Parallel Bayesian Toolbox

Generated by Doxygen 1.8.3.1

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Contents

Chapter 1

Hierarchical Index

1.1 Class Hierarchy

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

Chapter 2

Class Index

2.1 Class List

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

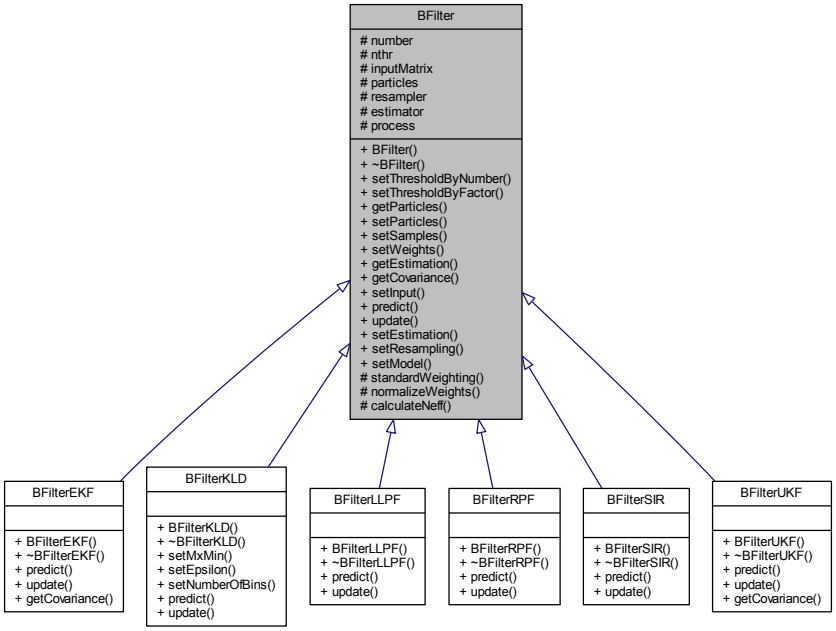
Chapter 3

Class Documentation

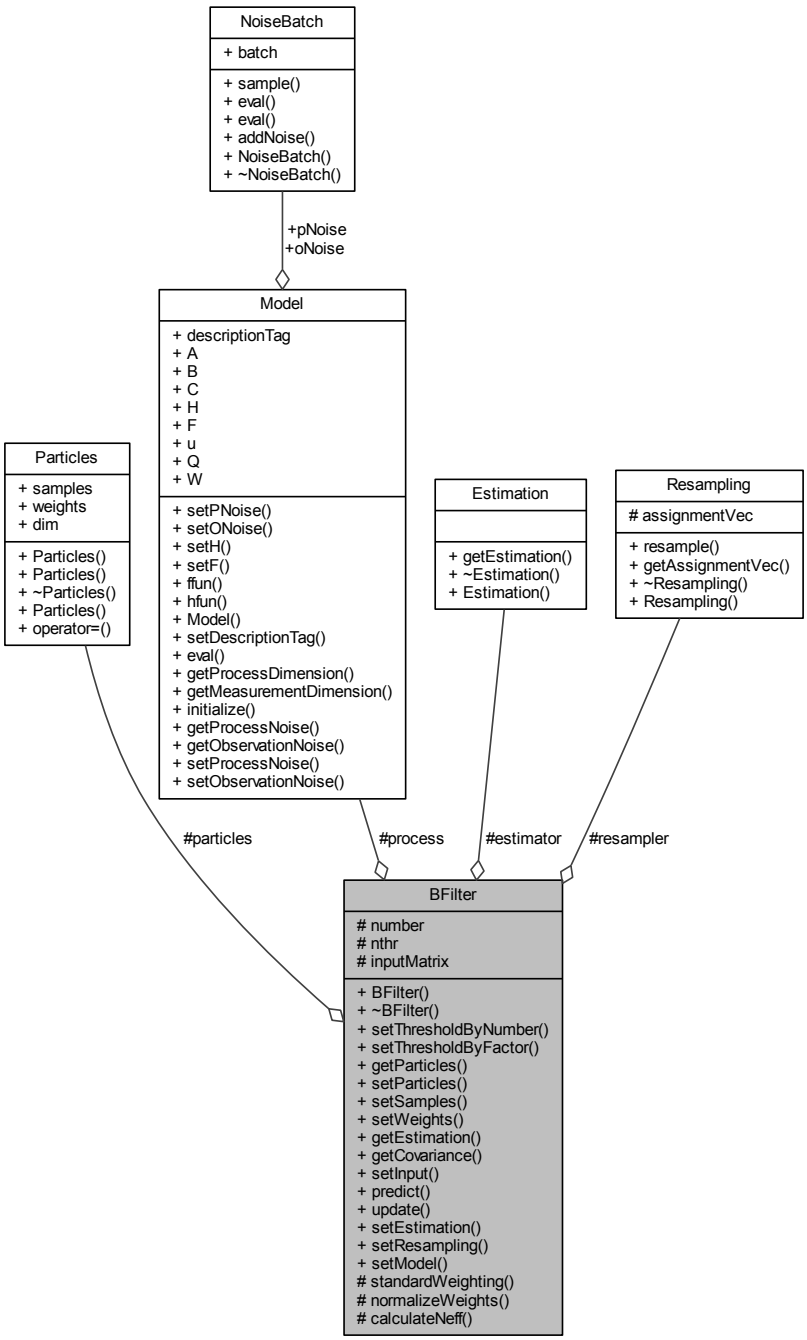
3.1 BFilter Class Reference

`#include <bf.h>`

Inheritance diagram for BFilter:



Collaboration diagram for BFilter:



Public Member Functions

- void setThresholdByNumber (unsigned int)
- void setThresholdByFactor (float)
- Particles getParticles ()
- void setParticles (fmat, frowvec)
- void setSamples (fmat)

- void setWeights (frowvec)
- fvec getEstimation ()
- fmat getCovariance ()
- void **setInput** (fvec)
- virtual void predict ()
- virtual void update (fvec)
- void setEstimation (Estimation ∗)
- void setResampling (Resampling ∗)
- void setModel (Model ∗)

Protected Member Functions

- void standardWeighting ()
- void normalizeWeights ()
- float calculateNeff ()

Protected Attributes

- unsigned int **number**
- unsigned int **nthr**
- fmat **inputMatrix**
- Particles **particles**
- Resampling ∗ **resampler**
- Estimation ∗ **estimator**
- Model ∗ **process**

3.1.1 Detailed Description

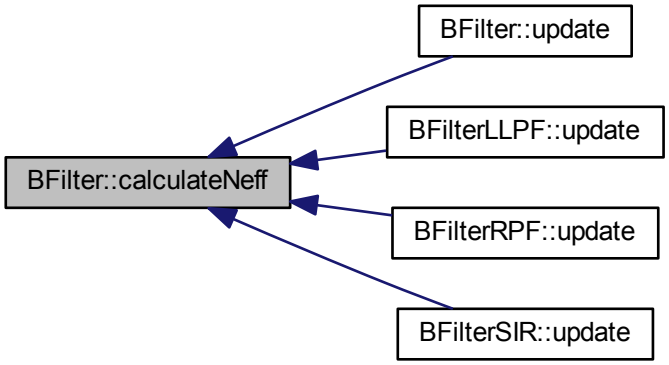
Bayes Filter base class implementing a simple SIS particle filter

3.1.2 Member Function Documentation

3.1.2.1 float BFilter::calculateNeff ( ) [protected]

calculate $Neff = \frac{1}{sum(weight^2)}$

Here is the caller graph for this function:



3.1.2.2 fmat BFilter::getCovariance ( )

Returns the current covariance matrix. Either it computes the covariance matrix by calculating it or returning the on-line computed covariance matrix of a Kalman Filter

Here is the caller graph for this function:

3.1.2.3 fvec BFilter::getEstimation ( )

returns the estimation of current state using the defined estimation method

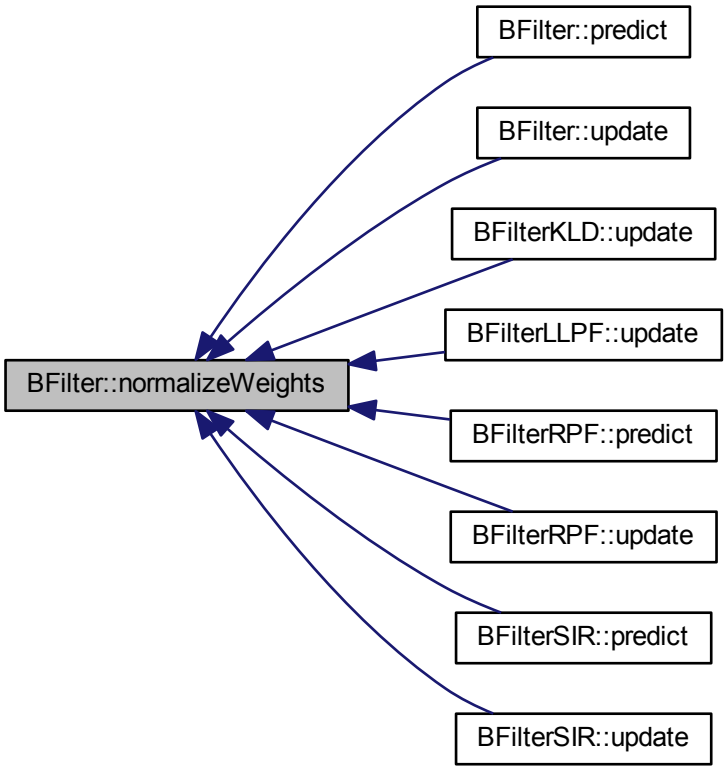
3.1.2.4 Particles BFilter::getParticles ( )

Returns the current set of particles including samples and weights

3.1.2.5 void BFilter::normalizeWeights ( ) [protected]

calculate weights so that sum of all weights equals 1

Here is the caller graph for this function:

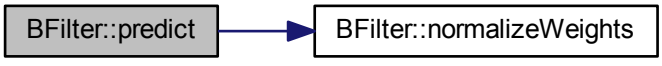


3.1.2.6 void BFilter::predict ( ) [virtual]

pressing prediction step including a temporary estimation

Reimplemented in BFilterUKF, BFilterKLD, BFilterLLPF, BFilterEKF, BFilterRPF, and BFilterSIR.

