

# Bayesian Cluster Tool

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# Chapter 1

## Class Index

### 1.1 Class List

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

<a href="#">ClusterWrapper</a>	A struct for storing extracted parameters from a cluster . . . . .	<a href="#">5</a>
<a href="#">ScanEntry</a>	A struct for storing a result of an individual scan configuration . . . . .	<a href="#">7</a>



## Chapter 2

# File Index

### 2.1 File List

Here is a list of all documented files with brief descriptions:

include/BayesianClustering/ <a href="#">API.hpp</a> . . . . .	9
src/BayesianClustering/ <a href="#">API.cpp</a> . . . . .	20





## Chapter 3

# Class Documentation

### 3.1 ClusterWrapper Struct Reference

A struct for storing extracted parameters from a cluster.

```
#include <API.hpp>
```

#### Public Member Functions

- bool `operator<` (const `ClusterWrapper` &aOther)  
*Comparison operator for sorting.*
- bool `operator==` (const `ClusterWrapper` &aOther)  
*Equality operator required by boost python.*

#### Public Attributes

- `std::size_t` `localizations`  
*The number of localizations in the cluster.*
- `long double` `area`  
*The area of the spanning convex hull.*
- `long double` `perimeter`  
*The perimeter of the spanning convex hull.*
- `double` `centroid_x`  
*The x-position of the centroid.*
- `double` `centroid_y`  
*The y-position of the centroid.*

#### 3.1.1 Detailed Description

A struct for storing extracted parameters from a cluster.

Definition at line 44 of file API.hpp.

## 3.1.2 Member Function Documentation

### 3.1.2.1 `operator<()`

```
bool ClusterWrapper::operator< (
    const ClusterWrapper & aOther ) [inline]
```

Comparison operator for sorting.

#### Returns

Whether we are smaller than the other

#### Parameters

<i>aOther</i>	Another <a href="#">ClusterWrapper</a> to compare against
---------------	---

Definition at line 54 of file API.hpp.

References area, localizations, and perimeter.

### 3.1.2.2 `operator==()`

```
bool ClusterWrapper::operator== (
    const ClusterWrapper & aOther ) [inline]
```

Equality operator required by boost python.

#### Returns

Whether we are equal to the other

#### Parameters

<i>aOther</i>	Another <a href="#">ClusterWrapper</a> to compare against
---------------	---

Definition at line 64 of file API.hpp.

References centroid\_x, and centroid\_y.

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

- include/BayesianClustering/[API.hpp](#)

## 3.2 ScanEntry Struct Reference

A struct for storing a result of an individual scan configuration.

```
#include <API.hpp>
```

### Public Member Functions

- bool `operator<` (const `ScanEntry` &aOther)  
*Comparison operator for sorting.*
- bool `operator==` (const `ScanEntry` &aOther)  
*Equality operator required by boost python.*

### Public Attributes

- double `r`  
*The R parameter*
- double `t`  
*The T parameter.*
- double `score`  
*The score.*

### 3.2.1 Detailed Description

A struct for storing a result of an individual scan configuration.

Definition at line 16 of file API.hpp.

### 3.2.2 Member Function Documentation

#### 3.2.2.1 `operator<()`

```
bool ScanEntry::operator< (  
    const ScanEntry & aOther ) [inline]
```

Comparison operator for sorting.

#### Returns

Whether we are smaller than the other

**Parameters**

<i>aOther</i>	Another <a href="#">ScanEntry</a> to compare against
---------------	--

Definition at line 24 of file API.hpp.

References [r](#), and [t](#).

**3.2.2.2 operator==()**

```
bool ScanEntry::operator== (
    const ScanEntry & aOther ) [inline]
```

Equality operator required by boost python.

**Returns**

Whether we are equal to the other

**Parameters**

<i>aOther</i>	Another <a href="#">ScanEntry</a> to compare against
---------------	--

Definition at line 33 of file API.hpp.

References [r](#), [score](#), and [t](#).

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

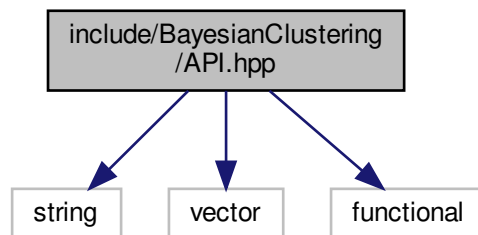
- [include/BayesianClustering/API.hpp](#)

## Chapter 4

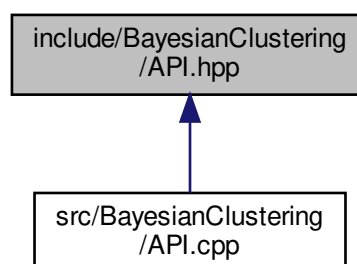
# File Documentation

### 4.1 include/BayesianClustering/API.hpp File Reference

```
#include <string>
#include <vector>
#include <functional>
Include dependency graph for API.hpp:
```



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



## Classes

- struct [ScanEntry](#)  
*A struct for storing a result of an individual scan configuration.*
- struct [ClusterWrapper](#)  
*A struct for storing extracted parameters from a cluster.*

## Typedefs

- typedef std::function< void(Rolproxy &, const double &, const double &) > [tFullScanCallback](#)  
*Typedef the full scan callback for clarity.*
- typedef std::function< void(const std::vector< [ScanEntry](#) > &) > [tSimpleScanCallback](#)  
*Typedef the simplified scan callback for clarity.*
- typedef std::function< void(Rolproxy &) > [tFullClusterCallback](#)  
*Typedef the full clustering callback for clarity.*
- typedef std::function< void(const std::vector< [ClusterWrapper](#) > &) > [tSimpleClusterCallback](#)  
*Typedef the simplified clustering callback for clarity.*

