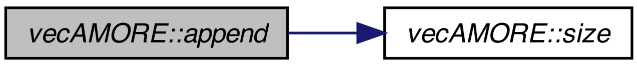
vecAMORE::setLdata , vecAMORE::push_back and the unit test files, e.g., runit.Cpp.vecAMORE.R, for usage examples.

Definition at line 166 of file vecAMORE.cpp.

References vecAMORE< T >::ldata, and vecAMORE< T >::size().

```
                                                              {
        ldata.reserve(ldata.size() + v.size());
        ldata.insert( ldata.end(), v.ldata.begin(), v.ldata.end() );
};
```

Here is the call graph for this function:



6.4.2.2 template<typename T > std::vector< boost::shared_ptr< T > > vecAMORE< T >::getLdata ( )

ldata field accessor function

This method allows access to the data stored in the ldata field.

Returns

The ldata vector.

```
    //================
    //Usage example:
    //================
            // Data set up
                            std::vector<int> result;
                            std::vector<ConSharedPtr> vcA, vcB;
                            vecAMOREneuronSharedPtr ptShvNeuron( new
vecAMORE<Neuron>() );
                            vecAMOREconSharedPtr    ptShvCon( new
vecAMORE<Con>() );
                            ConSharedPtr    ptC;
                            NeuronSharedPtr 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] ) );
                                    ptShvNeuron->push_back(ptN);
                            }
                            for (int i=0; i<=2 ; i++) {                     /
/ and a vector with three connections
                                    ptC.reset( new Con( ptShvNeuron->getLdata
().at(i), weights[i]) );
                                    vcA.push_back(ptC);
                            }
            // Test
                    ptShvCon->setLdata(vcA);
                    vcB = ptShvCon->getLdata();
                    for (int i=0; i<=2 ; i++) {                             /
/ get Ids. vecAMORE does not have getFromId defined
                                    result.push_back( vcB.at(i)->getFromId())
;
```

```
                        }

                // Now, result is an integer vector with values 10, 20, 30.
```

See also

setLdata and the unit test files, e.g., runit.Cpp.vecAMORE.R, for usage examples.

Definition at line 211 of file vecAMORE.cpp.

```
                                                                                        {
        return ldata;
};
```

6.4.2.3 template<typename T> void vecAMORE< T >::push_back (boost::shared_ptr< T > *TsharedPtr*)

Append a shared_ptr at the end of ldata.

Implements push_back for the vecAMORE class

Parameters

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

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

                        vc = MyvecCon.getLdata();

                        result.push_back(vc.at(0)->getFromId());
                        result.push_back(vc.at(1)->getFromId());
                        result.push_back(vc.at(2)->getFromId());
  // 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.vecAMORE.R, for usage examples.

Definition at line 44 of file vecAMORE.cpp.

```
                                                                                {
        ldata.push_back(TsharedPtr);
};
```

6.4.2.4 template<typename T > void vecAMORE< T >::reserve (int *n*)

Definition at line 239 of file vecAMORE.cpp.

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

6.4.2.5 template<typename T> void vecAMORE< T >::setLdata (typename std::vector< boost::shared_ptr< T > > *v*)

ldata field accessor function

This method sets the value of the data stored in the ldata field.

Parameters

v	The vector of smart pointers to be stored in the ldata field

See also

getLdata and the unit test files, e.g., runit.Cpp.vecAMORE.R, for usage examples.

Definition at line 223 of file vecAMORE.cpp.

```
        {
        ldata=v;
};
```

6.4.2.6 template<typename T > bool vecAMORE< T >::show ( )

Pretty print of the vecAMORE<T>

This method outputs in the R terminal the contents of vecAMORE::ldata.

Returns

true in case everything works without throwing an exception

*

```
            //================
            //Usage example:
            //================
            // Data set up
                    vecAMOREneuronSharedPtr ptShvNeuron( new
      vecAMORE<Neuron>() );
                    vecAMOREconSharedPtr    ptShvCon( new vecAMORE<Con>() );
                    ConSharedPtr    ptC;
                    NeuronSharedPtr 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] ) );
                            ptShvNeuron->push_back(ptN);
                    }

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

            // Test
                    ptShvCon->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.vecAMORE.R, for usage examples.

Definition at line 93 of file vecAMORE.cpp.

```
                                            {
        // This is equivalent to:
        // for( auto x : ldata) { x.show(); }
        // Waiting for C++0x
        for(typename std::vector< boost::shared_ptr<T>  >::iterator itr = ldata.b
      egin();   itr != ldata.end();   itr++)  { (*itr)->show(); }
        return true;
};
```

6.4.2.7 template<typename T > int vecAMORE< T >::size ( )

Returns the size or length of the vector.

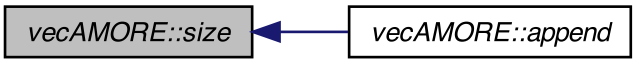
This method returns the size of the vector. In the classes derived from vecAMORE<T> this is aliased as numOfCons, numOfNeurons and numOfLayers. The unit test files, e.g., runit.Cpp.vecAMORE.R, for usage examples.

Definition at line 234 of file vecAMORE.cpp.

Referenced by vecAMORE< T >::append().

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

Here is the caller graph for this function:



6.4.2.8 template<typename T > bool vecAMORE< T >::validate ( )

Object validator.

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

See also

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

Definition at line 108 of file vecAMORE.cpp.