Here is the call graph for this function:



3.1.2.7 void BFilter::setEstimation (Estimation * *newEstimator*)

Set estimation method

3.1.2.8 void BFilter::setModel (Model * *newModel*)

Set model used for particle generation

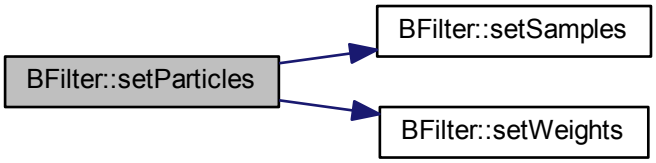
3.1.2.9 void BFilter::setParticles (fmat *newSamples*, frowvec *newWeights*)

sets the particle set to a defined state

Parameters

samples	matrix of particles approximating a defined state
weigts	vector of weights corresponing to the set of particles

Here is the call graph for this function:



3.1.2.10 void BFilter::setResampling (Resampling * *newResampler*)

Set resampling method

3.1.2.11 void BFilter::setSamples (fmat *newSamples*)

define a new set of particles

Parameters

samples	matrix of particles approximating a defined state

Here is the caller graph for this function:

3.1.2.12 void BFilter::setThresholdByFactor (float *newThreshold*)

Set number of particles. If the number of particles is reset all particles represent a zero vector and have standard weights. sets the threshold for resampling as a factor from 0 to 1. It is internally multiplied with the number of existing particles

3.1.2.13 void BFilter::setThresholdByNumber (unsigned int *newThreshold*)

methods to manipulate the particles set, e.g. number of particles or weights

sets the resampling threshold as a defined number of particles

3.1.2.14 void BFilter::setWeights (frowvec *newWeights*)

sets a new vector of weights

Parameters

weigts	vector of weights corresponing to the set of particles

Here is the caller graph for this function:

3.1.2.15 void BFilter::standardWeighting ( ) [protected]

Weights all particles with the same value 1/numberOfParticles

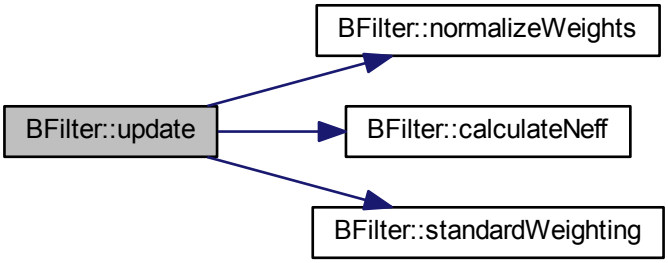
Here is the caller graph for this function:

3.1.2.16 void BFilter::update (fvec *measurement*) [virtual]

processing update step including resampling if possible

Reimplemented in BFilterUKF, BFilterKLD, BFilterLLPF, BFilterEKF, BFilterRPF, and BFilterSIR.

Here is the call graph for this function:



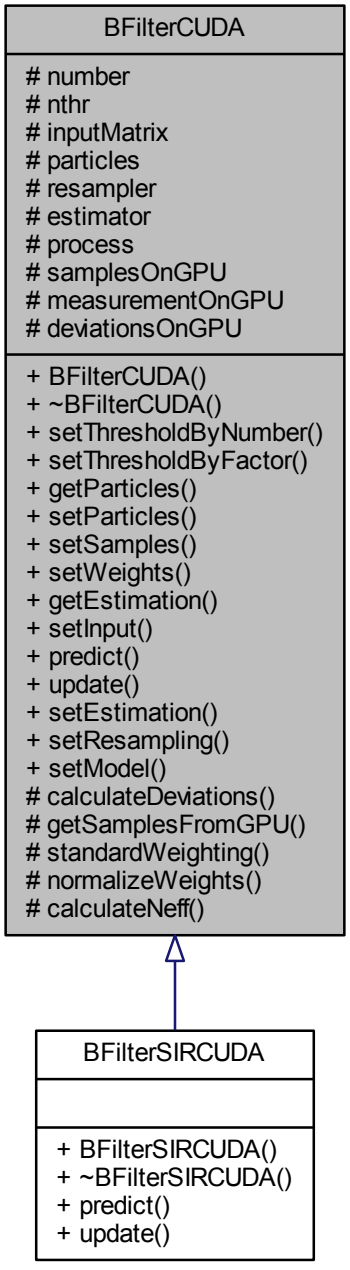
The documentation for this class was generated from the following files:

- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/bf.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/bf.cpp

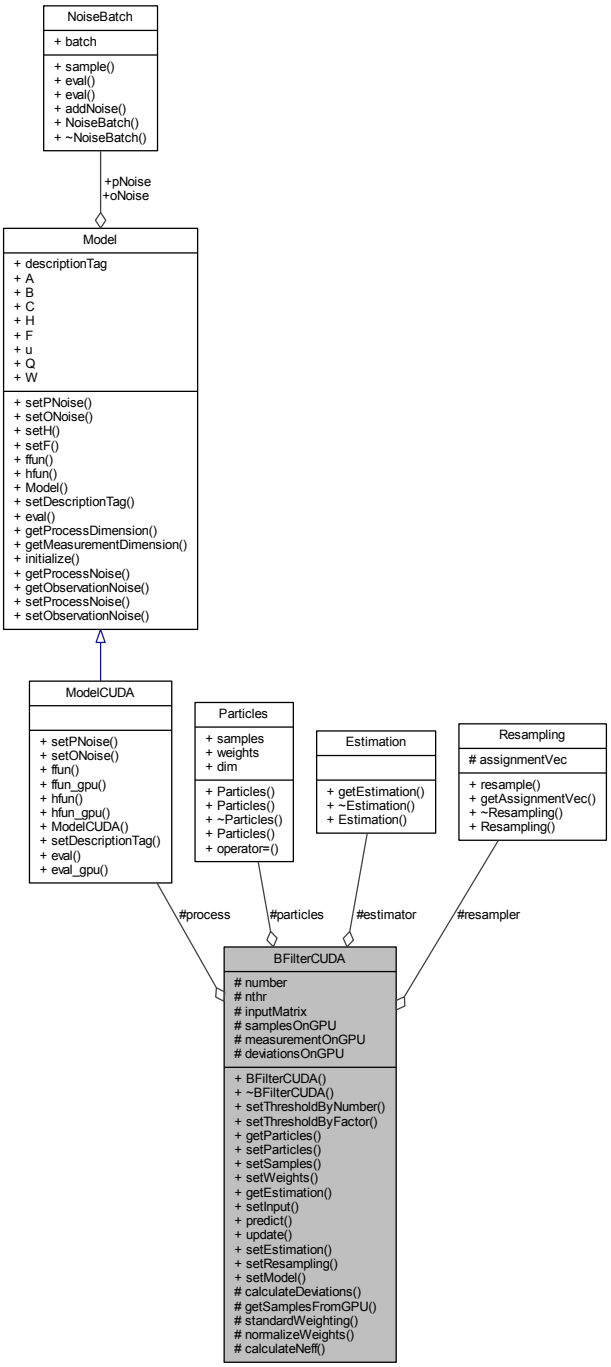
3.2 BFilterCUDA Class Reference

```
#include <bf_cuda.h>
```

Inheritance diagram for BFilterCUDA:



Collaboration diagram for BFilterCUDA:



Public Member Functions

- void setThresholdByNumber (unsigned int)
- void setThresholdByFactor (float)
- Particles getParticles ()
- void setParticles (fmat, frowvec)
- void setSamples (fmat)

- void setWeights (frowvec)
- fvec **getEstimation** ()
- void **setInput** (fvec)
- virtual void predict ()
- virtual void update (fvec)
- void setEstimation (Estimation ∗)
- void setResampling (Resampling ∗)
- void setModel (ModelCUDA ∗)

Protected Member Functions

- void **calculateDeviations** (float ∗measurement)
- fmat **getSamplesFromGPU** ()
- void standardWeighting ()
- void normalizeWeights ()
- float calculateNeff ()

Protected Attributes

- unsigned int **number**
- unsigned int **nthr**
- fmat **inputMatrix**
- Particles **particles**
- Resampling ∗ **resampler**
- Estimation ∗ **estimator**
- ModelCUDA ∗ **process**
- float ∗ **samplesOnGPU**
- float ∗ **measurementOnGPU**
- float ∗ **deviationsOnGPU**

3.2.1 Detailed Description

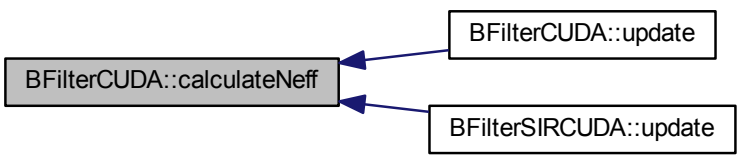
GPU accelerated Bayes Filter base class implementing a simple SIS particle filter

3.2.2 Member Function Documentation

3.2.2.1 float BFilterCUDA::calculateNeff ( ) [protected]

calculate $Neff = \frac{1}{sum(weight^2)}$

Here is the caller graph for this function:



3.2.2.2 Particles BFilterCUDA::getParticles ( )

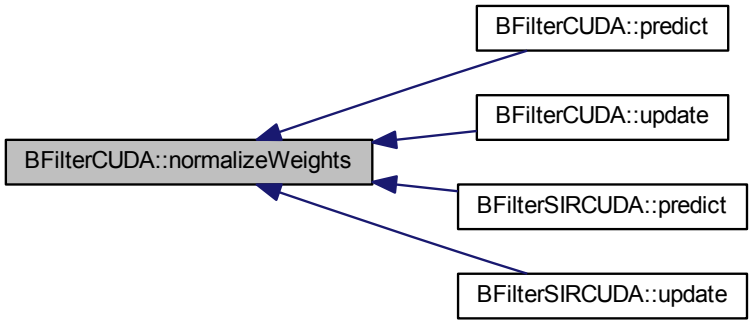
gives the current set of particles including samples and weigts

Reads the particles object

3.2.2.3 void BFilterCUDA::normalizeWeights ( ) [protected]

calculate weights so that sum of all weights equals 1

Here is the caller graph for this function:

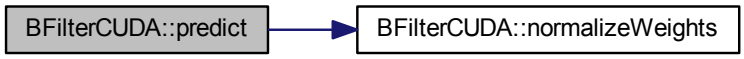


3.2.2.4 void BFilterCUDA::predict ( ) [virtual]

pressing prediction step including a temporary estimation

Reimplemented in BFilterSIRCUDA.