## Functions

- void [AutoRoi\\_Scan\\_FullCallback](#) (const std::string &alnFile, const ScanConfiguration &aScanConfig, const [tFullScanCallback](#) &aCallback)  
*Automatically extract Roi, run scan and apply a full call-back.*
- void [AutoRoi\\_Scan\\_SimpleCallback](#) (const std::string &alnFile, const ScanConfiguration &aScanConfig, const [tSimpleScanCallback](#) &aCallback)  
*Automatically extract Roi, run scan and apply a simple call-back.*
- void [AutoRoi\\_Scan\\_ToJson](#) (const std::string &alnFile, const ScanConfiguration &aScanConfig, const std::string &aOutputPattern)  
*Automatically extract Roi, run scan and dump to JSON file.*
- void [AutoRoi\\_Cluster\\_FullCallback](#) (const std::string &alnFile, const double &aR, const double &aT, const [tFullClusterCallback](#) &aCallback)  
*Automatically extract Roi, clusterize and apply a full call-back.*
- void [AutoRoi\\_Cluster\\_SimpleCallback](#) (const std::string &alnFile, const double &aR, const double &aT, const [tSimpleClusterCallback](#) &aCallback)  
*Automatically extract Roi, clusterize and apply a full call-back.*
- void [AutoRoi\\_Cluster\\_ToJson](#) (const std::string &alnFile, const double &aR, const double &aT, const std::string &aOutputPattern)  
*Automatically specify Roi, clusterize and apply a full call-back.*
- void [ManualRoi\\_Scan\\_FullCallback](#) (const std::string &alnFile, const ManualRoi &aManualRoi, const ScanConfiguration &aScanConfig, const [tFullScanCallback](#) &aCallback)  
*Manually specify Roi, run scan and apply a full call-back.*
- void [ManualRoi\\_Scan\\_SimpleCallback](#) (const std::string &alnFile, const ManualRoi &aManualRoi, const ScanConfiguration &aScanConfig, const [tSimpleScanCallback](#) &aCallback)  
*Manually specify Roi, run scan and apply a simple call-back.*
- void [ManualRoi\\_Scan\\_ToJson](#) (const std::string &alnFile, const ManualRoi &aManualRoi, const ScanConfiguration &aScanConfig, const std::string &aOutputPattern)  
*Manually specify Roi, run scan and dump to JSON file.*
- void [ManualRoi\\_Cluster\\_FullCallback](#) (const std::string &alnFile, const ManualRoi &aManualRoi, const double &aR, const double &aT, const [tFullClusterCallback](#) &aCallback)  
*Manually specify Roi, clusterize and apply a full call-back.*

- void [ManualRoi\\_Cluster\\_SimpleCallback](#) (const std::string &alnFile, const ManualRoi &aManualRoi, const double &aR, const double &aT, const [tSimpleClusterCallback](#) &aCallback)  
*Manually specify Roi, clusterize and apply a full call-back.*
- void [ManualRoi\\_Cluster\\_ToJson](#) (const std::string &alnFile, const ManualRoi &aManualRoi, const double &aR, const double &aT, const std::string &aOutputPattern)  
*Manually specify Roi, clusterize and apply a full call-back.*
- void [ImageJRoi\\_Scan\\_FullCallback](#) (const std::string &alnFile, const std::string &alimageJfile, const double &aScale, const ScanConfiguration &aScanConfig, const [tFullScanCallback](#) &aCallback)  
*Extract Roi using an image-map, run scan and apply a full call-back.*
- void [ImageJRoi\\_Scan\\_SimpleCallback](#) (const std::string &alnFile, const std::string &alimageJfile, const double &aScale, const ScanConfiguration &aScanConfig, const [tSimpleScanCallback](#) &aCallback)  
*Extract Roi using an image-map, run scan and apply a simple call-back.*
- void [ImageJRoi\\_Scan\\_ToJson](#) (const std::string &alnFile, const std::string &alimageJfile, const double &aScale, const ScanConfiguration &aScanConfig, const std::string &aOutputPattern)  
*Extract Roi using an image-map, run scan and dump to JSON file.*
- void [ImageJRoi\\_Cluster\\_FullCallback](#) (const std::string &alnFile, const std::string &alimageJfile, const double &aScale, const double &aR, const double &aT, const [tFullClusterCallback](#) &aCallback)  
*Extract Roi using an image-map, clusterize and apply a full call-back.*
- void [ImageJRoi\\_Cluster\\_SimpleCallback](#) (const std::string &alnFile, const std::string &alimageJfile, const double &aScale, const double &aR, const double &aT, const [tSimpleClusterCallback](#) &aCallback)  
*Extract Roi using an image-map, clusterize and apply a full call-back.*
- void [ImageJRoi\\_Cluster\\_ToJson](#) (const std::string &alnFile, const std::string &alimageJfile, const double &aScale, const double &aR, const double &aT, const std::string &aOutputPattern)  
*Extract Roi using an image-map, clusterize and apply a full call-back.*

## 4.1.1 Function Documentation

### 4.1.1.1 AutoRoi\_Cluster\_FullCallback()

```
void AutoRoi_Cluster_FullCallback (
    const std::string & aInFile,
    const double & aR,
    const double & aT,
    const tFullClusterCallback & aCallback )
```

Automatically extract Roi, clusterize and apply a full call-back.

#### Parameters

<i>aInFile</i>	The name of the localization file
<i>aR</i>	The R value of the clusterizer
<i>aT</i>	The T value of the clusterizer
<i>aCallback</i>	The callback to be applied

Definition at line 163 of file API.cpp.

Referenced by [AutoRoi\\_Cluster\\_SimpleCallback\(\)](#).

#### 4.1.1.2 AutoRoi\_Cluster\_SimpleCallback()

```
void AutoRoi_Cluster_SimpleCallback (
    const std::string & aInFile,
    const double & aR,
    const double & aT,
    const tSimpleClusterCallback & aCallback )
```

Automatically extract RoI, clusterize and apply a full call-back.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aR</i>	The R value of the clusterizer
<i>aT</i>	The T value of the clusterizer
<i>aCallback</i>	The callback to be applied

Definition at line 169 of file API.cpp.