```
                                                     {
        for(typename std::vector< boost::shared_ptr<T>  >::iterator itr = ldata.b
      egin();   itr != ldata.end();   itr++)  { (*itr)->validate(); }
        return true;
};
```

6.4.3 Member Data Documentation

6.4.3.1 template<typename T> std::vector<boost::shared_ptr<T> > vecAMORE< T >::ldata [protected]

Definition at line 14 of file vecAMORE.h.

Referenced by vecAMORE< T >::append().

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

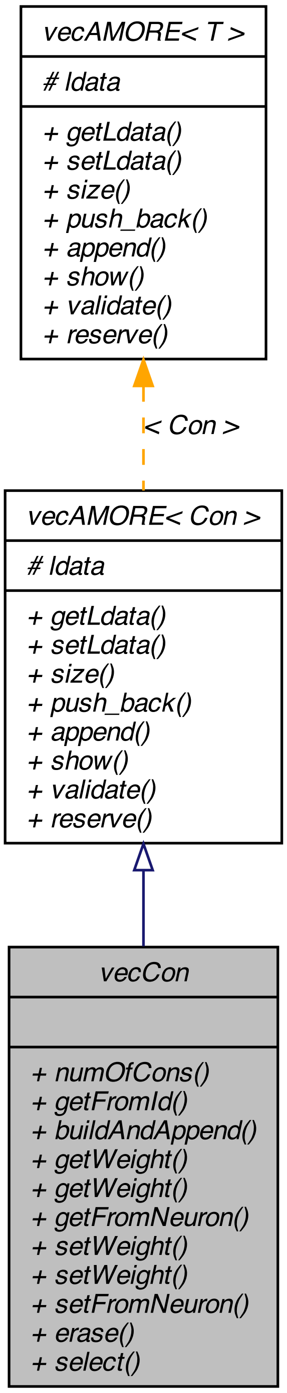
- pkg/AMORE/src/vecAMORE.h
- pkg/AMORE/src/vecAMORE.cpp

6.5 vecCon Class Reference

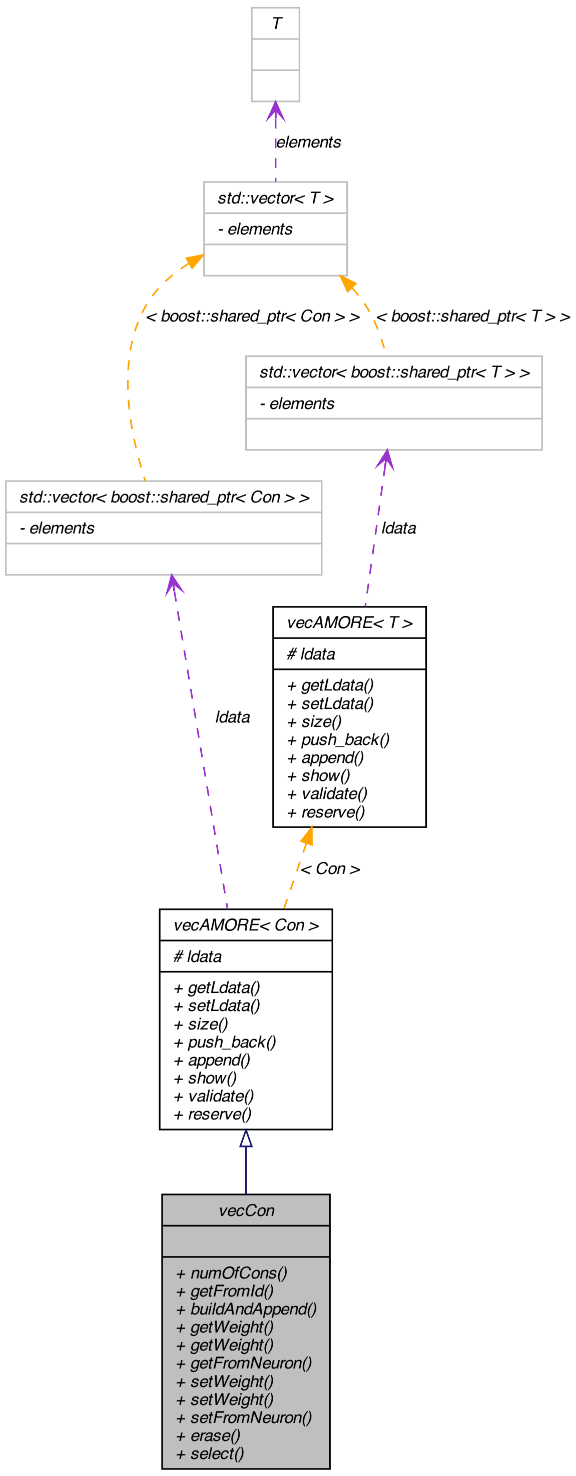
A vector of connections.

```
#include <vecCon.h>
```

Inheritance diagram for vecCon:



Collaboration diagram for vecCon:



Public Member Functions

- int numOfCons ()

  Size of the vecCon object.
- std::vector< int > getFromId ()

  Getter of the Id values of the vector of Cons.
- bool buildAndAppend (std::vector< NeuronSharedPtr > vFrom, std::vector< double > vWeight)

  Builds Con objects and appends them to ldata.
- std::vector< double > getWeight ()

  Getter of the weight field of the Con objects related to vecCon.
- std::vector< double > getWeight (std::vector< int > vFrom)

  Getter of the weights of the specified elements from the vecCom object.
- std::vector< NeuronSharedPtr > getFromNeuron ()

  Getter of the from field of the Con objects related to vecCon.
- bool setWeight (std::vector< double > vWeight)

  Setter of the weight field of the Con objects related to vecCon.
- bool setWeight (std::vector< double > vWeight, std::vector< int > vFrom)

  Setter of the weights of the specified elements from the vecCon object.
- bool setFromNeuron (std::vector< NeuronSharedPtr > vFrom)

  Setter of the from fields of the Con objects related to vecCon.
- void erase (std::vector< int > vFrom)

  Erase the specified elements from the vecCom object.
- vecConSharedPtr select (std::vector< int > vFrom)

  Selects the specified elements from the vecCom object.

6.5.1 Detailed Description

A vector of connections.

The vecCon class provides a simple class for a vector of connections. It's named after the R equivalent Reference Class.

Definition at line 17 of file vecCon.h.

6.5.2 Member Function Documentation

6.5.2.1 bool vecCon::buildAndAppend (std::vector< NeuronSharedPtr > *FROM*, std::vector< double > *WEIGHT*)

Builds Con objects and appends them to ldata.

This function provides a convenient way of populating a vecCon object by building and apending Con objects to ldata.

Parameters

FROM	A vector of smart pointers to the neurons to be used in the Con::from fields
WEIGHT	A vector of values to be set in the Con::weight fields

```
//================
//Usage example:
//================
// Data set up
        std::vector<int> result;
        vecCon MyvecCon;
        std::vector<NeuronSharedPtr> vNeuron;
        std::vector<double> vWeight;


// Test
        NeuronSharedPtr ptNeuron( new Neuron(11) );
        vNeuron.push_back(ptNeuron);
        ptNeuron.reset( new Neuron(22) );
        vNeuron.push_back(ptNeuron);
        ptNeuron.reset( new Neuron(33) );
        vNeuron.push_back(ptNeuron);

        vWeight.push_back(12.3);
        vWeight.push_back(1.2);
        vWeight.push_back(2.1);

        MyvecCon.buildAndAppend(vNeuron, vWeight);

        result=MyvecCon.getFromId();

// Now result is a vector that contains the values 11, 22 and 32.
```

See also

append and the unit test files, e.g. runit.Cpp.vecCon.R, for further examples.

Definition at line 130 of file vecCon.cpp.

References vecAMORE< Con >::ldata.