Here is the call graph for this function:



3.2.2.5 void BFilterCUDA::setEstimation (Estimation * *newEstimator*)

Set estimation method

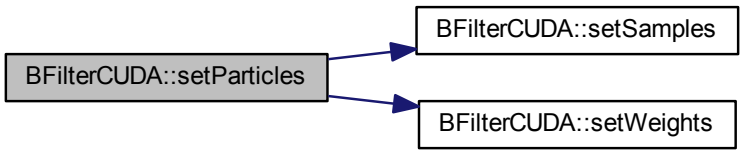
3.2.2.6 void BFilterCUDA::setModel (ModelCUDA * *newModel*)

Set model used for particle generation

3.2.2.7 void BFilterCUDA::setParticles (fmat *newSamples,* frowvec *newWeights*)

Manipulate the particles including samples and their weights

Here is the call graph for this function:



3.2.2.8 void BFilterCUDA::setResampling (**Resampling** ∗ *newResampler*)

Set resampling method

3.2.2.9 void BFilterCUDA::setSamples (fmat *newSamples*)

Manipulate only the samples of the partilces object

Here is the caller graph for this function:

3.2.2.10 void BFilterCUDA::setThresholdByFactor (float *newThreshold*)

sets the threshold for resampling as a factor from 0 to 1. It is multiplied with the number of existing particles

Set number of particles. If the number of particles is reset all particles represent a zero vector and have standard weights. set threshold from 0 to 1

3.2.2.11 void BFilterCUDA::setThresholdByNumber (unsigned int *newThreshold*)

methods to manipulate the particles set, e.g. number of particles or weights sets the resampling threshold as a defined number of particles

set threshold as a defined number

3.2.2.12 void BFilterCUDA::setWeights (frowvec *newWeights*)

Manipulate only the weights of the partilces object

Here is the caller graph for this function:

3.2.2.13 void BFilterCUDA::standardWeighting ( ) [protected]

Weights all particles with the same value 1/numberOfParticles

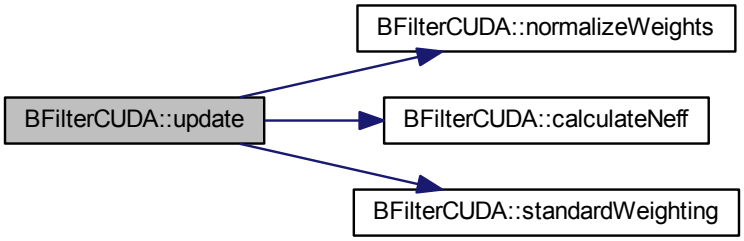
Here is the caller graph for this function:

3.2.2.14 void BFilterCUDA::update (fvec *measurement*) [virtual]

processing update step including resampling if possible

Reimplemented in BFilterSIRCUDA.

Here is the call graph for this function:



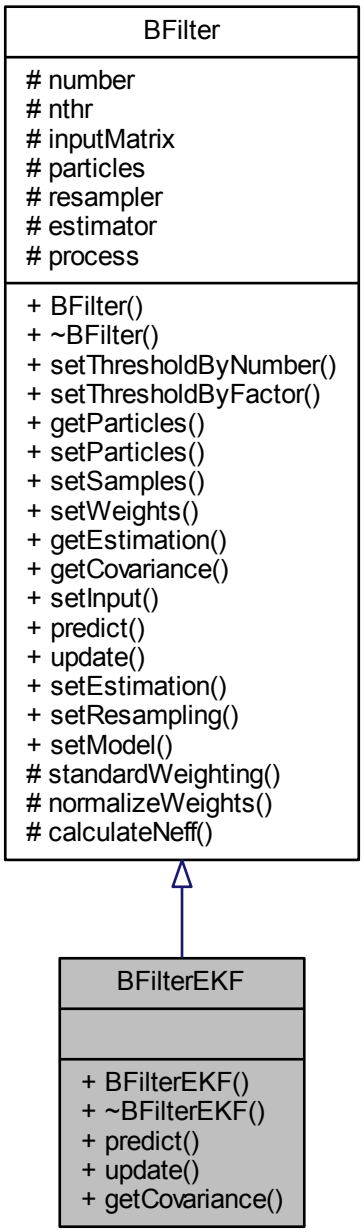
The documentation for this class was generated from the following files:

- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/bf_cuda.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/bf_cuda.cpp

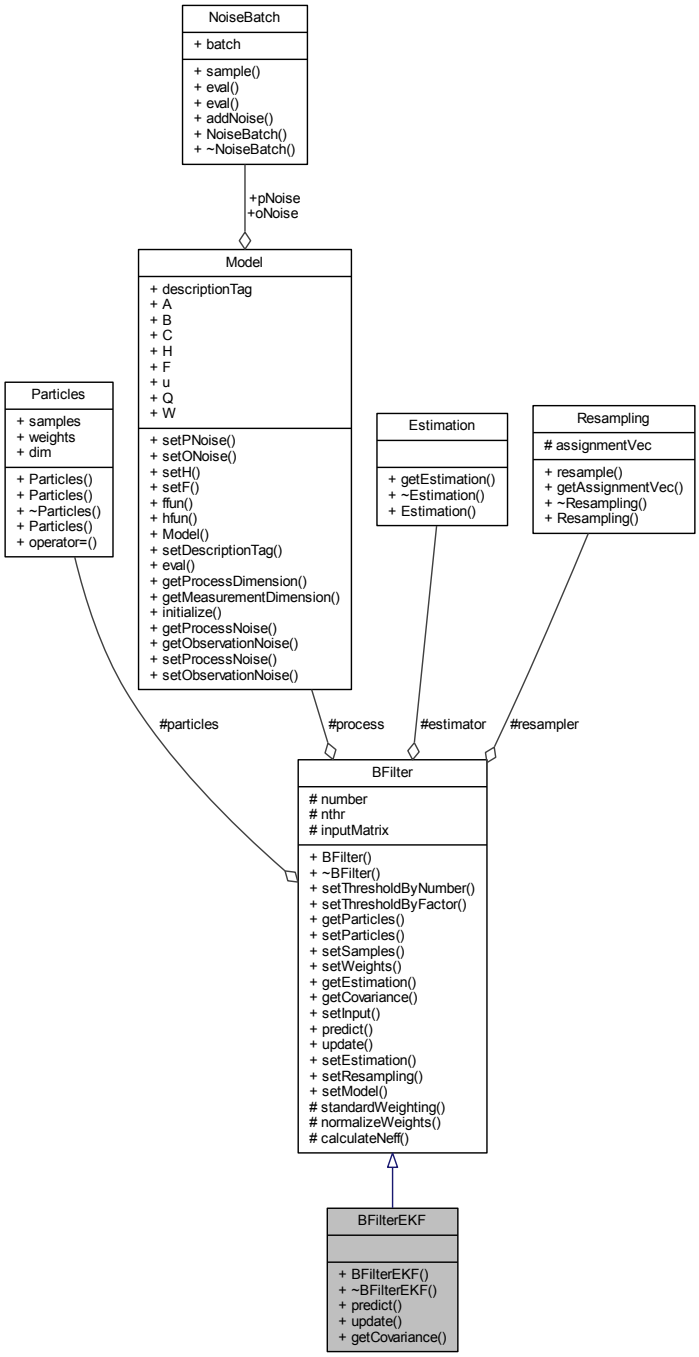
3.3 BFilterEKF Class Reference

`#include <bf_ekf.h>`

Inheritance diagram for BFilterEKF:



Collaboration diagram for BFilterEKF:



Public Member Functions

- void predict ()
- void update (fvec)
- fmat **getCovariance** ()

Additional Inherited Members

3.3.1 Detailed Description

Extended Kalman Filter

3.3.2 Member Function Documentation

3.3.2.1 void BFilterEKF::predict ( ) [virtual]

pressing prediction step including a temporary estimation

Reimplemented from BFilter.

3.3.2.2 void BFilterEKF::update (fvec *measurement*) [virtual]

processing update step including resampling if possible

Reimplemented from BFilter.

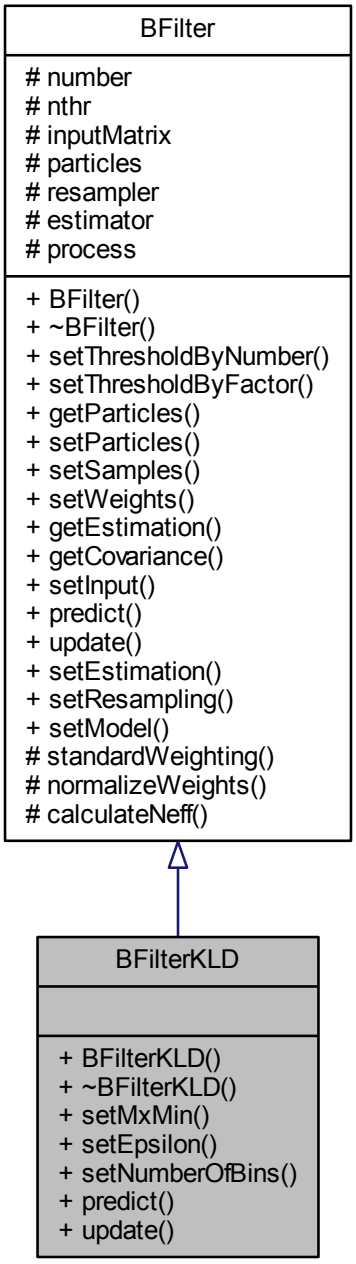
The documentation for this class was generated from the following files:

- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/bf_ekf.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/bf_ekf.cpp