References `_FullClusterToSimpleCluster_()`, and `AutoRoi_Cluster_FullCallback()`.

Referenced by `AutoRoi_Cluster_ToJson()`.

#### 4.1.1.3 AutoRoi\_Cluster\_ToJson()

```
void AutoRoi_Cluster_ToJson (
    const std::string & aInFile,
    const double & aR,
    const double & aT,
    const std::string & aOutputPattern )
```

Automatically specify RoI, clusterize and apply a full call-back.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aR</i>	The R value of the clusterizer
<i>aT</i>	The T value of the clusterizer
<i>aOutputPattern</i>	A formattable-string specifying the name of the output JSON files. Substitutable fields are {input} (giving the stem of the input file name) and {roi} (giving the RoI id).

Definition at line 175 of file API.cpp.

References `_ClusterCallback_Json_()`, and `AutoRoi_Cluster_SimpleCallback()`.

#### 4.1.1.4 AutoRoi\_Scan\_FullCallback()

```
void AutoRoi_Scan_FullCallback (
    const std::string & aInFile,
```



```
const ScanConfiguration & aScanConfig,
const tFullScanCallback & aCallback )
```

Automatically extract RoI, run scan and apply a full call-back.

#### Parameters

<i>aInFile</i>	The name of the localization file
<i>aScanConfig</i>	The configuration for the scan
<i>aCallback</i>	The full callback to be applied

Definition at line 143 of file API.cpp.

#### 4.1.1.5 AutoRoi\_Scan\_SimpleCallback()

```
void AutoRoi_Scan_SimpleCallback (
    const std::string & aInFile,
    const ScanConfiguration & aScanConfig,
    const tSimpleScanCallback & aCallback )
```

Automatically extract RoI, run scan and apply a simple call-back.

#### Parameters

<i>aInFile</i>	The name of the localization file
<i>aScanConfig</i>	The configuration for the scan
<i>aCallback</i>	The simple callback to be applied

Definition at line 149 of file API.cpp.

References `_FullScanToSimpleScan_()`.

Referenced by `AutoRoi_Scan_ToJson()`.

#### 4.1.1.6 AutoRoi\_Scan\_ToJson()

```
void AutoRoi_Scan_ToJson (
    const std::string & aInFile,
    const ScanConfiguration & aScanConfig,
    const std::string & aOutputPattern )
```

Automatically extract RoI, run scan and dump to JSON file.

#### Parameters

<i>aInFile</i>	The name of the localization file
<i>aScanConfig</i>	The configuration for the scan
<i>aOutputPattern</i>	A formattable-string specifying the name of the output JSON files. Substitutable fields are
Generated on Tue Jul 4 2023 10:10:10 by Doxygen 1.9.1. For the list of fields, see the file <code>API.hpp</code> .	

Definition at line 155 of file API.cpp.

References `_ScanCallback_Json_()`, and `AutoRoi_Scan_SimpleCallback()`.

#### 4.1.1.7 ImageJRoi\_Cluster\_FullCallback()

```
void ImageJRoi_Cluster_FullCallback (
    const std::string & aInFile,
    const std::string & aImageJfile,
    const double & aScale,
    const double & aR,
    const double & aT,
    const tFullClusterCallback & aCallback )
```

Extract Rol using an image-map, clusterize and apply a full call-back.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aImageJfile</i>	The name of an ImageJ Rol file file
<i>aScale</i>	The size of the LSB in the ImageJ file
<i>aR</i>	The R value of the clusterizer
<i>aT</i>	The T value of the clusterizer
<i>aCallback</i>	The callback to be applied

Definition at line 243 of file API.cpp.

Referenced by `ImageJRoi_Cluster_SimpleCallback()`.

#### 4.1.1.8 ImageJRoi\_Cluster\_SimpleCallback()

```
void ImageJRoi_Cluster_SimpleCallback (
    const std::string & aInFile,
    const std::string & aImageJfile,
    const double & aScale,
    const double & aR,
    const double & aT,
    const tSimpleClusterCallback & aCallback )
```

Extract Rol using an image-map, clusterize and apply a full call-back.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aImageJfile</i>	The name of an ImageJ Rol file file
<i>aScale</i>	The size of the LSB in the ImageJ file
<i>aR</i>	The R value of the clusterizer
<i>aT</i>	The T value of the clusterizer
<i>aCallback</i>	The callback to be applied

Definition at line 249 of file API.cpp.

References `_FullClusterToSimpleCluster_()`, and `ImageJRoi_Cluster_FullCallback()`.

Referenced by `ImageJRoi_Cluster_ToJson()`.

#### 4.1.1.9 ImageJRoi\_Cluster\_ToJson()

```
void ImageJRoi_Cluster_ToJson (
    const std::string & aInFile,
    const std::string & aImageJfile,
    const double & aScale,
    const double & aR,
    const double & aT,
    const std::string & aOutputPattern )
```

Extract Roi using an image-map, clusterize and apply a full call-back.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aImageJfile</i>	The name of an ImageJ Roi file file
<i>aScale</i>	The size of the LSB in the ImageJ file
<i>aR</i>	The R value of the clusterizer
<i>aT</i>	The T value of the clusterizer
<i>aOutputPattern</i>	A formattable-string specifying the name of the output JSON files. Substitutable fields are {input} (giving the stem of the input file name) and {roi} (giving the Roi id).

Definition at line 255 of file API.cpp.

References `_ClusterCallback_Json_()`, and `ImageJRoi_Cluster_SimpleCallback()`.