```
         {
  BEGIN_RCPP
  if (FROM.empty()) { throw std::range_error("[vecCon::append]: Error, FROM
 is empty"); }
  if (FROM.size() != WEIGHT.size() ) { throw std::range_error("[vecCon::bui
ldAndAppend]: Error, FROM.size() != WEIGHT.size()"); }
  ldata.reserve(ldata.size() + FROM.size());
  ConSharedPtr ptCon;
  std::vector<double>::iterator itrWEIGHT = WEIGHT.begin();
  for(  std::vector<NeuronSharedPtr>::iterator itrFROM=FROM.begin();  itrFR
OM != FROM.end();       itrFROM++ , itrWEIGHT++)        {
                ptCon.reset(  new Con( *itrFROM, *itrWEIGHT) );
                ldata.push_back(ptCon);
  }
  return true;
  END_RCPP
}
```

6.5.2.2 void vecCon::erase (std::vector< int > *vFrom*)

Erase the specified elements from the vecCom object.

Provides a convenient way of removing some Con objects from the Idata field of the vecCon object.

Parameters

vFrom	An std::vector<int> with the Ids of the connections to remove.

```
        //================
        //Usage example:
        //================

        // Data set up
                        std::vector<int> result;
                        std::vector<NeuronSharedPtr> vNeuron;
                        vecConSharedPtr ptShvCon( new vecCon() );
                        vecConSharedPtr vErased;
                        ConSharedPtr    ptC;
                        NeuronSharedPtr ptN;
                        int ids[]= {11, 10, 9, 3, 4, 5, 6, 7, 8, 2, 1};
                        std::vector<double> vWeight;
                        vWeight.push_back(11.32);
                        vWeight.push_back(1.26);
                        vWeight.push_back(2.14);
                        vWeight.push_back(3.16);
                        vWeight.push_back(4.14);
                        vWeight.push_back(5.19);
                        vWeight.push_back(6.18);
                        vWeight.push_back(7.16);
                        vWeight.push_back(8.14);
                        vWeight.push_back(9.12);
                        vWeight.push_back(10.31);

                        for (int i=0; i<vWeight.size() ; i++) {                    /
      / Let's create a vector with three neurons
                                ptN.reset( new Neuron( ids[i] ) );
                                vNeuron.push_back(ptN);
                        }
                        ptShvCon->buildAndAppend(vNeuron, vWeight);

                        // Test

                        std::vector<int> toRemove;
                        toRemove.push_back(1);
                        toRemove.push_back(3);
                        toRemove.push_back(5);
                        toRemove.push_back(7);

                        ptShvCon->erase(toRemove);
                        ptShvCon->show();
                        result=ptShvCon->getFromId();

                // The output at the R terminal would display :
                //
                // From:        2       Weight=         9.120000
                // From:        4       Weight=         4.140000
                // From:        6       Weight=         6.180000
                // From:        8       Weight=         8.140000
                // From:          9       Weight=         2.140000
                // From:          10  Weight=     1.260000
                // From:          11  Weight=     11.320000
```

See also

select and the unit test files, e.g. runit.Cpp.vecCon.R, for further examples.

Definition at line 445 of file vecCon.cpp.

References vecAMORE< Con >::ldata.

```
                                     {
        std::vector<ConSharedPtr>::iterator itr;
        sort (ldata.begin(), ldata.end(), CompareId());
        sort (vFrom.begin(), vFrom.end());
        itr=set_difference (ldata.begin(), ldata.end(), vFrom.begin(), vFrom.end(
      ), ldata.begin(), CompareId());
        ldata.resize(itr-ldata.begin());
}
```

6.5.2.3 std::vector< int > vecCon::getFromId ( )

Getter of the Id values of the vector of Cons.

This function returns the Id's of the neurons referred to by the vector of Cons.

Returns

An std::vector<int> that contains the Ids

```
  //================
  //Usage example:
  //================
        // Data set up
                        Neuron N1, N2, N3;
                        vecCon MyvecCon;
                        std::vector<int> result;

                        N1.setId(10);
                        N2.setId(20);
                        N3.setId(30);

                        ConSharedPtr ptCon( new Con(&N1, 1.13) );       // Create
       new Con and initialize ptCon
                        MyvecCon.push_back(ptCon);                             /
      / push_back
                        ptCon.reset(  new Con(&N2, 2.22) );             // create
       new Con and assign to ptCon
                        MyvecCon.push_back(ptCon);                             /
      / push_back
                        ptCon.reset(  new Con(&N3, 3.33) );             // create
       new Con and assign to ptCon
                        MyvecCon.push_back(ptCon);                             /
      / push_back

        // Test
```

```
                        MyvecCon.show() ;
                        MyvecCon.validate();
                        result=MyvecCon.getFromId();

        // Now result is a vector that contains the values 10, 20 and 30.
```

See also

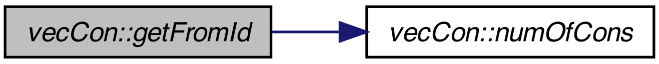
getWeight and the unit test files, e.g. runit.Cpp.vecCon.R, for further examples.

Definition at line 83 of file vecCon.cpp.

References vecAMORE< Con >::ldata, and numOfCons().

```
                                  {
        std::vector<int> result;
        result.reserve(numOfCons());
        for(std::vector<ConSharedPtr>::iterator itr = ldata.begin();   itr !=
      ldata.end();   itr++)   { result.push_back((*itr)->getFromId()); }
        return result;
}
```

Here is the call graph for this function:



6.5.2.4 std::vector< NeuronSharedPtr > vecCon::getFromNeuron ( )

Getter of the from field of the Con objects related to vecCon.

This function provides a convenient way of getting the values of the weight field of those Con object pointed to by the smart pointer stored in the vecCon object.

Returns

An std::vector<NeuronSharedPtr> with the pointer to the incoming neurons.

```
        //================
        //Usage example:
        //================
        // Data set up
                std::vector<double> result;
                int ids[]= {1, 2, 3};
                double weights[] = {12.3, 1.2, 2.1 };
                vecCon MyvecCon;
                std::vector<NeuronSharedPtr> vNeuron;
                std::vector<double> vWeight;
                NeuronSharedPtr ptNeuron;

                        for (int i=0; i<=2; i++) {
                                ptNeuron.reset( new Neuron(ids[i]) );
                                vNeuron.push_back(ptNeuron);
                                vWeight.push_back(weights[i]);
                        }
                        MyvecCon.buildAndAppend(vNeuron, vWeight);
                // Test
                        vNeuron=MyvecCon.getFromNeuron();
                        for (int i=0; i<=2; i++) {
                                result.push_back(vNeuron.at(i)->getId());
                        }

        // Now result is a vector that contains the values 1, 2 and 3 .
```

See also

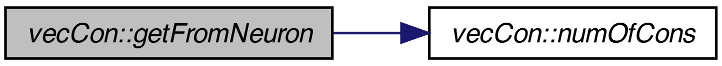
getFromId and the unit test files, e.g. runit.Cpp.vecCon.R, for further examples.

Definition at line 288 of file vecCon.cpp.

References vecAMORE< Con >::ldata, and numOfCons().

