

UM

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Chapter 1

Namespace Index

1.1 Packages

Here are the packages with brief descriptions (if available):

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Chapter 2

Class Index

2.1 Class List

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

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Chapter 3

File Index

3.1 File List

Here is a list of all files with brief descriptions:

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Chapter 4

Namespace Documentation

4.1 Build Namespace Reference

Classes

- class [Quantity](#)
class used to save information about number of elements
- class [Subtree_Values](#)
class used to save elemnets in all knots

Functions

- def [count_all](#) (training_data)
function used to count all elements
- def [build_tree](#) (training_data)
function used to build tree

4.1.1 Function Documentation

4.1.1.1 build_tree()

```
def Build.build_tree (  
    training_data )
```

function used to build tree

Parameters

<i>training_elements</i>	list of training elements
--------------------------	---------------------------

Returns

object [Subtree_Values](#) for knot
 object [Quantity](#) for knot

4.1.1.2 count_all()

```
def Build.count_all (
    training_data )
```

function used to count all elements

Parameters

<i>training_elements</i>	list in which items will be counted
--------------------------	-------------------------------------

Returns

quantity of elements all elements

4.2 Data Namespace Reference**Functions**

- def [read_csv_file](#) (name)
function used to read csv file
- def [read_data_file](#) (name)
function used to read data file

4.2.1 Function Documentation**4.2.1.1 read_csv_file()**

```
def Data.read_csv_file (
    name )
```

function used to read csv file

Parameters

<i>name</i>	name of data file
-------------	-------------------

Returns

data readed data

4.2.1.2 read_data_file()

```
def Data.read_data_file (
    name )
```

function used to read data file

Parameters

<i>name</i>	name of data file
-------------	-------------------

Returns

data readed data

4.3 Data_matching Namespace Reference

Functions

- def [for_basic_tree](#) (quantity, data)
function used to do test for basic tree
- def [for_tree_incremental_learning](#) (quantity_basic_tree, quantity, data)
function used to do test for tree with one incremental learning
- def [confusion_matrix](#) (data_test, tree)
function used to create confusion matrix
- def [data_matching](#) (tree, data_test)
function used to calculate test data matching
- def [find](#) (tree, dt)
function used to find the list for test data

4.3.1 Function Documentation**4.3.1.1 confusion_matrix()**

```
def Data_matching.confusion_matrix (
    data_test,
    tree )
```

function used to create confusion matrix

Parameters

<i>tree</i>	
<i>data</i>	test

Returns

matrix confusion_matrix

4.3.1.2 data_matching()

```
def Data_matching.data_matching (
    tree,
    data_test )
```

function used to calculate test data matching

Parameters

<i>tree</i>	
<i>data</i>	test

Returns

match

4.3.1.3 find()

```
def Data_matching.find (
    tree,
    dt )
```

function used to find the list for test data

Parameters

<i>trees</i>	
<i>dt</i>	element for which we are looking for a place

Returns

tree[1].quantity leaf value

4.3.1.4 for_basic_tree()

```
def Data_matching.for_basic_tree (
    quantity,
    data )
```

function used to do test for basic tree

Parameters

<i>quantity</i>	quantity of data used to tarin dree
-----------------	-------------------------------------

Returns

match matching basic tree
matrix confusion matrix

4.3.1.5 for_tree_incremental_learning()

```
def Data_matching.for_tree_incremental_learning (
    quantity_basic_tree,
    quantity,
    data )
```

function used to do test for tree with one incremental learning

Parameters

<i>quantity_basic_tree</i>	quantity of data used to tarin basic tree
<i>quantity</i>	quantity of data used to incremental learning

Returns

match matching for incremental learning
matrix confusion matrix

4.4 Incremental_learning Namespace Reference

Functions

- def [find_tree](#) (tree, data)
function used to find the same tree in old tree
- def [incremental_learning](#) (data, tree)
function for incremental learning