#### 4.1.1.10 ImageJRoi\_Scan\_FullCallback()

```
void ImageJRoi_Scan_FullCallback (
    const std::string & aInFile,
    const std::string & aImageJfile,
    const double & aScale,
    const ScanConfiguration & aScanConfig,
    const tFullScanCallback & aCallback )
```

Extract Roi using an image-map, run scan and apply a full call-back.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aImageJfile</i>	The name of an ImageJ Roi file file
<i>aScale</i>	The size of the LSB in the ImageJ file
<i>aScanConfig</i>	The configuration for the scan
<i>aCallback</i>	The full callback to be applied

Definition at line 223 of file API.cpp.

#### 4.1.1.11 ImageJroi\_Scan\_SimpleCallback()

```
void ImageJroi_Scan_SimpleCallback (
    const std::string & aInFile,
    const std::string & aImageJfile,
    const double & aScale,
    const ScanConfiguration & aScanConfig,
    const tSimpleScanCallback & aCallback )
```

Extract Rol using an image-map, run scan and apply a simple call-back.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aImageJfile</i>	The name of an ImageJ Rol file file
<i>aScale</i>	The size of the LSB in the ImageJ file
<i>aScanConfig</i>	The configuration for the scan
<i>aCallback</i>	The simple callback to be applied

Definition at line 229 of file API.cpp.

References `_FullScanToSimpleScan_()`.

Referenced by `ImageJroi_Scan_ToJson()`.

#### 4.1.1.12 ImageJroi\_Scan\_ToJson()

```
void ImageJroi_Scan_ToJson (
    const std::string & aInFile,
    const std::string & aImageJfile,
    const double & aScale,
    const ScanConfiguration & aScanConfig,
    const std::string & aOutputPattern )
```

Extract Rol using an image-map, run scan and dump to JSON file.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aImageJfile</i>	The name of an ImageJ Rol file file
<i>aScale</i>	The size of the LSB in the ImageJ file
<i>aScanConfig</i>	The configuration for the scan
<i>aOutputPattern</i>	A formattable-string specifying the name of the output JSON files. Substitutable fields are {input} (giving the stem of the input file name) and {roi} (giving the Rol id).

Definition at line 235 of file API.cpp.

References `_ScanCallback_Json_()`, and `ImageJRoi_Scan_SimpleCallback()`.

#### 4.1.1.13 ManualRoi\_Cluster\_FullCallback()

```
void ManualRoi_Cluster_FullCallback (
    const std::string & aInFile,
    const ManualRoI & aManualRoI,
    const double & aR,
    const double & aT,
    const tFullClusterCallback & aCallback )
```

Manually specify RoI, clusterize and apply a full call-back.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aManualRoI</i>	The manually-specified RoI window
<i>aR</i>	The R value of the clusterizer
<i>aT</i>	The T value of the clusterizer
<i>aCallback</i>	The callback to be applied

Definition at line 203 of file API.cpp.

Referenced by `ManualRoi_Cluster_SimpleCallback()`.

#### 4.1.1.14 ManualRoi\_Cluster\_SimpleCallback()

```
void ManualRoi_Cluster_SimpleCallback (
    const std::string & aInFile,
    const ManualRoI & aManualRoI,
    const double & aR,
    const double & aT,
    const tSimpleClusterCallback & aCallback )
```

Manually specify RoI, clusterize and apply a full call-back.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aManualRoI</i>	The manually-specified RoI window
<i>aR</i>	The R value of the clusterizer
<i>aT</i>	The T value of the clusterizer
<i>aCallback</i>	The callback to be applied

Definition at line 209 of file API.cpp.

References `_FullClusterToSimpleCluster_()`, and `ManualRoi_Cluster_FullCallback()`.

Referenced by `ManualRoi_Cluster_ToJson()`.

#### 4.1.1.15 `ManualRoi_Cluster_ToJson()`

```
void ManualRoi_Cluster_ToJson (
    const std::string & aInFile,
    const ManualRoI & aManualRoI,
    const double & aR,
    const double & aT,
    const std::string & aOutputPattern )
```

Manually specify RoI, clusterize and apply a full call-back.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aManualRoI</i>	The manually-specified RoI window
<i>aR</i>	The R value of the clusterizer
<i>aT</i>	The T value of the clusterizer
<i>aOutputPattern</i>	A formattable-string specifying the name of the output JSON files. Substitutable fields are {input} (giving the stem of the input file name) and {roi} (giving the RoI id).

Definition at line 215 of file `API.cpp`.

References `_ClusterCallback_Json_()`, and `ManualRoi_Cluster_SimpleCallback()`.

#### 4.1.1.16 `ManualRoi_Scan_FullCallback()`

```
void ManualRoi_Scan_FullCallback (
    const std::string & aInFile,
    const ManualRoI & aManualRoI,
    const ScanConfiguration & aScanConfig,
    const tFullScanCallback & aCallback )
```

Manually specify RoI, run scan and apply a full call-back.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aManualRoI</i>	The manually-specified RoI window
<i>aScanConfig</i>	The configuration for the scan
<i>aCallback</i>	The full callback to be applied

Definition at line 183 of file `API.cpp`.

**4.1.1.17 ManualRoi\_Scan\_SimpleCallback()**

```
void ManualRoi_Scan_SimpleCallback (
    const std::string & aInFile,
    const ManualRoI & aManualRoI,
    const ScanConfiguration & aScanConfig,
    const tSimpleScanCallback & aCallback )
```

Manually specify RoI, run scan and apply a simple call-back.

**Parameters**

<i>aInFile</i>	The name of the localization file
<i>aManualRoI</i>	The manually-specified RoI window
<i>aScanConfig</i>	The configuration for the scan
<i>aCallback</i>	The simple callback to be applied

Definition at line 189 of file API.cpp.

References `_FullScanToSimpleScan_()`.

Referenced by `ManualRoi_Scan_ToJson()`.