```
                                                    {
        std::vector<NeuronSharedPtr> result;
        result.reserve(numOfCons());
        for(std::vector<ConSharedPtr>::iterator itr = ldata.begin();   itr !=
      ldata.end();   itr++)    {
                result.push_back((*itr)->getFromNeuron());
        }
        return result;
}
```

Here is the call graph for this function:



6.5.2.5 std::vector< double > vecCon::getWeight ( )

Getter of the weight field of the Con objects related to vecCon.

This function provides a convenient way of getting the values of the weight field of those Con object pointed to by the smart pointer stored in the vecCon object.

Returns

A numeric (double) vector with the weights

```
//================
//Usage example:
//================
// Data set up
        std::vector<double> result;
        vecCon MyvecCon;
        std::vector<NeuronSharedPtr> vNeuron;
        std::vector<double> vWeight;


// Test
        NeuronSharedPtr ptNeuron( new Neuron(11) );
        vNeuron.push_back(ptNeuron);
        ptNeuron.reset( new Neuron(22) );
        vNeuron.push_back(ptNeuron);
        ptNeuron.reset( new Neuron(33) );
        vNeuron.push_back(ptNeuron);

        vWeight.push_back(12.3);
        vWeight.push_back(1.2);
        vWeight.push_back(2.1);

        MyvecCon.buildAndAppend(vNeuron, vWeight);

        result=MyvecCon.getWeight();

// Now result is a vector that contains the values 12.3, 1.2 and 2.1 .
```

See also

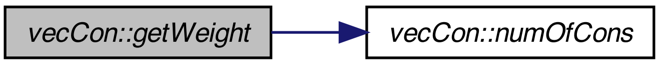
getFromId and the unit test files, e.g. runit.Cpp.vecCon.R, for further examples.

Definition at line 185 of file vecCon.cpp.

References vecAMORE< Con >::ldata, and numOfCons().

```
                                            {
        std::vector<double> result;
        result.reserve(numOfCons());
        for(std::vector<ConSharedPtr>::iterator itr = ldata.begin();   itr !=
      ldata.end();   itr++)   { result.push_back((*itr)->getWeight()); }
        return result;
}
```

Here is the call graph for this function:



6.5.2.6 std::vector< double > vecCon::getWeight (std::vector< int > *vFrom*)

Getter of the weights of the specified elements from the vecCom object.

Provides a convenient way of getting the weights of some Con objects from the Idata field of the vecCon object.

Parameters

vFrom	An std::vector<int> with the Ids of the connections to select

Returns

An std::vector<double> with the weights of the selected connections

```
  //================
  //Usage example:
  //================

  // Data set up

          std::vector<double> result;
          std::vector<NeuronSharedPtr> vNeuron;
          vecConSharedPtr ptShvCon( new vecCon() );
          ConSharedPtr    ptC;
          NeuronSharedPtr ptN;
          int ids[]= {11, 10, 9, 3, 4, 5, 6, 7, 8, 2, 1};
          double weights[]={11.32, 1.26, 2.14, 3.16, 4.14, 5.19, 6.18, 7.16
, 8.14, 9.12, 10.31};
          std::vector<double> vWeight;
          for (int i=0; i<11; i++) {
                  vWeight.push_back(weights[i]);
          }
          for (int i=0; i<vWeight.size() ; i++) {                         /
/ Let's create a vector with three neurons
                  ptN.reset( new Neuron( ids[i] ) );
                  vNeuron.push_back(ptN);
          }
          ptShvCon->buildAndAppend(vNeuron, vWeight);

  // Test
          std::vector<int> toSelect;
          toSelect.push_back(1);
          toSelect.push_back(3);
          toSelect.push_back(5);
          toSelect.push_back(7);

          result=ptShvCon->getWeight(toSelect);

  // Now, result is a numeric vector with the values  10.31, 3.16,  5.19 an
d 7.16.
```

See also

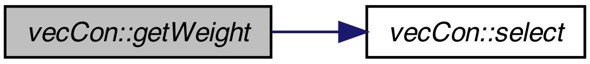
setWeigth and the unit test files, e.g. runit.Cpp.vecCon.R, for further examples.

Definition at line 558 of file vecCon.cpp.

References select().

```
                                                                                        {
        return  select(vFrom)->getWeight();
}
```

Here is the call graph for this function:



6.5.2.7 int vecCon::numOfCons ( )

Size of the vecCon object.

This function returns the size of the vecCon object, that is to say, the number of Con objects it contains.

Returns

The size of the vector

```
  //================
  //Usage example:
  //================
        // Data set up
                                std::vector<int> result;
                                std::vector<ConSharedPtr> vcA, vcB;
                                vecAMOREneuronSharedPtr ptShvNeuron( new
      vecAMORE<Neuron>() );
                                vecConSharedPtr ptShvCon( new vecCon() );
                                ConSharedPtr    ptC;
                                NeuronSharedPtr 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] ) );
                                        ptShvNeuron->push_back(ptN);
                                }
        // Test
                                for (int i=0; i<=2 ; i++) {                          /
      / and a vector with three connections
                                        result.push_back(ptShvCon->numOfCons());
      / Append numOfCons to result, create new Con and push_back into MyvecCon
                                        ptC.reset( new Con( ptShvNeuron->getLdata
      ().at(i), weights[i]) );
                                        ptShvCon->push_back(ptC);
                                }
        // Now, result contains a numeric vector with values 0, 1, 2, and 3.
```

See also

vecAMORE::size (alias)

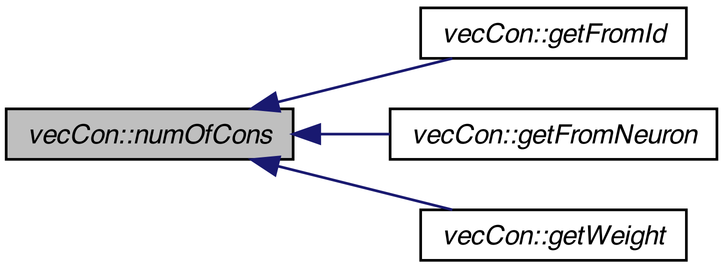
Definition at line 42 of file vecCon.cpp.

References vecAMORE< Con >::ldata.

Referenced by getFromId(), getFromNeuron(), and getWeight().

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

Here is the caller graph for this function:



6.5.2.8 vecConSharedPtr vecCon::select (std::vector< int > *vFrom*)

Selects the specified elements from the vecCom object.

Provides a convenient way of selecting some Con objects from the ldata field of the vecCon object.

Parameters

vFrom	An std::vector<int> with the Ids of the connections to select.