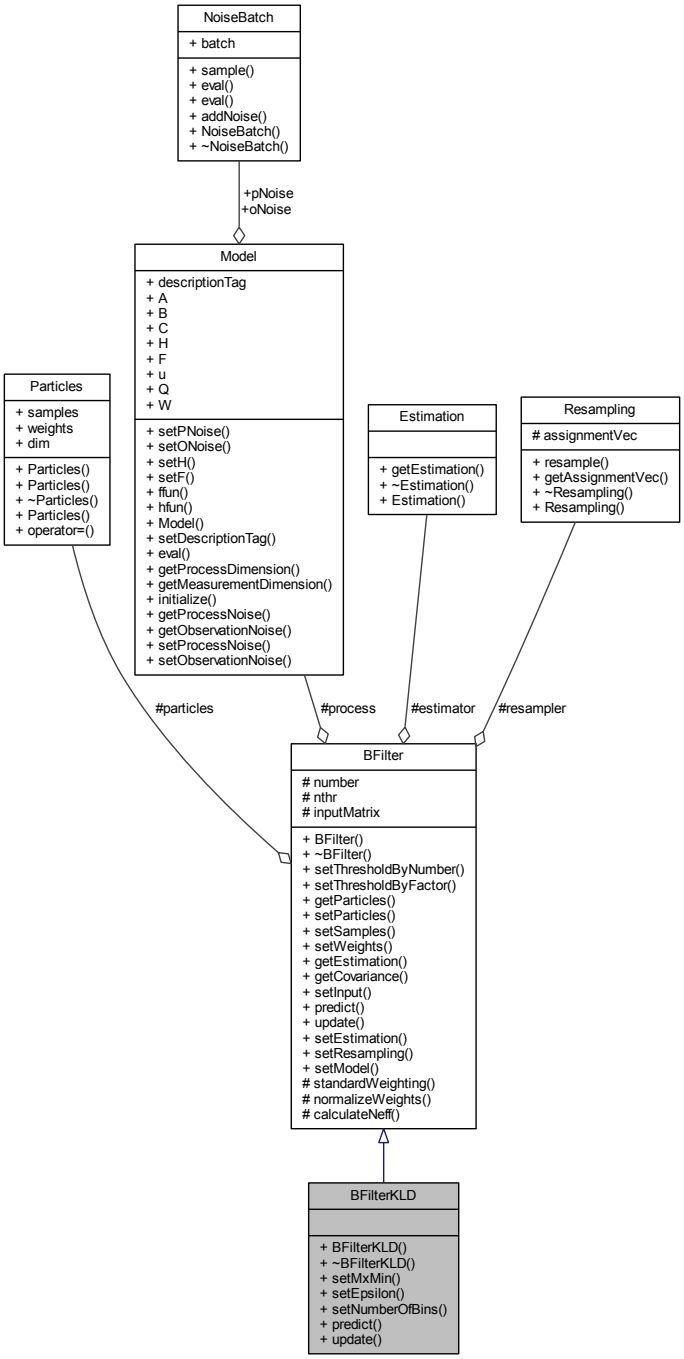
3.4 BFilterKLD Class Reference

```
#include <bf_kld.h>
```

Inheritance diagram for BFilterKLD:



Collaboration diagram for BFilterKLD:



Public Member Functions

- void **setMxMin** (unsigned int MxMin)
- void **setEpsilon** (float epsilon)
- void **setNumberOfBins** (unsigned int number)
- void predict ()
- void update (fvec)

Additional Inherited Members

3.4.1 Detailed Description

particle filter using Kullback-Leibler Divergence sampling

3.4.2 Member Function Documentation

3.4.2.1 void BFilterKLD::predict ( ) [virtual]

pressing prediction step including a temporary estimation

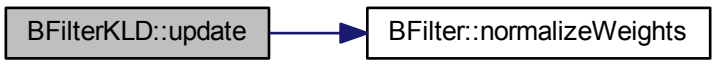
Reimplemented from BFilter.

3.4.2.2 void BFilterKLD::update (fvec *measurement*) [virtual]

processing update step including resampling if possible

Reimplemented from BFilter.

Here is the call graph for this function:



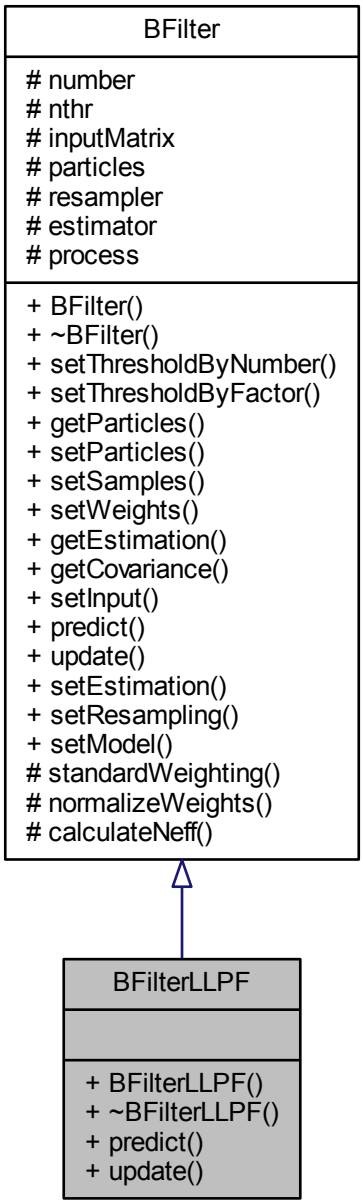
The documentation for this class was generated from the following files:

- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/bf_kld.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/bf_kld.cpp

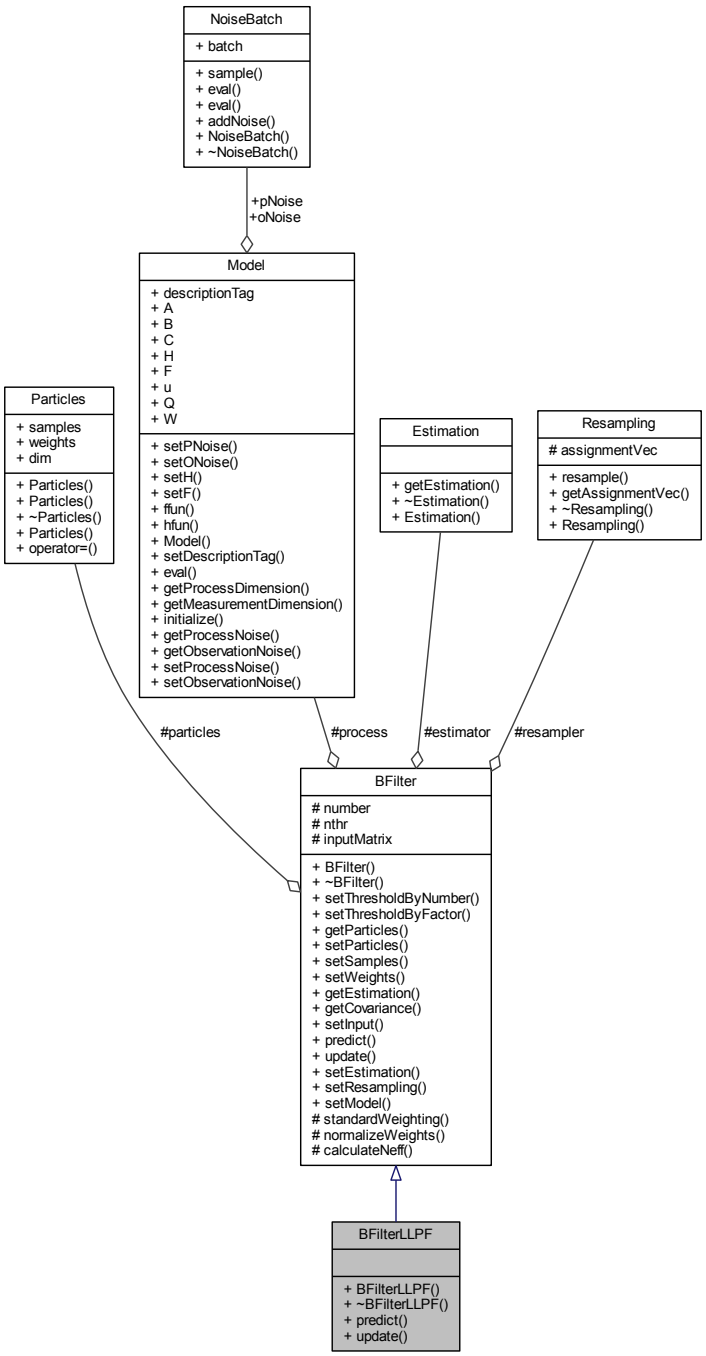
3.5 BFilterLLPF Class Reference

```
#include <bf_llpf.h>
```

Inheritance diagram for BFilterLLPF:



Collaboration diagram for BFilterLLPF:



Public Member Functions

- void predict ()
- void update (fvec)

Additional Inherited Members

3.5.1 Detailed Description

Local Linearization Particle Filter

3.5.2 Member Function Documentation

3.5.2.1 void BFilterLLPF::predict ( ) [virtual]

pressing prediction step including a temporary estimation

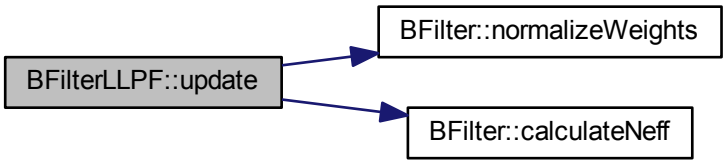
Reimplemented from BFilter.

3.5.2.2 void BFilterLLPF::update (fvec *measurement*) [virtual]

processing update step including resampling if possible

Reimplemented from BFilter.