**4.1.1.18 ManualRoi\_Scan\_ToJson()**

```
void ManualRoi_Scan_ToJson (
    const std::string & aInFile,
    const ManualRoI & aManualRoI,
    const ScanConfiguration & aScanConfig,
    const std::string & aOutputPattern )
```

Manually specify RoI, run scan and dump to JSON file.

**Parameters**

<i>aInFile</i>	The name of the localization file
<i>aManualRoI</i>	The manually-specified RoI window
<i>aScanConfig</i>	The configuration for the scan
<i>aOutputPattern</i>	A formattable-string specifying the name of the output JSON files. Substitutable fields are {input} (giving the stem of the input file name) and {roi} (giving the RoI id).

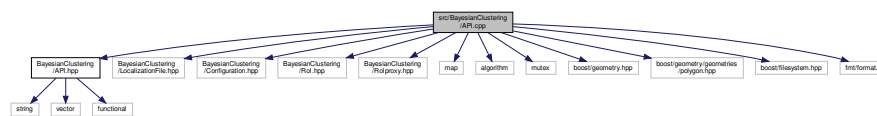
Definition at line 195 of file API.cpp.

References `_ScanCallback_Json_()`, and `ManualRoi_Scan_SimpleCallback()`.

## 4.2 src/BayesianClustering/API.cpp File Reference

```
#include "BayesianClustering/API.hpp"
#include "BayesianClustering/LocalizationFile.hpp"
#include "BayesianClustering/Configuration.hpp"
#include "BayesianClustering/RoI.hpp"
#include "BayesianClustering/RoIproxy.hpp"
#include <map>
#include <algorithm>
#include <mutex>
#include <boost/geometry.hpp>
#include <boost/geometry/geometries/polygon.hpp>
#include <boost/filesystem.hpp>
#include <fmt/format.h>
```

Include dependency graph for API.cpp:



## Functions

- void `_ScanCallback_Json_` (const std::vector< [ScanEntry](#) > &aVector, const std::string &aInFile, const std::string &aOutputPattern)  
A callback to dump a scan to a JSON file.
- void `_FullScanToSimpleScan_` (RoI &aRoI, const ScanConfiguration &aScanConfig, const [tSimpleScanCallback](#) &aCallback)  
A callback to neatly package the scan results for easy consumption.
- void `_ClusterCallback_Json_` (const std::vector< [ClusterWrapper](#) > &aVector, const std::string &aInFile, const std::string &aOutputPattern)  
A callback to dump a clustering run to a JSON file.
- void `_FullClusterToSimpleCluster_` (RoIproxy &aRoIproxy, const std::function< void(const std::vector< [ClusterWrapper](#) > &) > &aCallback)  
A callback to neatly package the scan results for easy consumption.
- void `AutoRoI_Scan_FullCallback` (const std::string &aInFile, const ScanConfiguration &aScanConfig, const [tFullScanCallback](#) &aCallback)  
Automatically extract RoI, run scan and apply a full call-back.
- void `AutoRoI_Scan_SimpleCallback` (const std::string &aInFile, const ScanConfiguration &aScanConfig, const [tSimpleScanCallback](#) &aCallback)  
Automatically extract RoI, run scan and apply a simple call-back.
- void `AutoRoI_Scan_ToJson` (const std::string &aInFile, const ScanConfiguration &aScanConfig, const std::string &aOutputPattern)  
Automatically extract RoI, run scan and dump to JSON file.
- void `AutoRoI_Cluster_FullCallback` (const std::string &aInFile, const double &aR, const double &aT, const [tFullClusterCallback](#) &aCallback)  
Automatically extract RoI, clusterize and apply a full call-back.
- void `AutoRoI_Cluster_SimpleCallback` (const std::string &aInFile, const double &aR, const double &aT, const [tSimpleClusterCallback](#) &aCallback)  
Automatically extract RoI, clusterize and apply a full call-back.
- void `AutoRoI_Cluster_ToJson` (const std::string &aInFile, const double &aR, const double &aT, const std::string &aOutputPattern)



- Automatically specify Roi, clusterize and apply a full call-back.*
- void [ManualRoi\\_Scan\\_FullCallback](#) (const std::string &InFile, const ManualRoi &aManualRoi, const ScanConfiguration &aScanConfig, const [tFullScanCallback](#) &aCallback)
- Manually specify Roi, run scan and apply a full call-back.*
- void [ManualRoi\\_Scan\\_SimpleCallback](#) (const std::string &InFile, const ManualRoi &aManualRoi, const ScanConfiguration &aScanConfig, const [tSimpleScanCallback](#) &aCallback)
- Manually specify Roi, run scan and apply a simple call-back.*
- void [ManualRoi\\_Scan\\_ToJson](#) (const std::string &InFile, const ManualRoi &aManualRoi, const ScanConfiguration &aScanConfig, const std::string &aOutputPattern)
- Manually specify Roi, run scan and dump to JSON file.*
- void [ManualRoi\\_Cluster\\_FullCallback](#) (const std::string &InFile, const ManualRoi &aManualRoi, const double &aR, const double &aT, const [tFullClusterCallback](#) &aCallback)
- Manually specify Roi, clusterize and apply a full call-back.*
- void [ManualRoi\\_Cluster\\_SimpleCallback](#) (const std::string &InFile, const ManualRoi &aManualRoi, const double &aR, const double &aT, const [tSimpleClusterCallback](#) &aCallback)
- Manually specify Roi, clusterize and apply a full call-back.*
- void [ManualRoi\\_Cluster\\_ToJson](#) (const std::string &InFile, const ManualRoi &aManualRoi, const double &aR, const double &aT, const std::string &aOutputPattern)
- Manually specify Roi, clusterize and apply a full call-back.*
- void [ImageJRoi\\_Scan\\_FullCallback](#) (const std::string &InFile, const std::string &almageJfile, const double &aScale, const ScanConfiguration &aScanConfig, const [tFullScanCallback](#) &aCallback)
- Extract Roi using an image-map, run scan and apply a full call-back.*
- void [ImageJRoi\\_Scan\\_SimpleCallback](#) (const std::string &InFile, const std::string &almageJfile, const double &aScale, const ScanConfiguration &aScanConfig, const [tSimpleScanCallback](#) &aCallback)
- Extract Roi using an image-map, run scan and apply a simple call-back.*
- void [ImageJRoi\\_Scan\\_ToJson](#) (const std::string &InFile, const std::string &almageJfile, const double &aScale, const ScanConfiguration &aScanConfig, const std::string &aOutputPattern)
- Extract Roi using an image-map, run scan and dump to JSON file.*
- void [ImageJRoi\\_Cluster\\_FullCallback](#) (const std::string &InFile, const std::string &almageJfile, const double &aScale, const double &aR, const double &aT, const [tFullClusterCallback](#) &aCallback)
- Extract Roi using an image-map, clusterize and apply a full call-back.*
- void [ImageJRoi\\_Cluster\\_SimpleCallback](#) (const std::string &InFile, const std::string &almageJfile, const double &aScale, const double &aR, const double &aT, const [tSimpleClusterCallback](#) &aCallback)
- Extract Roi using an image-map, clusterize and apply a full call-back.*
- void [ImageJRoi\\_Cluster\\_ToJson](#) (const std::string &InFile, const std::string &almageJfile, const double &aScale, const double &aR, const double &aT, const std::string &aOutputPattern)
- Extract Roi using an image-map, clusterize and apply a full call-back.*