```
        //================
        //Usage example:
        //================
        // Data set up
                std::vector<int> result;
                std::vector<NeuronSharedPtr> vNeuron;
                vecConSharedPtr ptShvCon( new vecCon() );
                ConSharedPtr    ptC;
                NeuronSharedPtr ptN;
                int ids[]= {11, 10, 9, 3, 4, 5, 6, 7, 8, 2, 1};
                double weights[]={11.32, 1.26, 2.14, 3.16, 4.14, 5.19, 6.18, 7.16
      , 8.14, 9.12, 10.31};
                std::vector<double> vWeight;
                for (int i=0; i<11; i++) {
                        vWeight.push_back(weights[i]);
                }
                for (int i=0; i<vWeight.size() ; i++) {                         /
      / Let's create a vector with three neurons
                        ptN.reset( new Neuron( ids[i] ) );
                        vNeuron.push_back(ptN);
                }
                ptShvCon->buildAndAppend(vNeuron, vWeight);
                // Test
                std::vector<int> toSelect;
                toSelect.push_back(1);
                toSelect.push_back(3);
                toSelect.push_back(5);
                toSelect.push_back(7);

                vecConSharedPtr  vSelect (  ptShvCon->select(toSelect)  );
                result=vSelect->getFromId();

                // Now, result is a numeric vector with the values 1, 3, 5 and 7.
```

See also

erase and the unit test files, e.g. runit.Cpp.vecCon.R, for further examples.

Definition at line 497 of file vecCon.cpp.

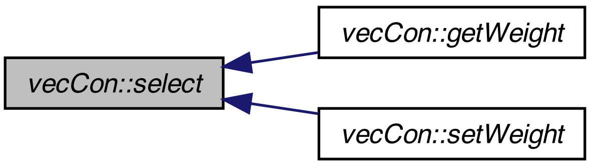
References vecAMORE< Con >::ldata.

Referenced by getWeight(), and setWeight().

```
                                                        {
        vecConSharedPtr result(new vecCon );
        result->reserve(ldata.size());
        sort (ldata.begin(), ldata.end(), CompareId());
        sort (vFrom.begin(), vFrom.end());
        set_intersection(ldata.begin(), ldata.end(), vFrom.begin(), vFrom.end(),
      back_inserter(result->ldata) , CompareId());

        return result;
}
```

Here is the caller graph for this function:



6.5.2.9 bool vecCon::setFromNeuron (std::vector< NeuronSharedPtr > *vFrom*)

Setter of the from fields of the Con objects related to vecCon.

This function provides a convenient way of getting the values of the weight field of those Con object pointed to by the smart pointer stored in the vecCon object.

Parameters

vFrom	An std::vector<NeuronSharedPtr> with the pointers to be set in the from fields of the vecCon object.

Returns

true if not exception is thrown

```
    //================
    //Usage example:
    //================

    // Data set up
            std::vector<int> result;
            vecAMOREneuronSharedPtr ptShvNeuron( new vecAMORE<Neuron>() );
            vecConSharedPtr ptShvCon( new vecCon() );
            ConSharedPtr    ptC;
            NeuronSharedPtr 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] ) );
                    ptShvNeuron->push_back(ptN);
            }
            for (int i=0; i<=2 ; i++) {                              // and a
  vector with three connections
                    ptC.reset( new Con() );
                    ptShvCon->push_back(ptC);
```

```
                }
        // Test
                ptShvCon->setFromNeuron(ptShvNeuron->getLdata()) ;
                ptShvCon->show();
                result=ptShvCon->getFromId();

        // Now result is a vector that contains the values 10, 20 and 30.
```

See also

getFromNeuron and the unit test files, e.g. runit.Cpp.vecCon.R, for further examples.

Definition at line 343 of file vecCon.cpp.

References vecAMORE< Con >::ldata.

```
                                                                  {
        BEGIN_RCPP
                if (vFrom.empty()) { throw std::range_error("[ C++ vecCon::setFro
      mNeuron]: Error, w is empty"); }
                if (vFrom.size() != ldata.size() ) { throw std::range_error("[C++
       vecCon::setFromNeuron]: Error, w.size() != ldata.size()"); }
                std::vector<NeuronSharedPtr>::iterator itrFrom = vFrom.begin();
                for(std::vector<ConSharedPtr>::iterator itr = ldata.begin();   it
      r != ldata.end();   itr++, itrFrom++)    {
                        (*itr)->setFromNeuron( *itrFrom );
                }

                return true;
                END_RCPP
}
```

6.5.2.10 bool vecCon::setWeight (std::vector< double > *vWeight*, std::vector< int > *vFrom*)

Setter of the weights of the specified elements from the vecCon object.

Provides a convenient way of setting the weights of some Con objects from the ldata field of the vecCon object.

Parameters

vWeight	A numeric (double) vector with the weights to be set in the Con objects contained in the vecCon object.
vFrom	An std::vector<int> with the Ids of the connections to select

Returns

true in case no exception is thrown

```
        //================
        //Usage example:
        //================

        // Data set up
                std::vector<double> result;
```

```
                  std::vector<NeuronSharedPtr> vNeuron;
                  vecConSharedPtr ptShvCon( new vecCon() );
                  ConSharedPtr    ptC;
                  NeuronSharedPtr ptN;
                  int ids[]= {11, 10, 9, 3, 4, 5, 6, 7, 8, 2, 1};
                  double weights[]={11.32, 1.26, 2.14, 3.16, 4.14, 5.19, 6.
18, 7.16, 8.14, 9.12, 10.31};
                  std::vector<double> vWeight;
                  for (int i=0; i<11; i++) {
                  vWeight.push_back(weights[i]);
                  }
                  for (int i=0; i<vWeight.size() ; i++) {                 /
/ Let's create a vector with three neurons
                  ptN.reset( new Neuron( ids[i] ) );
                  vNeuron.push_back(ptN);
                  }
                  ptShvCon->buildAndAppend(vNeuron, vWeight);

                  std::vector<int> toSelect;
                  std::vector<double> vNewWeights;
                  toSelect.push_back(1);
                  toSelect.push_back(3);
                  toSelect.push_back(5);
                  toSelect.push_back(7);
                  vNewWeights.push_back(1000.1);
                  vNewWeights.push_back(3000.3);
                  vNewWeights.push_back(5000.5);
                  vNewWeights.push_back(7000.7);
                  ptShvCon->setWeight(vNewWeights, toSelect);

  // Test
                  result = ptShvCon->getWeight();
                  return wrap(result);

  // Now, result is a numeric vector with the values  1000.10, 9.12, 3000.3
0, 4.14, 5000.50, 6.18, 7000.70, 8.14, 2.14, 1.26 and 11.32 .
```

See also

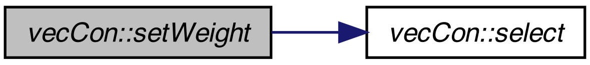
getWeigth and the unit test files, e.g. runit.Cpp.vecCon.R, for further examples.

Definition at line 620 of file vecCon.cpp.

References select().