4.4.1 Function Documentation

4.4.1.1 find_tree()

```
def Incremental_learning.find_tree (
    tree,
    data )
```

function used to find the same tree in old tree

Parameters

<i>tree</i>	- old tree
<i>data</i>	current data

Returns

tree tree from old tree which can be used

4.4.1.2 incremental_learning()

```
def Incremental_learning.incremental_learning (
    data,
    tree )
```

function for incremental learning

Parameters

<i>tree</i>	- old tree
<i>data</i>	current data

Returns

object Subtree_Values for knot

object Quantity for knot

4.5 Mesure Namespace Reference

Functions

- def [count](#) (training_elements)
function used to count elements in all attributes

- def `giny` (training_data)
function used to calculate the gini coefficient
- def `gain` (false, true, current)
function used to calculate the information gain

4.5.1 Function Documentation

4.5.1.1 `count()`

```
def Measure.count (
    training_elements )
```

function used to count elements in all attributes

Parameters

<i>training_elements</i>	list in which items will be counted
--------------------------	-------------------------------------

Returns

count_data dictionary with quantity of elements in all category

4.5.1.2 `gain()`

```
def Measure.gain (
    false,
    true,
    current )
```

function used to calculate the information gain

Parameters

<i>false</i>	list of false elements in which the information gain will be counted
<i>true</i>	list of true elements in which the information gain will be counted
<i>current</i>	all list of all elements in which the information gain will be counted

Returns

info_gain information gain for current split

4.5.1.3 giny()

```
def Mesure.giny (
    training_data )
```

function used to calculate the gini coefficient

Parameters

<i>training_elements</i>	list in which items will be counted
--------------------------	-------------------------------------

Returns

1 - giny_tmp gini coefficient

4.6 Print_tree Namespace Reference

Functions

- def [print_tree](#) (element, space="")
function used to print tree
- def [print_basic_tree](#) (start, quantity, data)
function used to build and print tree
- def [print_incremental_tree](#) (start, quantity, tree, data)
function used to incremental learning and print tree

4.6.1 Function Documentation

4.6.1.1 print_basic_tree()

```
def Print_tree.print_basic_tree (
    start,
    quantity,
    data )
```

function used to build and print tree

Parameters

<i>start</i>	- the data number in the csv file used to train the tree
<i>quantity</i>	- quantity of data used to train the tree
<i>data</i>	data for incremental learning

4.6.1.2 `print_incremental_tree()`

```
def Print_tree.print_incremental_tree (
    start,
    quantity,
    tree,
    data )
```

function used to incremental learning and print tree

Parameters

<i>start</i>	- the data number in the csv file used to train the tree
<i>quantity</i>	- quantity of data used to train the tree
<i>tree</i>	- old tree
<i>data</i>	data for incremental learning

4.6.1.3 `print_tree()`

```
def Print_tree.print_tree (
    element,
    space = "" )
```

function used to print tree

Parameters

<i>element</i>	tree
<i>space</i>	

4.7 Split Namespace Reference

Functions

- def [make_split](#) (training_data)
function used to find the best split
- def [check_split](#) (training_data, question_split)
function used to do split for only one question

4.7.1 Function Documentation

4.7.1.1 check_split()

```
def Split.check_split (
    training_data,
    question_split )
```

function used to do split for only one question

Parameters

<i>training_elements</i>	list in which items will be split
--------------------------	-----------------------------------

Returns

best_gain_value the best find gain
 best_question_split the best find question to split
 best_true_data the best find list with true data
 best_false_data the best find list with false data

4.7.1.2 make_split()

```
def Split.make_split (
    training_data )
```

function used to find the best split

Parameters

<i>training_elements</i>	list in which items will be split
--------------------------	-----------------------------------

Returns

best_gain_value the best find gain
 best_question_split the best find question to split
 best_true_data the best find list with true data
 best_false_data the best find list with false data