## 4.2.1 Function Documentation

### 4.2.1.1 \_ClusterCallback\_Json\_()

```
void _ClusterCallback_Json_ (
    const std::vector< ClusterWrapper > & aVector,
    const std::string & aInFile,
    const std::string & aOutputPattern )
```

A callback to dump a clustering run to a JSON file.

**Parameters**

<i>aVector</i>	A vector of cluster-wrappers
<i>aInFile</i>	The name of the localization file
<i>aOutputPattern</i>	The name of the output JSON file

Definition at line 89 of file API.cpp.

Referenced by AutoRoi\_Cluster\_ToJson(), ImageJRoi\_Cluster\_ToJson(), and ManualRoi\_Cluster\_ToJson().

**4.2.1.2 \_FullClusterToSimpleCluster\_()**

```
void _FullClusterToSimpleCluster_ (
    RoIproxy & aRoIproxy,
    const std::function< void(const std::vector< ClusterWrapper > &) > & aCallback )
```

A callback to neatly package the scan results for easy consumption.

**Parameters**

<i>aRoIproxy</i>	The region-proxy containing the clusters
<i>aCallback</i>	The simple callback to be applied

Definition at line 110 of file API.cpp.

Referenced by AutoRoi\_Cluster\_SimpleCallback(), ImageJRoi\_Cluster\_SimpleCallback(), and ManualRoi\_Cluster\_SimpleCallback().

**4.2.1.3 \_FullScanToSimpleScan\_()**

```
void _FullScanToSimpleScan_ (
    RoI & aRoI,
    const ScanConfiguration & aScanConfig,
    const tSimpleScanCallback & aCallback )
```

A callback to neatly package the scan results for easy consumption.

**Parameters**

<i>aRoI</i>	The region of interest
<i>aScanConfig</i>	The configuration for the scan
<i>aCallback</i>	The simple callback to be applied

Definition at line 75 of file API.cpp.

Referenced by `AutoRoi_Scan_SimpleCallback()`, `ImageJRoi_Scan_SimpleCallback()`, and `ManualRoi_Scan_SimpleCallback()`.

#### 4.2.1.4 `_ScanCallback_Json_()`

```
void _ScanCallback_Json_ (
    const std::vector< ScanEntry > & aVector,
    const std::string & aInFile,
    const std::string & aOutputPattern )
```

A callback to dump a scan to a JSON file.

##### Parameters

<i>aVector</i>	A vector of scan results
<i>aInFile</i>	The name of the localization file
<i>aOutputPattern</i>	The name of the output JSON file

Definition at line 27 of file `API.cpp`.

Referenced by `AutoRoi_Scan_ToJson()`, `ImageJRoi_Scan_ToJson()`, and `ManualRoi_Scan_ToJson()`.

#### 4.2.1.5 `AutoRoi_Cluster_FullCallback()`

```
void AutoRoi_Cluster_FullCallback (
    const std::string & aInFile,
    const double & aR,
    const double & aT,
    const tFullClusterCallback & aCallback )
```

Automatically extract Roi, clusterize and apply a full call-back.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aR</i>	The R value of the clusterizer
<i>aT</i>	The T value of the clusterizer
<i>aCallback</i>	The callback to be applied

Definition at line 163 of file `API.cpp`.

Referenced by `AutoRoi_Cluster_SimpleCallback()`.

#### 4.2.1.6 AutoRoi\_Cluster\_SimpleCallback()

```
void AutoRoi_Cluster_SimpleCallback (
    const std::string & aInFile,
    const double & aR,
    const double & aT,
    const tSimpleClusterCallback & aCallback )
```

Automatically extract RoI, clusterize and apply a full call-back.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aR</i>	The R value of the clusterizer
<i>aT</i>	The T value of the clusterizer
<i>aCallback</i>	The callback to be applied

Definition at line 169 of file API.cpp.

References `_FullClusterToSimpleCluster_()`, and `AutoRoi_Cluster_FullCallback()`.

Referenced by `AutoRoi_Cluster_ToJson()`.

#### 4.2.1.7 AutoRoi\_Cluster\_ToJson()

```
void AutoRoi_Cluster_ToJson (
    const std::string & aInFile,
    const double & aR,
    const double & aT,
    const std::string & aOutputPattern )
```

Automatically specify RoI, clusterize and apply a full call-back.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aR</i>	The R value of the clusterizer
<i>aT</i>	The T value of the clusterizer
<i>aOutputPattern</i>	A formattable-string specifying the name of the output JSON files. Substitutable fields are {input} (giving the stem of the input file name) and {roi} (giving the RoI id).