```
        {
         BEGIN_RCPP
         return  select(vFrom)->setWeight(vWeight);
         END_RCPP
}
```

Here is the call graph for this function:



6.5.2.11 bool vecCon::setWeight (std::vector< double > *vWeight*)

Setter of the weight field of the Con objects related to vecCon.

This function provides a convenient way of setting the values of the weight field of those Con objects pointed to by the smart pointer stored in the vecCon object.

Parameters

vWeight	A numeric (double) vector with the weights to be set in the Con objects contained in the vecCon object.

Returns

true in case no exception is thrown

```
    //================
    //Usage example:
    //================
    // Data set up
            std::vector<double> result;
                    int ids[]= {1, 2, 3};
                    double weights[] = {12.3, 1.2, 2.1 };
                    vecCon MyvecCon;
                    std::vector<NeuronSharedPtr> vNeuron;
                    std::vector<double> vWeight;
                    NeuronSharedPtr ptNeuron;

                    for (int i=0; i<=2; i++) {
                    ptNeuron.reset( new Neuron(ids[1]) );
                    vNeuron.push_back(ptNeuron);
                    vWeight.push_back(0);                                   /
  / weights are set to 0
                    }
                    MyvecCon.buildAndAppend(vNeuron, vWeight);
                    MyvecCon.show();

                    for (int i=0; i<=2; i++) {
                            vWeight.at(i)=weights[i];
                    }
    // Test
                    MyvecCon.setWeight(vWeight);                    // weight
  s are set to 12.3, 1.2 and 2.1
```

```
                        result=MyvecCon.getWeight();

        // Now result is a vector that contains the values 12.3, 1.2 and 2.1 .
```

See also

getWeight and the unit test files, e.g. runit.Cpp.vecCon.R, for further examples.

Definition at line 235 of file vecCon.cpp.

References vecAMORE< Con >::ldata.