4.8 Test Namespace Reference

Functions

- def [read_bank](#) ()
function used to read bank data
- def [write_file](#) (name, match)
function used to write match

- def `write_time` (name, time)
function used to write time
- def `write_dict` (matrix, name)
function used to write confusion matrix
- def `data_matching_for_basic_tree` (quantity, name, data)
function used to do tests
- def `data_matching_for_tree_incremental_learning` (quantity_basic_tree, quantity, quantity_of_all, name, data)
function used to do tests
- def `test` ()
function used to do all tests

Variables

- def `bank` = `read_bank`()
- `agaricus_incremental` = `Data.read_data_file`('agaricus-lepiota.data')
- `iris` = `Data.read_data_file`('iris.data')

4.8.1 Function Documentation

4.8.1.1 `data_matching_for_basic_tree()`

```
def Test.data_matching_for_basic_tree (
    quantity,
    name,
    data )
```

function used to do tests

Parameters

<i>quantity</i>	quantity of data used to train tree
-----------------	-------------------------------------

Returns

match matching basic tree

4.8.1.2 `data_matching_for_tree_incremental_learning()`

```
def Test.data_matching_for_tree_incremental_learning (
    quantity_basic_tree,
    quantity,
    quantity_of_all,
    name,
    data )
```

function used to do tests

Parameters

<i>quantity_basic_tree</i>	quantity of data used to tarin basic tree
<i>quantity</i>	quantity of data used to incremental learning

Returns

match matching for incremental learning

4.8.1.3 read_bank()

```
def Test.read_bank ( )
```

function used to read bank data

Returns

data

4.8.1.4 test()

```
def Test.test ( )
```

function used to do all tests

4.8.1.5 write_dict()

```
def Test.write_dict (
    matrix,
    name )
```

function used to write confusion matrix

Parameters

<i>matrix</i>	confusion matrix
<i>name</i>	name of data

4.8.1.6 write_file()

```
def Test.write_file (
    name,
    match )
```

function used to write match

Parameters

<i>name</i>	name of data
<i>match</i>	

4.8.1.7 write_time()

```
def Test.write_time (
    name,
    time )
```

function used to write time

Parameters

<i>name</i>	name of data
<i>time</i>	

4.8.2 Variable Documentation

4.8.2.1 agaricus_incremental

```
Test.agaricus_incremental = Data.read_data_file('agaricus-lepiota.data')
```

4.8.2.2 bank

```
def Test.bank = read_bank()
```

4.8.2.3 iris

```
Test.iris = Data.read_data_file('iris.data')
```


Chapter 5

Class Documentation

5.1 Build.Quantity Class Reference

class used to save information about number of elements

Public Member Functions

- `def __init__ (self, data)`
save information about number of elements

Public Attributes

- `quantity`
number of elements

5.1.1 Detailed Description

class used to save information about number of elements

5.1.2 Constructor & Destructor Documentation

5.1.2.1 `__init__()`

```
def Build.Quantity.__init__ (  
    self,  
    data )
```

save information about number of elements

5.1.3 Member Data Documentation

5.1.3.1 quantity

`Build.Quantity.quantity`

number of elements

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

- [Build.py](#)

5.2 Build.Subtree_Values Class Reference

class used to save elemnets in all knots

Public Member Functions

- `def __init__(self, question, right_next, left_next, gain, true_data, false_data)`
save information about knots

Public Attributes

- [question](#)
question used to divide data
- [right_next](#)
next right knots
- [left_next](#)
next left knots
- [gain](#)
gain of information obtained
- [true_data](#)
list with true data - that met the query
- [false_data](#)
list with false data - which did not match the query