Here is the call graph for this function:



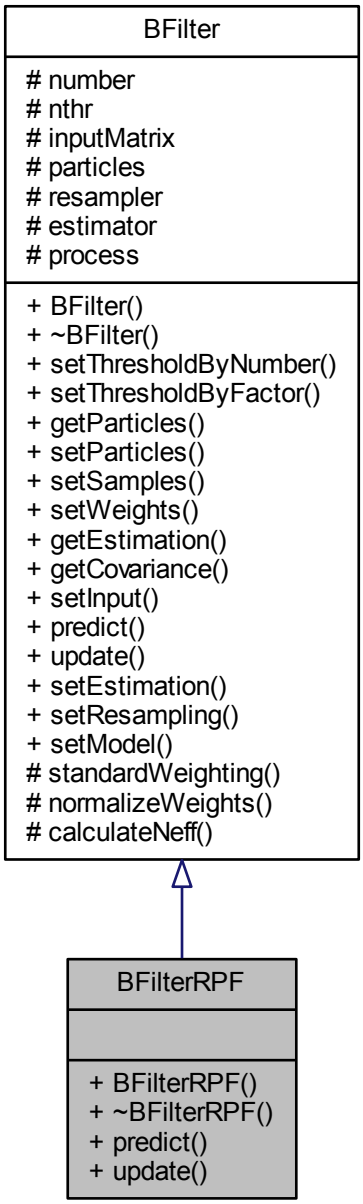
The documentation for this class was generated from the following files:

- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/bf_llpf.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/bf_llpf.cpp

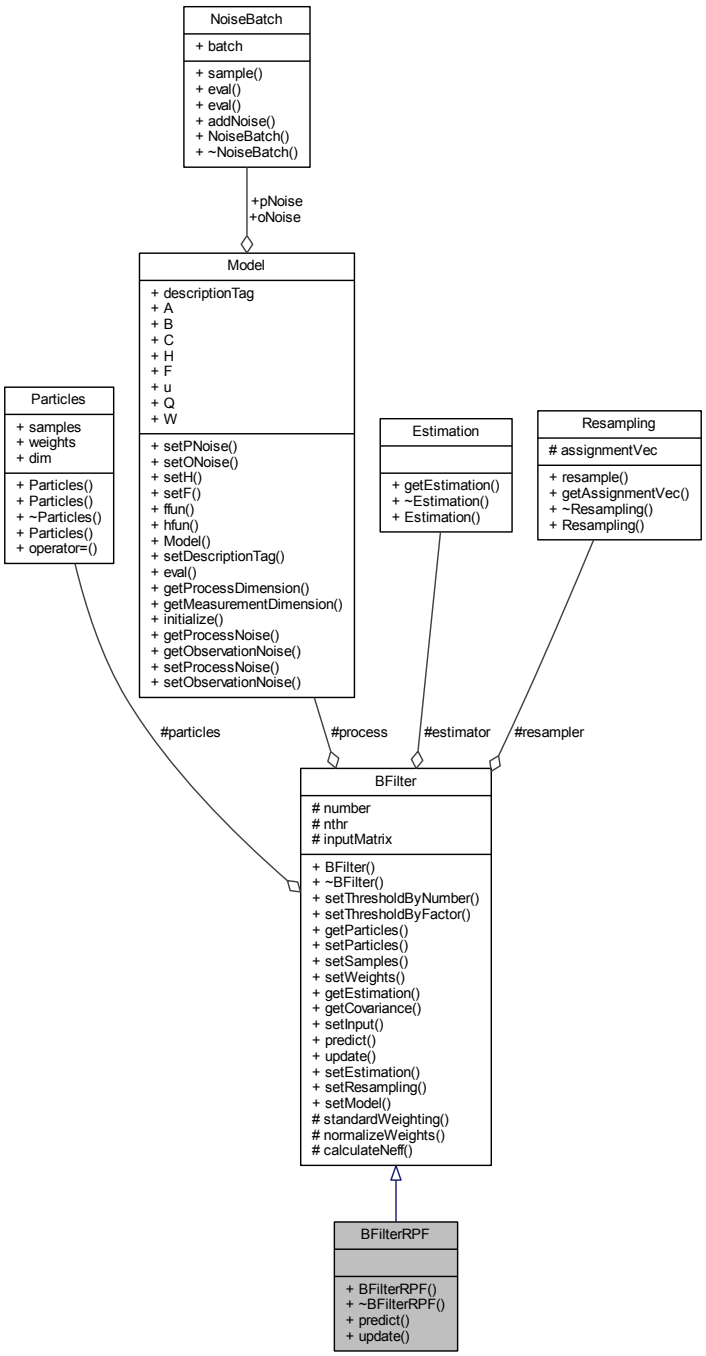
3.6 BFilterRPF Class Reference

`#include <bf_rpf.h>`

Inheritance diagram for BFilterRPF:



Collaboration diagram for BFilterRPF:



Public Member Functions

- void predict ()
- void update (fvec)

Additional Inherited Members

3.6.1 Detailed Description

Regularized Particle Filter

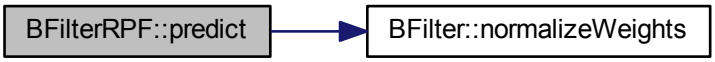
3.6.2 Member Function Documentation

3.6.2.1 void BFilterRPF::predict ( ) [virtual]

pressing prediction step including a temporary estimation

Reimplemented from BFilter.

Here is the call graph for this function:

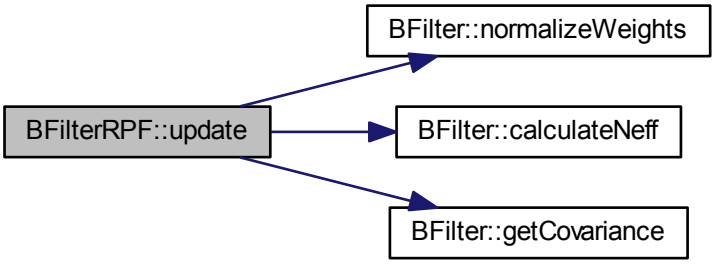


3.6.2.2 void BFilterRPF::update (fvec *measurement*) [virtual]

processing update step including resampling if possible

Reimplemented from BFilter.

Here is the call graph for this function:



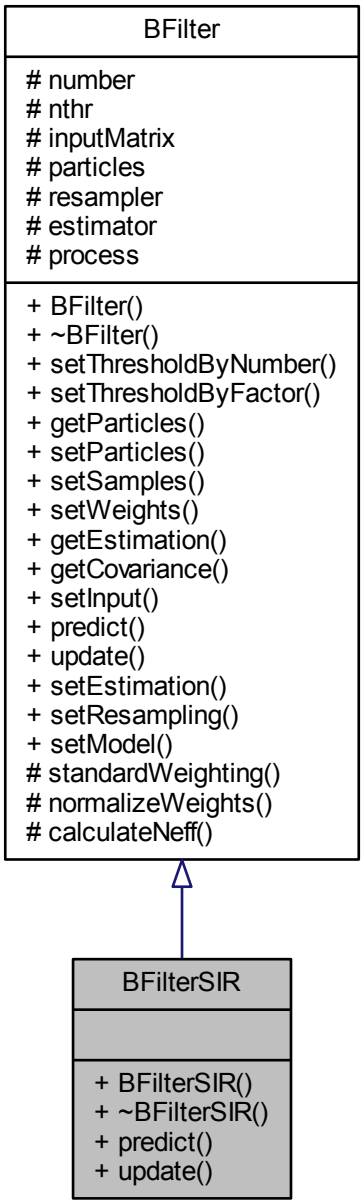
The documentation for this class was generated from the following files:

- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/bf_rpf.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/bf_rpf.cpp

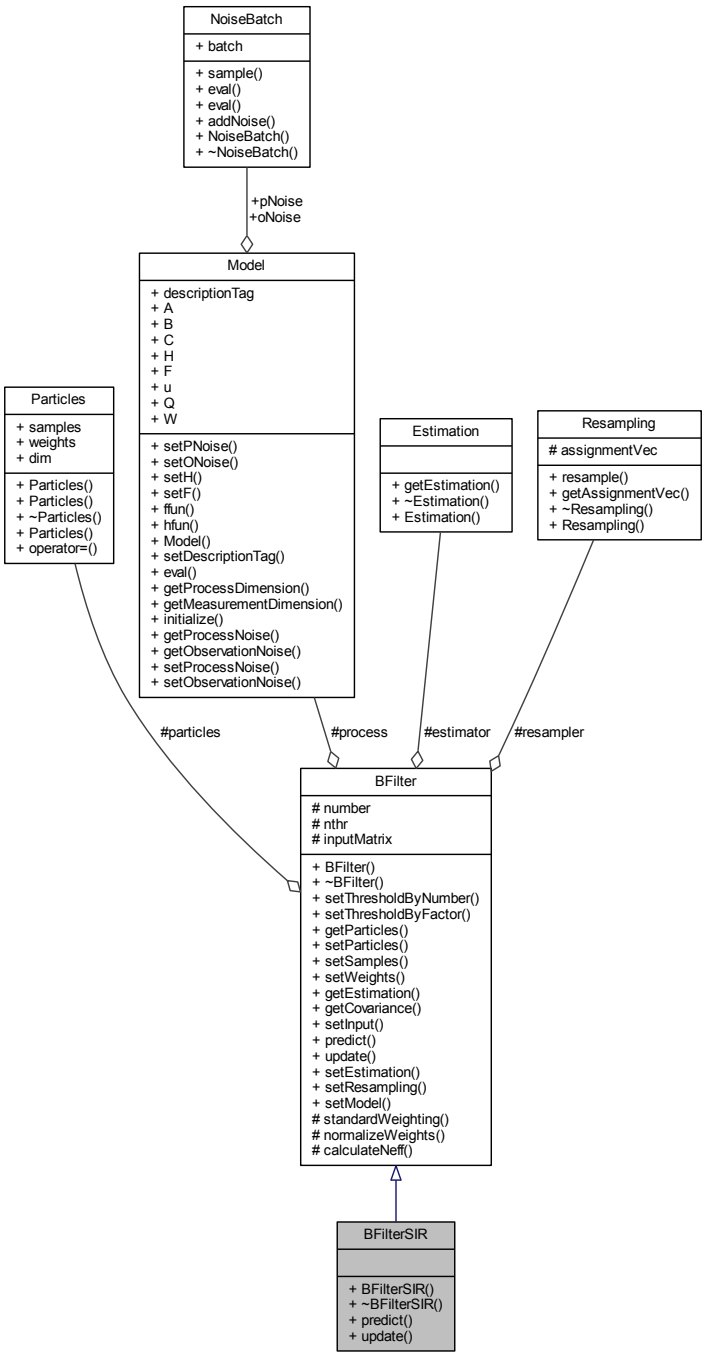
3.7 BFilterSIR Class Reference

`#include <bf_sirpf.h>`

Inheritance diagram for BFilterSIR:



Collaboration diagram for BFilterSIR:



Public Member Functions

- void predict ()
- void update (fvec)

Additional Inherited Members

3.7.1 Detailed Description

Sequential Importance Resampling Particle Filter

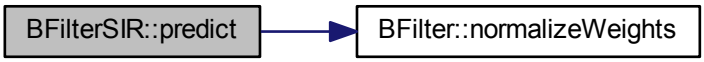
3.7.2 Member Function Documentation

3.7.2.1 void BFilterSIR::predict ( ) [virtual]

pressing prediction step including a temporary estimation

Reimplemented from BFilter.