```
                                                  {
        BEGIN_RCPP
        if (vWeight.empty()) { throw std::range_error("[ C++ vecCon::setWeight]:
      Error, vWeight is empty"); }
        if (vWeight.size() != ldata.size() ) { throw std::range_error("[C++ vecCo
      n::setWeight]: Error, vWeight.size() != ldata.size()"); }
        std::vector<double>::iterator itrWeight = vWeight.begin();
        for(std::vector<ConSharedPtr>::iterator itr = ldata.begin();   itr !=
      ldata.end();   itr++, itrWeight++)      {
                (*itr)->setWeight( *itrWeight );
        }
        return true;
        END_RCPP
}
```

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

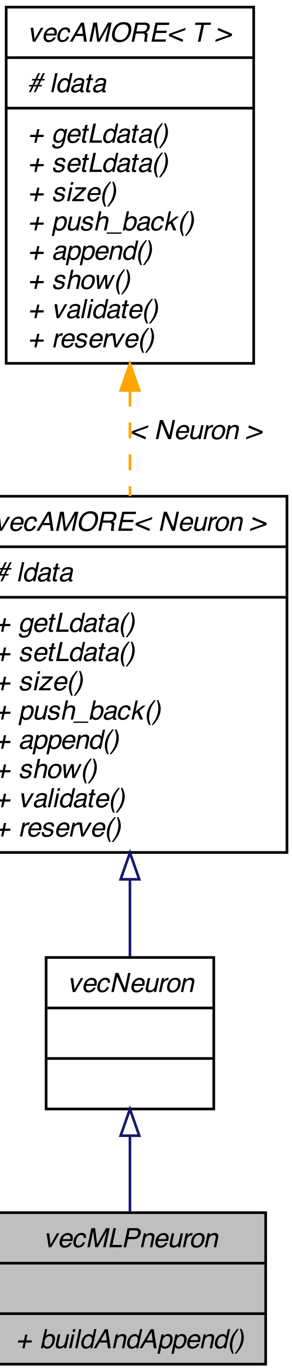
- pkg/AMORE/src/vecCon.h
- pkg/AMORE/src/vecCon.cpp

6.6 vecMLPneuron Class Reference

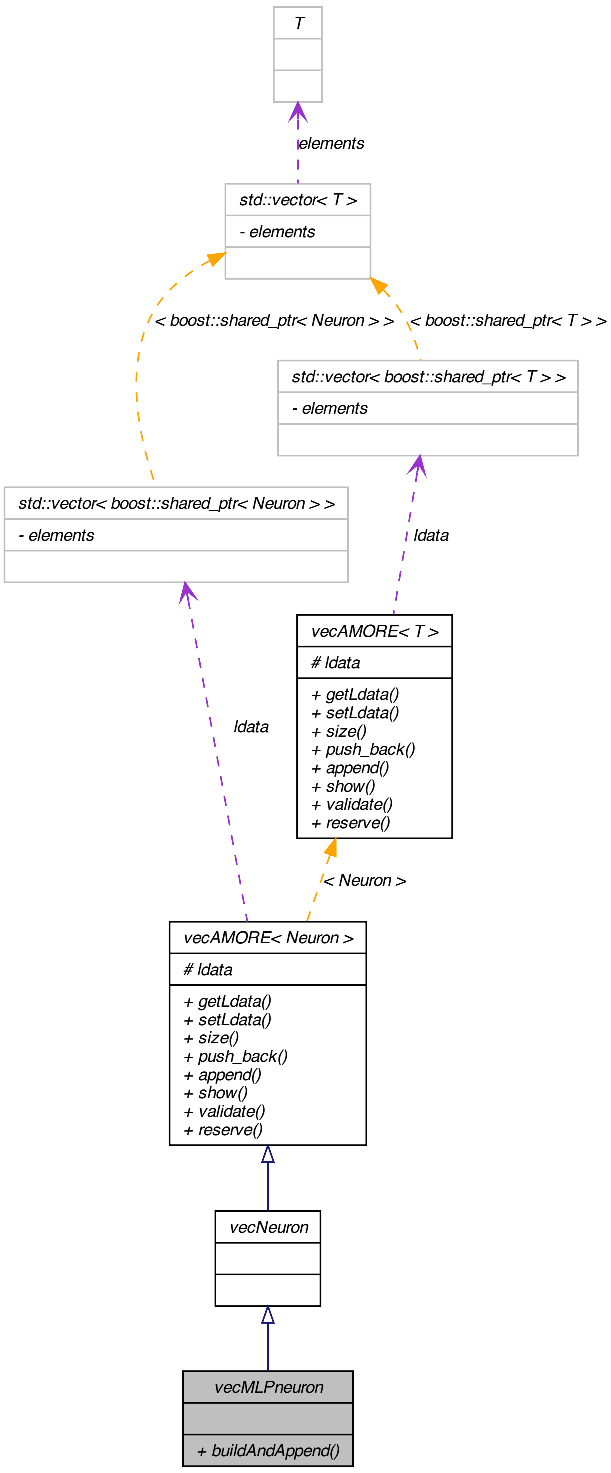
A vector of connections.

`#include <vecMLPneuron.h>`

Inheritance diagram for vecMLPneuron:



Collaboration diagram for vecMLPneuron:



Public Member Functions

- bool buildAndAppend (std::vector< int > IDS, std::vector< int > BIAS, vecCon VC)

6.6.1 Detailed Description

A vector of connections.

The vecCon class provides a simple class for a vector of connections. It's named after the R equivalent Reference Class.

Definition at line 17 of file vecMLPneuron.h.

6.6.2 Member Function Documentation

6.6.2.1 bool vecMLPneuron::buildAndAppend (std::vector< int > *IDS*, std::vector< int > *BIAS*, vecCon *VC*)

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

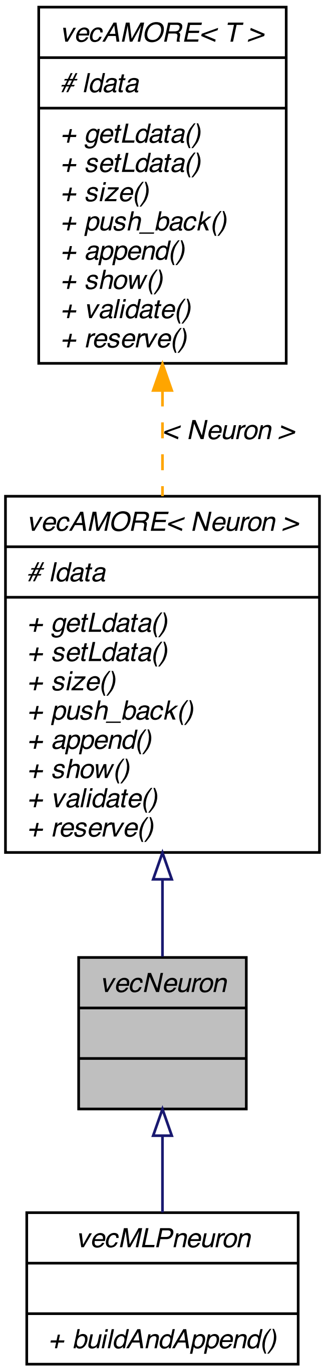
- pkg/AMORE/src/vecMLPneuron.h

6.7 vecNeuron Class Reference

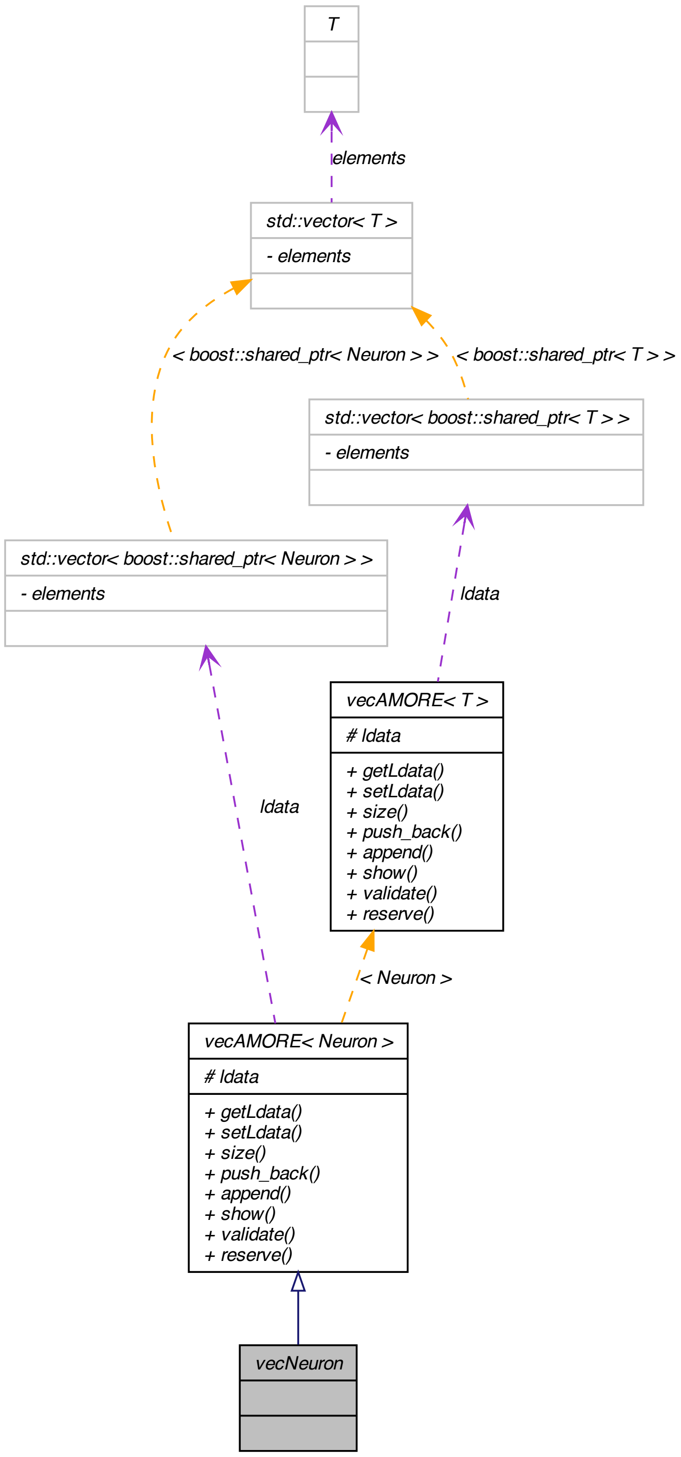
A vector of neurons.