5.2.1 Detailed Description

class used to save elemnets in all knots

5.2.2 Constructor & Destructor Documentation

5.2.2.1 `__init__()`

```
def Build.Subtree_Values.__init__ (
    self,
    question,
    right_next,
    left_next,
    gain,
    true_data,
    false_data )
```

save information about knots

5.2.3 Member Data Documentation

5.2.3.1 `false_data`

`Build.Subtree_Values.false_data`

list with false data - which did not match the query

5.2.3.2 `gain`

`Build.Subtree_Values.gain`

gain of information obtained

5.2.3.3 `left_next`

`Build.Subtree_Values.left_next`

next left knots

5.2.3.4 `question`

`Build.Subtree_Values.question`

question used to divide data

5.2.3.5 right_next

`Build.Subtree_Values.right_next`

next right knots

5.2.3.6 true_data

`Build.Subtree_Values.true_data`

list with true data - that met the query

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

- [Build.py](#)

Chapter 6

File Documentation

6.1 Build.py File Reference

Classes

- class [Build.Subtree_Values](#)
class used to save elemnets in all knots
- class [Build.Quantity](#)
class used to save information about number of elements

Namespaces

- [Build](#)

Functions

- def [Build.count_all](#) (training_data)
function used to count all elements
- def [Build.build_tree](#) (training_data)
function used to build tree

6.2 Data.py File Reference

Namespaces

- [Data](#)

Functions

- def [Data.read_csv_file](#) (name)
function used to read csv file
- def [Data.read_data_file](#) (name)
function used to read data file

6.3 Data_matching.py File Reference

Namespaces

- [Data_matching](#)

Functions

- def [Data_matching.for_basic_tree](#) (quantity, data)
function used to do test for basic tree
- def [Data_matching.for_tree_incremental_learning](#) (quantity_basic_tree, quantity, data)
function used to do test for tree with one incremental learning
- def [Data_matching.confusion_matrix](#) (data_test, tree)
function used to create confusion matrix
- def [Data_matching.data_matching](#) (tree, data_test)
function used to calculate test data matching
- def [Data_matching.find](#) (tree, dt)
function used to find the list for test data

6.4 Incremental_learning.py File Reference

Namespaces

- [Incremental_learning](#)

Functions

- def [Incremental_learning.find_tree](#) (tree, data)
function used to find the same tree in old tree
- def [Incremental_learning.incremental_learning](#) (data, tree)
function for incremental learning

6.5 Measure.py File Reference

Namespaces

- [Measure](#)

Functions

- def [Measure.count](#) (training_elements)
function used to count elements in all attributes
- def [Measure.giny](#) (training_data)
function used to calculate the gini coefficient
- def [Measure.gain](#) (false, true, current)
function used to calculate the information gain

6.6 Print_tree.py File Reference

Namespaces

- [Print_tree](#)

Functions

- def [Print_tree.print_tree](#) (element, space="")
function used to print tree
- def [Print_tree.print_basic_tree](#) (start, quantity, data)
function used to build and print tree
- def [Print_tree.print_incremental_tree](#) (start, quantity, tree, data)
function used to incremental learning and print tree

6.7 Split.py File Reference

Namespaces

- [Split](#)

Functions

- def [Split.make_split](#) (training_data)
function used to find the best split
- def [Split.check_split](#) (training_data, question_split)
function used to do split for only one question

6.8 Test.py File Reference

Namespaces

- [Test](#)

Functions

- def [Test.read_bank](#) ()
function used to read bank data
- def [Test.write_file](#) (name, match)
function used to write match
- def [Test.write_time](#) (name, time)
function used to write time
- def [Test.write_dict](#) (matrix, name)
function used to write confusion matrix
- def [Test.data_matching_for_basic_tree](#) (quantity, name, data)
function used to do tests
- def [Test.data_matching_for_tree_incremental_learning](#) (quantity_basic_tree, quantity, quantity_of_all, name, data)
function used to do tests
- def [Test.test](#) ()
function used to do all tests

Variables

- `def Test.bank = read_bank()`
- `Test.agaricus_incremental = Data.read_data_file('agaricus-lepiota.data')`
- `Test.iris = Data.read_data_file('iris.data')`

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