Here is the call graph for this function:

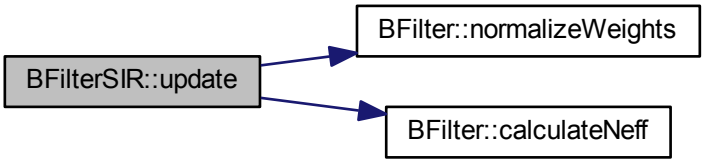


3.7.2.2 void BFilterSIR::update (fvec *measurement*) [virtual]

processing update step including resampling if possible

Reimplemented from BFilter.

Here is the call graph for this function:



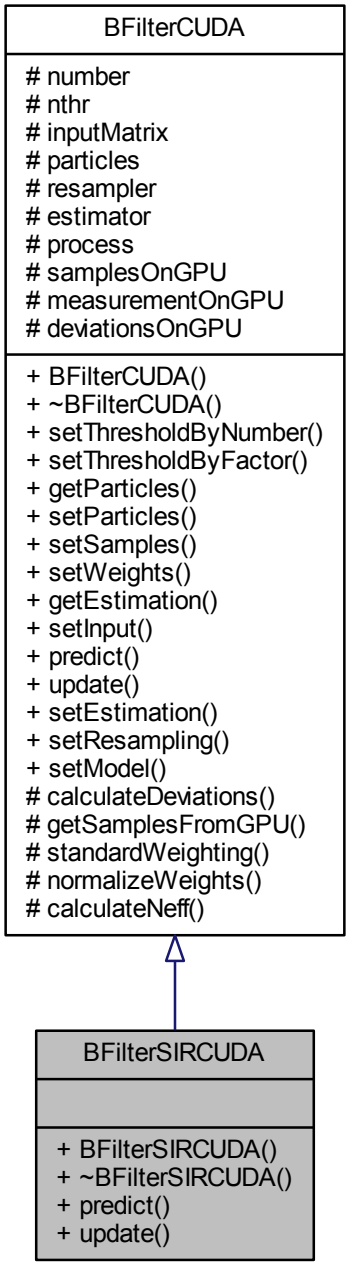
The documentation for this class was generated from the following files:

- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/bf_sirpf.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/bf_sirpf.cpp

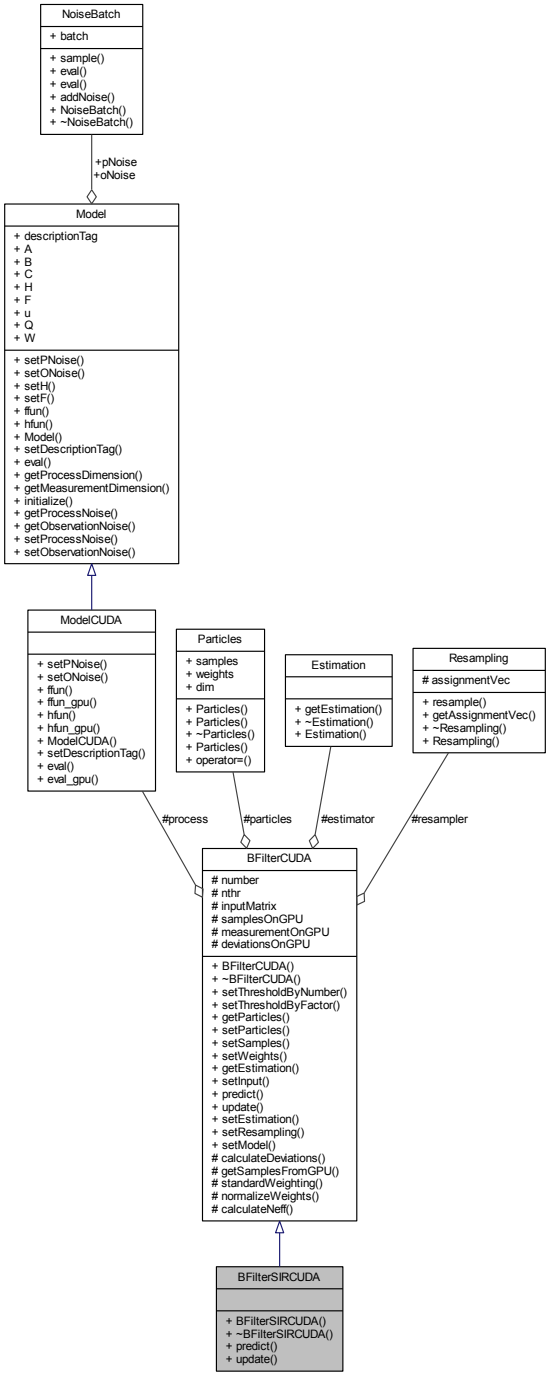
3.8 BFilterSIRCUDA Class Reference

`#include <bf_sirpf_cuda.h>`

Inheritance diagram for BFilterSIRCUDA:



Collaboration diagram for BFilterSIRCUDA:



Public Member Functions

- void predict ()
- void update (fvec)

Additional Inherited Members

3.8.1 Detailed Description

GPU accelerated Sequential Importance Resampling Particle Filter

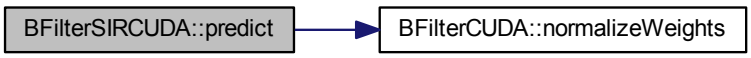
3.8.2 Member Function Documentation

3.8.2.1 void BFilterSIRCUDA::predict ( ) [virtual]

pressing prediction step including a temporary estimation

Reimplemented from BFilterCUDA.

Here is the call graph for this function:

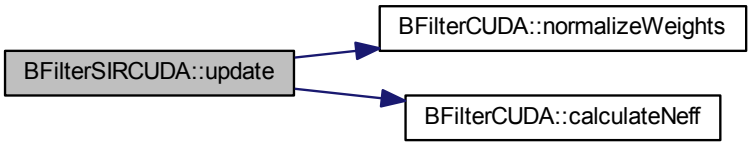


3.8.2.2 void BFilterSIRCUDA::update (fvec *measurement*) [virtual]

processing update step including resampling if possible

Reimplemented from BFilterCUDA.

Here is the call graph for this function:



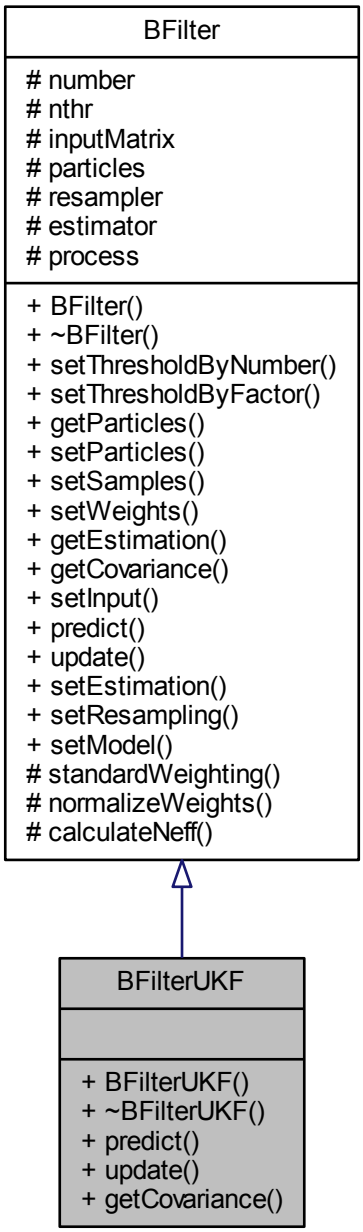
The documentation for this class was generated from the following files:

- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/bf_sirpf_cuda.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/bf_sirpf_cuda.cpp

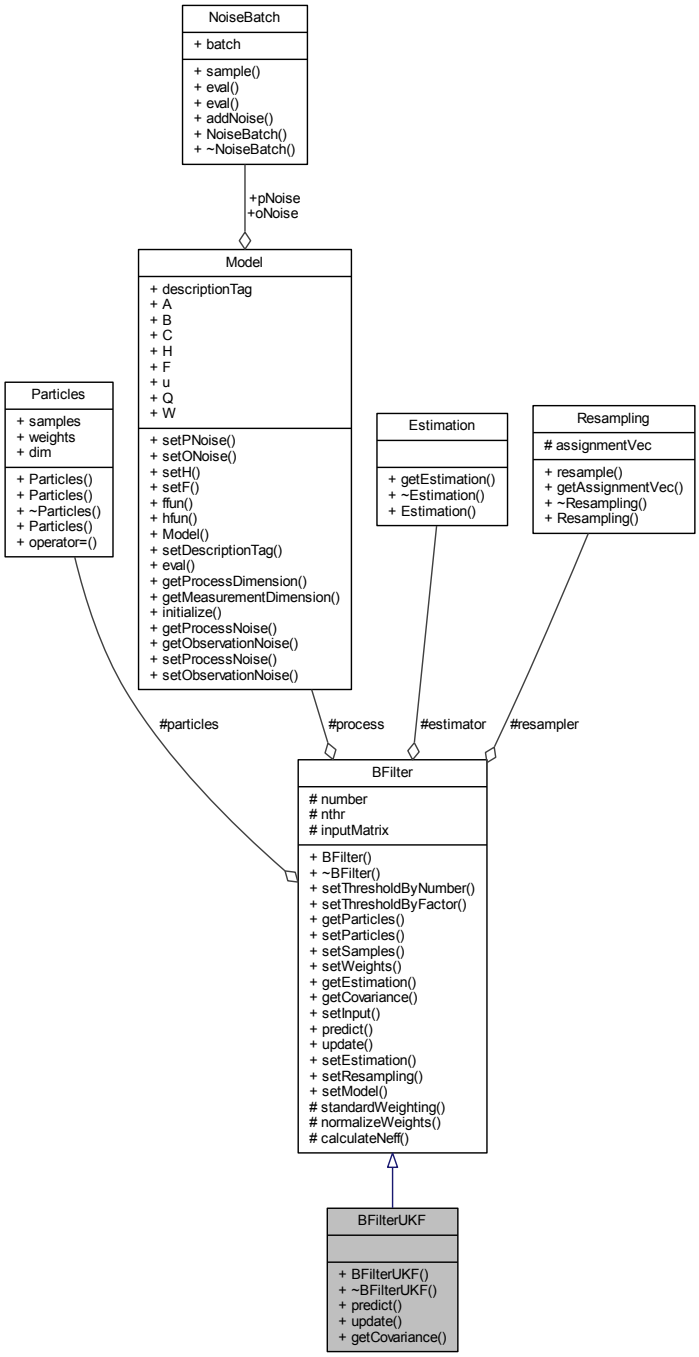
3.9 BFilterUKF Class Reference

`#include <bf_ukf.h>`

Inheritance diagram for BFilterUKF:



Collaboration diagram for BFilterUKF:



Public Member Functions

- void predict ()
- void update (fvec)
- fmat **getCovariance** ()

Additional Inherited Members

3.9.1 Detailed Description

Unscented Kalman Filter

3.9.2 Member Function Documentation

3.9.2.1 void BFilterUKF::predict ( ) [virtual]

pressing prediction step including a temporary estimation

Reimplemented from BFilter.