```
#include <vecNeuron.h>
```

Inheritance diagram for vecNeuron:



Collaboration diagram for vecNeuron:



6.7.1 Detailed Description

A vector of neurons.

The vecNeuron class provides a simple class for a vector of neurons. It's named after the R equivalent Reference Class.

Definition at line 18 of file vecNeuron.h.

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

- pkg/AMORE/src/vecNeuron.h

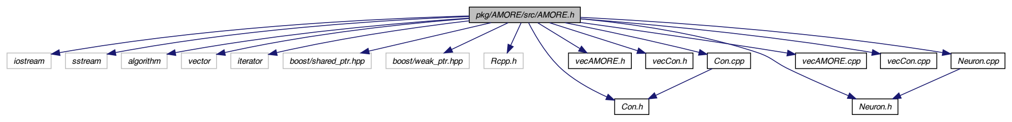
Chapter 7

File Documentation

7.1 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 <Rcpp.h>
#include "Con.h"
#include "vecAMORE.h"
#include "vecCon.h"
#include "Neuron.h"
#include "Con.cpp"
#include "vecAMORE.cpp"
#include "vecCon.cpp"
#include "Neuron.cpp"
```

Include dependency graph for AMORE.h:



Typedefs

- typedef boost::shared_ptr< Con > ConSharedPtr
- typedef boost::shared_ptr< Neuron > NeuronSharedPtr
- typedef boost::weak_ptr< Neuron > NeuronWeakPtr
- typedef boost::shared_ptr< vecAMORE< Con > > vecAMOREconSharedPtr
- typedef boost::shared_ptr< vecAMORE< Neuron > > vecAMOREneuronSharedPtr
- typedef boost::shared_ptr< vecCon > vecConSharedPtr

7.1.1 Typedef Documentation

7.1.1.1 typedef boost::shared_ptr<Con> ConSharedPtr

Definition at line 33 of file AMORE.h.

7.1.1.2 typedef boost::shared_ptr<Neuron> NeuronSharedPtr

Definition at line 37 of file AMORE.h.

7.1.1.3 typedef boost::weak_ptr<Neuron> NeuronWeakPtr

Definition at line 38 of file AMORE.h.

7.1.1.4 typedef boost::shared_ptr< vecAMORE<Con> > vecAMOREconSharedPtr

Definition at line 39 of file AMORE.h.

7.1.1.5 typedef boost::shared_ptr< vecAMORE<Neuron> > vecAMOREneuronSharedPtr

Definition at line 40 of file AMORE.h.

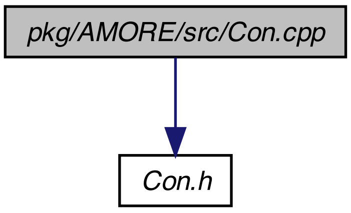
7.1.1.6 typedef boost::shared_ptr< vecCon > vecConSharedPtr

Definition at line 41 of file AMORE.h.

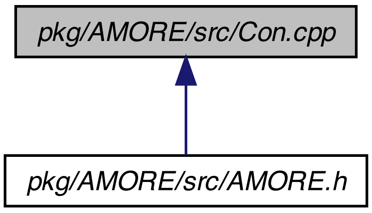
7.2 pkg/AMORE/src/Con.cpp File Reference

```
#include "Con.h"
```

Include dependency graph for Con.cpp:

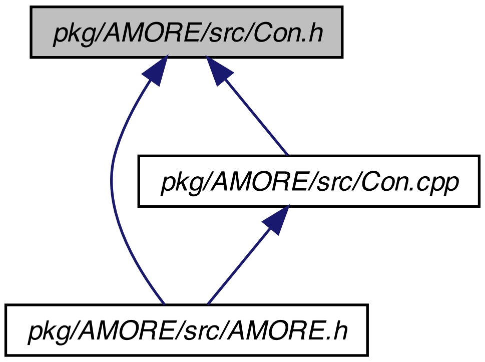


This graph shows which files directly or indirectly include this file:



7.3 pkg/AMORE/src/Con.h File Reference

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



Classes

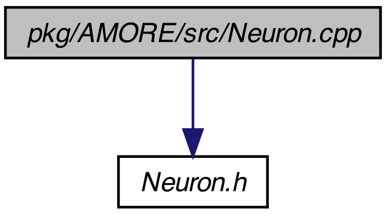
- class Con

  A class to handle the information needed to describe an input connection.

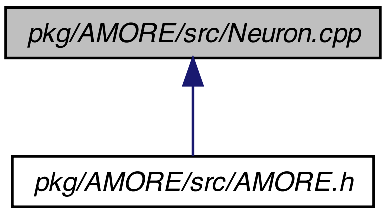
7.4 pkg/AMORE/src/Neuron.cpp File Reference

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

Include dependency graph for Neuron.cpp:

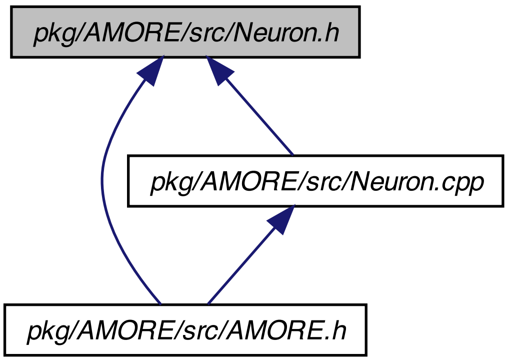


This graph shows which files directly or indirectly include this file:



7.5 pkg/AMORE/src/Neuron.h File Reference

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



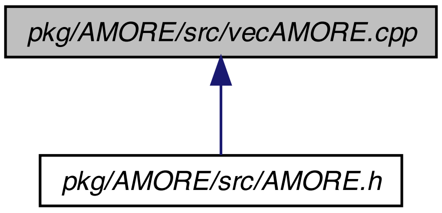
Classes

- class Neuron

  A class to handle the information contained in a general Neuron.

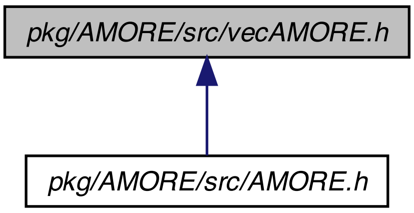
7.6 pkg/AMORE/src/vecAMORE.cpp File Reference

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



7.7 pkg/AMORE/src/vecAMORE.h File Reference

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

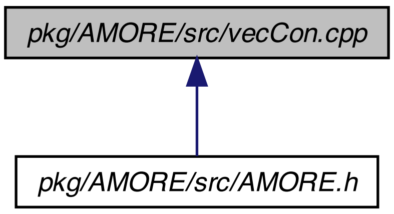


Classes

- class vecAMORE< T >

7.8 pkg/AMORE/src/vecCon.cpp File Reference

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

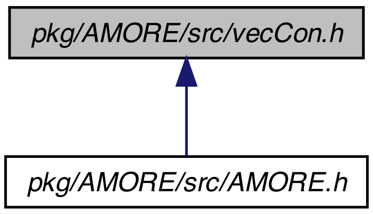


Classes

- struct CompareId

7.9 pkg/AMORE/src/vecCon.h File Reference

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



Classes

- class vecCon

  A vector of connections.

7.10 pkg/AMORE/src/vecMLPneuron.h File Reference

Classes

- class vecMLPneuron

  A vector of connections.

7.11 pkg/AMORE/src/vecNeuron.h File Reference

Classes

- class vecNeuron

  A vector of neurons.

Index