Definition at line 175 of file API.cpp.

References `_ClusterCallback_Json_()`, and `AutoRoi_Cluster_SimpleCallback()`.

#### 4.2.1.8 AutoRoi\_Scan\_FullCallback()

```
void AutoRoi_Scan_FullCallback (
    const std::string & aInFile,
```

```
const ScanConfiguration & aScanConfig,
const tFullScanCallback & aCallback )
```

Automatically extract RoI, run scan and apply a full call-back.

#### Parameters

<i>aInFile</i>	The name of the localization file
<i>aScanConfig</i>	The configuration for the scan
<i>aCallback</i>	The full callback to be applied

Definition at line 143 of file API.cpp.

#### 4.2.1.9 AutoRoi\_Scan\_SimpleCallback()

```
void AutoRoi_Scan_SimpleCallback (
    const std::string & aInFile,
    const ScanConfiguration & aScanConfig,
    const tSimpleScanCallback & aCallback )
```

Automatically extract RoI, run scan and apply a simple call-back.

#### Parameters

<i>aInFile</i>	The name of the localization file
<i>aScanConfig</i>	The configuration for the scan
<i>aCallback</i>	The simple callback to be applied

Definition at line 149 of file API.cpp.

References `_FullScanToSimpleScan_()`.

Referenced by `AutoRoi_Scan_ToJson()`.

#### 4.2.1.10 AutoRoi\_Scan\_ToJson()

```
void AutoRoi_Scan_ToJson (
    const std::string & aInFile,
    const ScanConfiguration & aScanConfig,
    const std::string & aOutputPattern )
```

Automatically extract RoI, run scan and dump to JSON file.

#### Parameters

<i>aInFile</i>	The name of the localization file
<i>aScanConfig</i>	The configuration for the scan
<i>aOutputPattern</i>	A formattable-string specifying the name of the output JSON files. Substitutable fields are
Generated on Tue Jul 4 2023 10:10:10 by Doxygen 1.9.1. For the list of fields, see the file <code>src/BayesianClustering/API.cpp</code> .	

Definition at line 155 of file API.cpp.

References `_ScanCallback_Json_()`, and `AutoRoi_Scan_SimpleCallback()`.

#### 4.2.1.11 ImageJRoi\_Cluster\_FullCallback()

```
void ImageJRoi_Cluster_FullCallback (
    const std::string & aInFile,
    const std::string & aImageJfile,
    const double & aScale,
    const double & aR,
    const double & aT,
    const tFullClusterCallback & aCallback )
```

Extract Rol using an image-map, clusterize and apply a full call-back.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aImageJfile</i>	The name of an ImageJ Rol file file
<i>aScale</i>	The size of the LSB in the ImageJ file
<i>aR</i>	The R value of the clusterizer
<i>aT</i>	The T value of the clusterizer
<i>aCallback</i>	The callback to be applied

Definition at line 243 of file API.cpp.

Referenced by `ImageJRoi_Cluster_SimpleCallback()`.

#### 4.2.1.12 ImageJRoi\_Cluster\_SimpleCallback()

```
void ImageJRoi_Cluster_SimpleCallback (
    const std::string & aInFile,
    const std::string & aImageJfile,
    const double & aScale,
    const double & aR,
    const double & aT,
    const tSimpleClusterCallback & aCallback )
```

Extract Rol using an image-map, clusterize and apply a full call-back.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aImageJfile</i>	The name of an ImageJ Rol file file
<i>aScale</i>	The size of the LSB in the ImageJ file
<i>aR</i>	The R value of the clusterizer
<i>aT</i>	The T value of the clusterizer
<i>aCallback</i>	The callback to be applied

Definition at line 249 of file API.cpp.

References `_FullClusterToSimpleCluster_()`, and `ImageJRoi_Cluster_FullCallback()`.

Referenced by `ImageJRoi_Cluster_ToJson()`.

#### 4.2.1.13 ImageJRoi\_Cluster\_ToJson()

```
void ImageJRoi_Cluster_ToJson (
    const std::string & aInFile,
    const std::string & aImageJfile,
    const double & aScale,
    const double & aR,
    const double & aT,
    const std::string & aOutputPattern )
```

Extract Roi using an image-map, clusterize and apply a full call-back.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aImageJfile</i>	The name of an ImageJ Roi file file
<i>aScale</i>	The size of the LSB in the ImageJ file
<i>aR</i>	The R value of the clusterizer
<i>aT</i>	The T value of the clusterizer
<i>aOutputPattern</i>	A formattable-string specifying the name of the output JSON files. Substitutable fields are {input} (giving the stem of the input file name) and {roi} (giving the Roi id).

Definition at line 255 of file API.cpp.

References `_ClusterCallback_Json_()`, and `ImageJRoi_Cluster_SimpleCallback()`.

#### 4.2.1.14 ImageJRoi\_Scan\_FullCallback()

```
void ImageJRoi_Scan_FullCallback (
    const std::string & aInFile,
    const std::string & aImageJfile,
    const double & aScale,
    const ScanConfiguration & aScanConfig,
    const tFullScanCallback & aCallback )
```

Extract Roi using an image-map, run scan and apply a full call-back.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aImageJfile</i>	The name of an ImageJ Roi file file
<i>aScale</i>	The size of the LSB in the ImageJ file
<i>aScanConfig</i>	The configuration for the scan
<i>aCallback</i>	The full callback to be applied

Definition at line 223 of file API.cpp.