3.9.2.2 void BFilterUKF::update (fvec *measurement*) [virtual]

processing update step including resampling if possible

Reimplemented from BFilter.

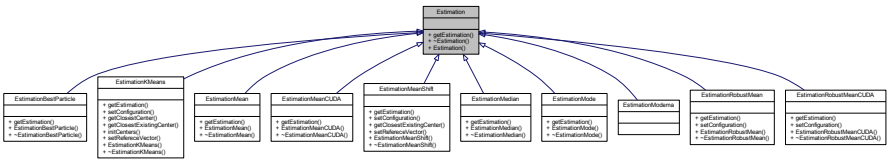
The documentation for this class was generated from the following files:

- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/bf_ukf.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/bf_ukf.cpp

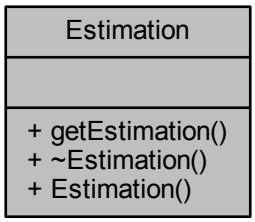
3.10 Estimation Class Reference

`#include <estimation.h>`

Inheritance diagram for Estimation:



Collaboration diagram for Estimation:



Public Member Functions

- virtual fmat **getEstimation** (Particles ∗)

3.10.1 Detailed Description

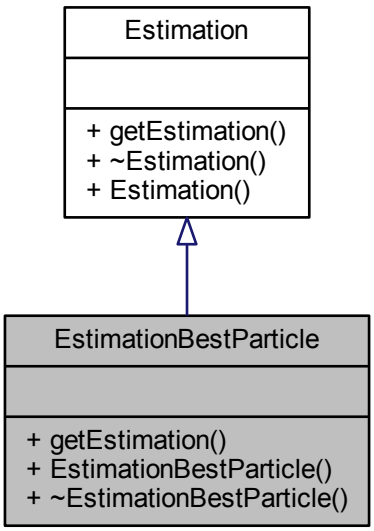
base class for estimation methods

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

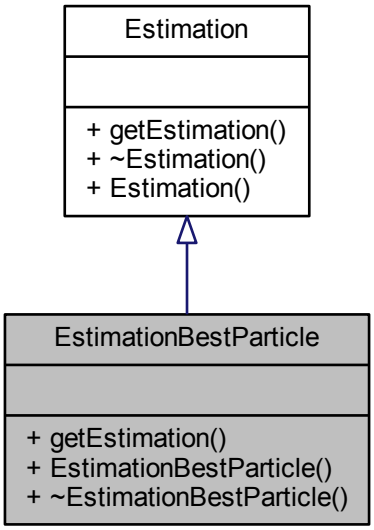
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/estimation.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/estimation.cpp

3.11 EstimationBestParticle Class Reference

Inheritance diagram for EstimationBestParticle:



Collaboration diagram for EstimationBestParticle:



Public Member Functions

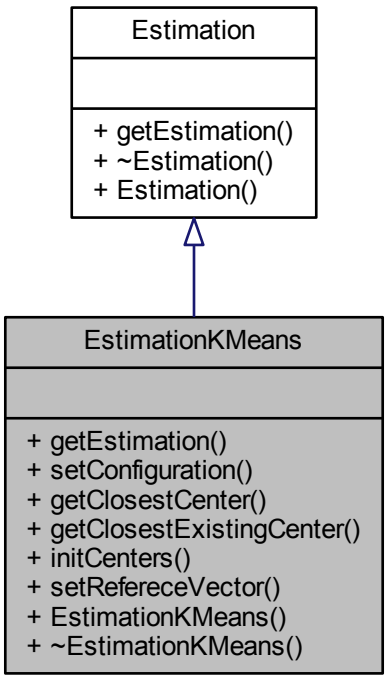
- fmat **getEstimation** (Particles ∗)

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

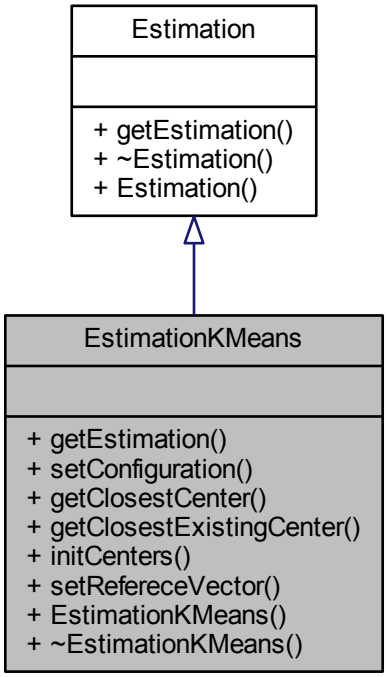
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/estimation_best_particle.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/estimation_best_particle.cpp

3.12 EstimationKMeans Class Reference

Inheritance diagram for EstimationKMeans:



Collaboration diagram for EstimationKMeans:



Public Member Functions

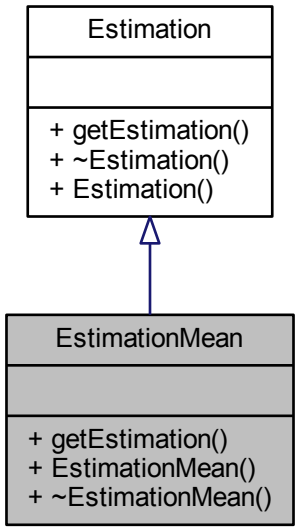
- fmat **getEstimation** (Particles ∗)
- void **setConfiguration** (unsigned int, unsigned int)
- unsigned int **getClosestCenter** (unsigned int)
- unsigned int **getClosestExistingCenter** ()
- void **initCenters** ()
- void **setRefereceVector** (fvec)

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

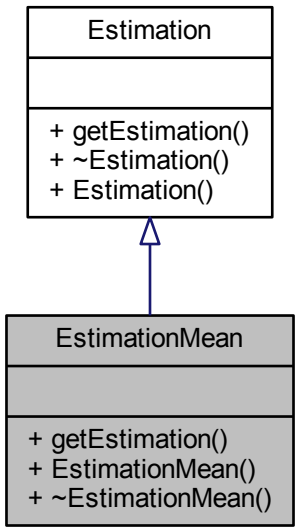
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/estimation_kmeans.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/estimation_kmeans.cpp

3.13 EstimationMean Class Reference

Inheritance diagram for EstimationMean:



Collaboration diagram for EstimationMean:



Public Member Functions

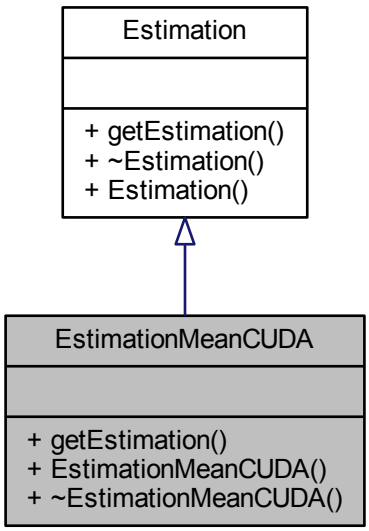
- fmat **getEstimation** (Particles *)

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

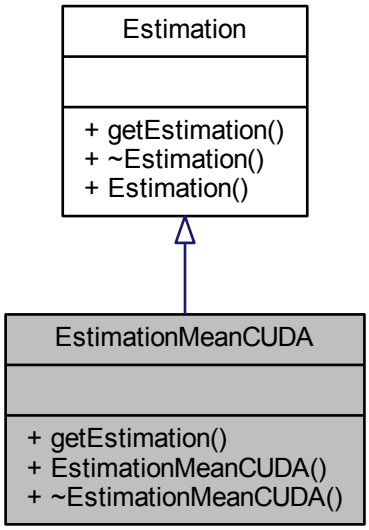
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/estimation_mean.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/estimation_mean.cpp

3.14 EstimationMeanCUDA Class Reference

Inheritance diagram for EstimationMeanCUDA:



Collaboration diagram for EstimationMeanCUDA:



Public Member Functions

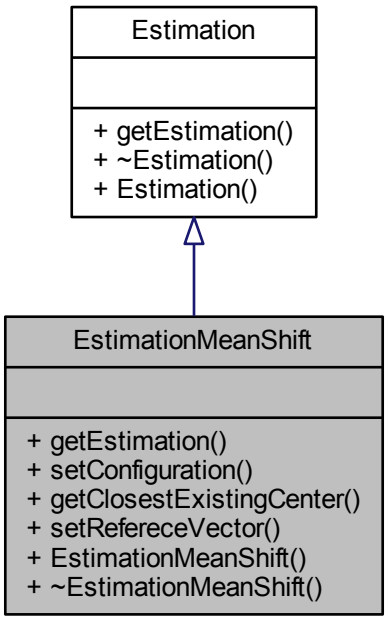
- fmat **getEstimation** (Particles ∗)

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

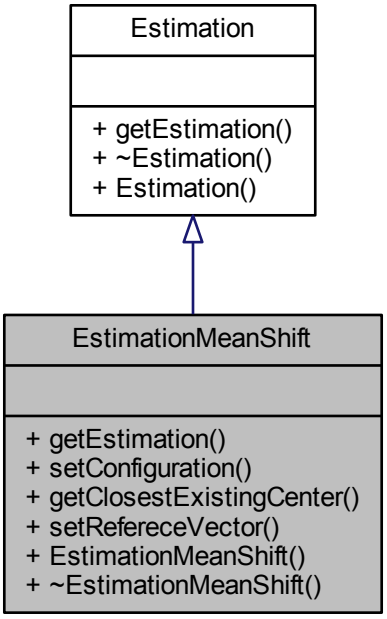
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/estimation_mean_cuda.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/estimation_mean_cuda.cpp