#### 4.2.1.15 ImageJroi\_Scan\_SimpleCallback()

```
void ImageJroi_Scan_SimpleCallback (
    const std::string & aInFile,
    const std::string & aImageJfile,
    const double & aScale,
    const ScanConfiguration & aScanConfig,
    const tSimpleScanCallback & aCallback )
```

Extract Rol using an image-map, run scan and apply a simple call-back.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aImageJfile</i>	The name of an ImageJ Rol file file
<i>aScale</i>	The size of the LSB in the ImageJ file
<i>aScanConfig</i>	The configuration for the scan
<i>aCallback</i>	The simple callback to be applied

Definition at line 229 of file API.cpp.

References `_FullScanToSimpleScan_()`.

Referenced by `ImageJroi_Scan_ToJson()`.

#### 4.2.1.16 ImageJroi\_Scan\_ToJson()

```
void ImageJroi_Scan_ToJson (
    const std::string & aInFile,
    const std::string & aImageJfile,
    const double & aScale,
    const ScanConfiguration & aScanConfig,
    const std::string & aOutputPattern )
```

Extract Rol using an image-map, run scan and dump to JSON file.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aImageJfile</i>	The name of an ImageJ Rol file file
<i>aScale</i>	The size of the LSB in the ImageJ file
<i>aScanConfig</i>	The configuration for the scan
<i>aOutputPattern</i>	A formattable-string specifying the name of the output JSON files. Substitutable fields are {input} (giving the stem of the input file name) and {roi} (giving the Rol id).



Definition at line 235 of file API.cpp.

References `_ScanCallback_Json()`, and `ImageJRoi_Scan_SimpleCallback()`.

#### 4.2.1.17 ManualRoi\_Cluster\_FullCallback()

```
void ManualRoi_Cluster_FullCallback (
    const std::string & aInFile,
    const ManualRoI & aManualRoI,
    const double & aR,
    const double & aT,
    const tFullClusterCallback & aCallback )
```

Manually specify RoI, clusterize and apply a full call-back.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aManualRoI</i>	The manually-specified RoI window
<i>aR</i>	The R value of the clusterizer
<i>aT</i>	The T value of the clusterizer
<i>aCallback</i>	The callback to be applied

Definition at line 203 of file API.cpp.

Referenced by `ManualRoi_Cluster_SimpleCallback()`.

#### 4.2.1.18 ManualRoi\_Cluster\_SimpleCallback()

```
void ManualRoi_Cluster_SimpleCallback (
    const std::string & aInFile,
    const ManualRoI & aManualRoI,
    const double & aR,
    const double & aT,
    const tSimpleClusterCallback & aCallback )
```

Manually specify RoI, clusterize and apply a full call-back.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aManualRoI</i>	The manually-specified RoI window
<i>aR</i>	The R value of the clusterizer
<i>aT</i>	The T value of the clusterizer
<i>aCallback</i>	The callback to be applied

Definition at line 209 of file API.cpp.

References `_FullClusterToSimpleCluster_()`, and `ManualRoi_Cluster_FullCallback()`.

Referenced by `ManualRoi_Cluster_ToJson()`.

#### 4.2.1.19 ManualRoi\_Cluster\_ToJson()

```
void ManualRoi_Cluster_ToJson (
    const std::string & aInFile,
    const ManualRoI & aManualRoI,
    const double & aR,
    const double & aT,
    const std::string & aOutputPattern )
```

Manually specify RoI, clusterize and apply a full call-back.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aManualRoI</i>	The manually-specified RoI window
<i>aR</i>	The R value of the clusterizer
<i>aT</i>	The T value of the clusterizer
<i>aOutputPattern</i>	A formattable-string specifying the name of the output JSON files. Substitutable fields are {input} (giving the stem of the input file name) and {roi} (giving the RoI id).

Definition at line 215 of file `API.cpp`.

References `_ClusterCallback_Json_()`, and `ManualRoi_Cluster_SimpleCallback()`.

#### 4.2.1.20 ManualRoi\_Scan\_FullCallback()

```
void ManualRoi_Scan_FullCallback (
    const std::string & aInFile,
    const ManualRoI & aManualRoI,
    const ScanConfiguration & aScanConfig,
    const tFullScanCallback & aCallback )
```

Manually specify RoI, run scan and apply a full call-back.

##### Parameters

<i>aInFile</i>	The name of the localization file
<i>aManualRoI</i>	The manually-specified RoI window
<i>aScanConfig</i>	The configuration for the scan
<i>aCallback</i>	The full callback to be applied

Definition at line 183 of file `API.cpp`.

**4.2.1.21 ManualRoi\_Scan\_SimpleCallback()**

```
void ManualRoi_Scan_SimpleCallback (
    const std::string & aInFile,
    const ManualRoI & aManualRoI,
    const ScanConfiguration & aScanConfig,
    const tSimpleScanCallback & aCallback )
```

Manually specify RoI, run scan and apply a simple call-back.

**Parameters**

<i>aInFile</i>	The name of the localization file
<i>aManualRoI</i>	The manually-specified RoI window
<i>aScanConfig</i>	The configuration for the scan
<i>aCallback</i>	The simple callback to be applied

Definition at line 189 of file API.cpp.

References `_FullScanToSimpleScan_()`.

Referenced by `ManualRoi_Scan_ToJson()`.

**4.2.1.22 ManualRoi\_Scan\_ToJson()**

```
void ManualRoi_Scan_ToJson (
    const std::string & aInFile,
    const ManualRoI & aManualRoI,
    const ScanConfiguration & aScanConfig,
    const std::string & aOutputPattern )
```

Manually specify RoI, run scan and dump to JSON file.

**Parameters**

<i>aInFile</i>	The name of the localization file
<i>aManualRoI</i>	The manually-specified RoI window
<i>aScanConfig</i>	The configuration for the scan
<i>aOutputPattern</i>	A formattable-string specifying the name of the output JSON files. Substitutable fields are {input} (giving the stem of the input file name) and {roi} (giving the RoI id).

Definition at line 195 of file API.cpp.

References `_ScanCallback_Json_()`, and `ManualRoi_Scan_SimpleCallback()`.



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