3.15 EstimationMeanShift Class Reference

Inheritance diagram for EstimationMeanShift:



Collaboration diagram for EstimationMeanShift:



Public Member Functions

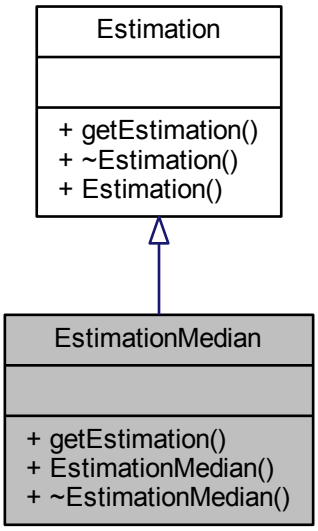
- fmat **getEstimation** (Particles *)
- void **setConfiguration** (float distance, float epsilon, unsigned int maxIterations)
- unsigned int **getClosestExistingCenter** ()
- void **setRefereceVector** (fvec)

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

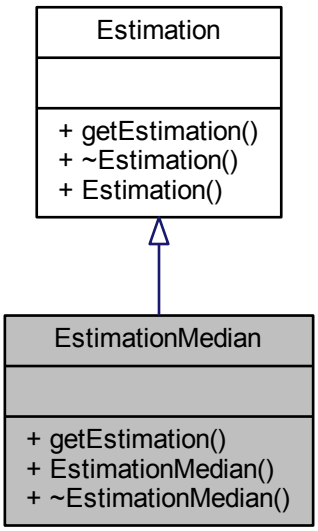
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/estimation_mean_shift.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/estimation_mean_shift.cpp

3.16 EstimationMedian Class Reference

Inheritance diagram for EstimationMedian:



Collaboration diagram for EstimationMedian:



Public Member Functions

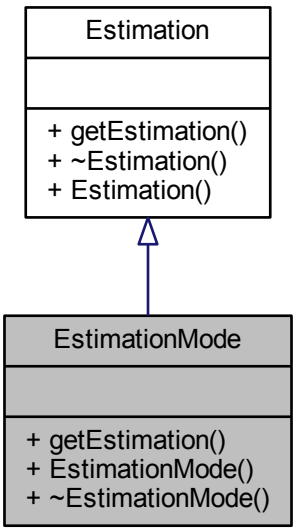
- fmat **getEstimation** (Particles ∗)

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

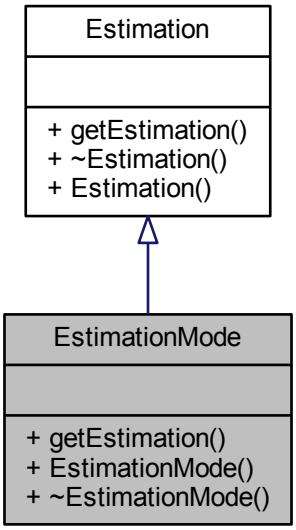
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/estimation_median.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/estimation_median.cpp

3.17 EstimationMode Class Reference

Inheritance diagram for EstimationMode:



Collaboration diagram for EstimationMode:



Public Member Functions

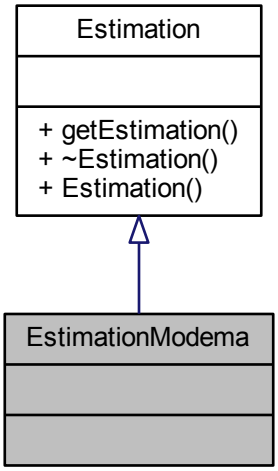
- fmat **getEstimation** (Particles ∗)

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

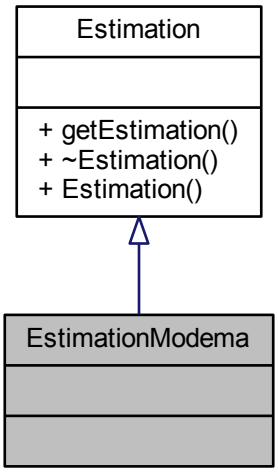
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/estimation_mode.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/estimation_mode.cpp

3.18 EstimationModema Class Reference

Inheritance diagram for EstimationModema:



Collaboration diagram for EstimationModema:



Additional Inherited Members

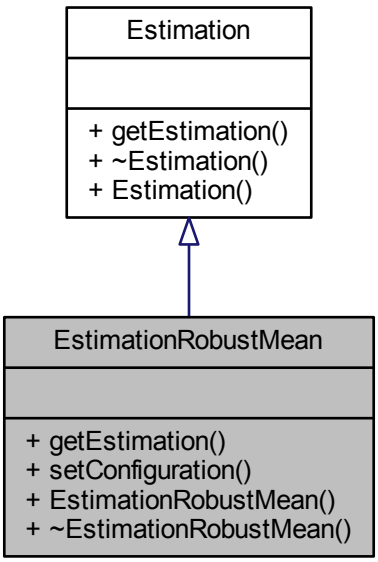
The documentation for this class was generated from the following file:

- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/estimation_modema.h

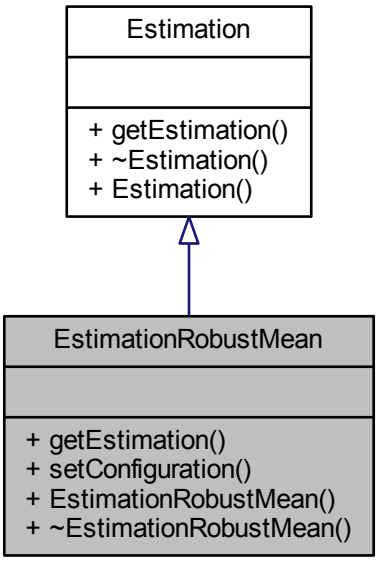
3.19 EstimationRobustMean Class Reference

`#include <estimation_robust_mean.h>`

Inheritance diagram for EstimationRobustMean:



Collaboration diagram for EstimationRobustMean:



Public Member Functions

- fmat **getEstimation** (Particles ∗)
- void **setConfiguration** (fvec)

3.19.1 Detailed Description

robust mean estimation

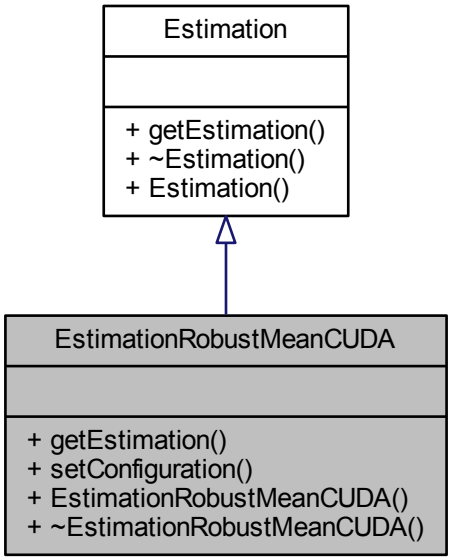
The documentation for this class was generated from the following files:

- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/estimation_robust_mean.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/estimation_robust_mean.cpp

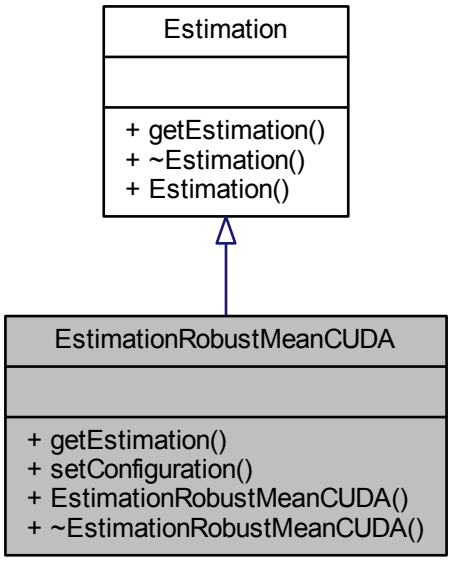
3.20 EstimationRobustMeanCUDA Class Reference

`#include <estimation_robust_mean_cuda.h>`

Inheritance diagram for EstimationRobustMeanCUDA:



Collaboration diagram for EstimationRobustMeanCUDA:



Public Member Functions

- fmat **getEstimation** (Particles ∗)
- void **setConfiguration** (fvec)

3.20.1 Detailed Description

GPU accelerated robust mean estimation

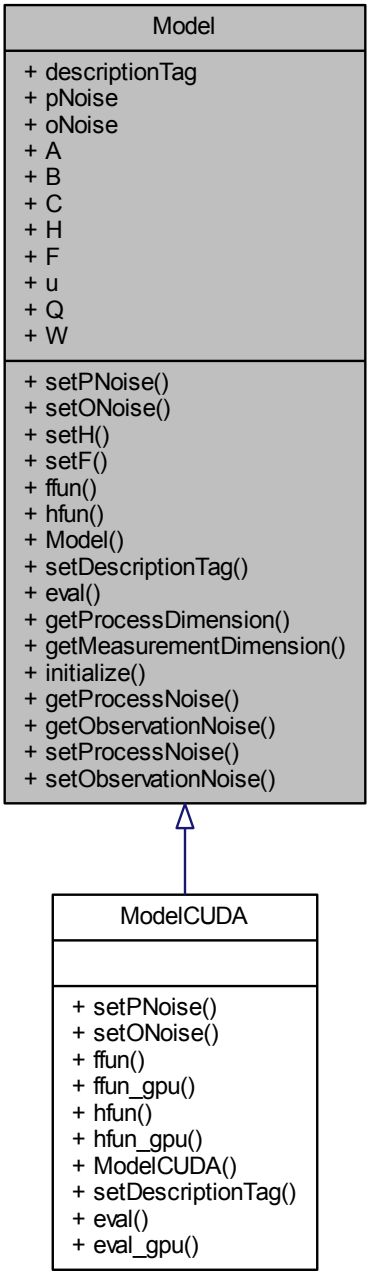
The documentation for this class was generated from the following files:

- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/estimation_robust_mean_cuda.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/estimation_robust_mean_cuda.cpp

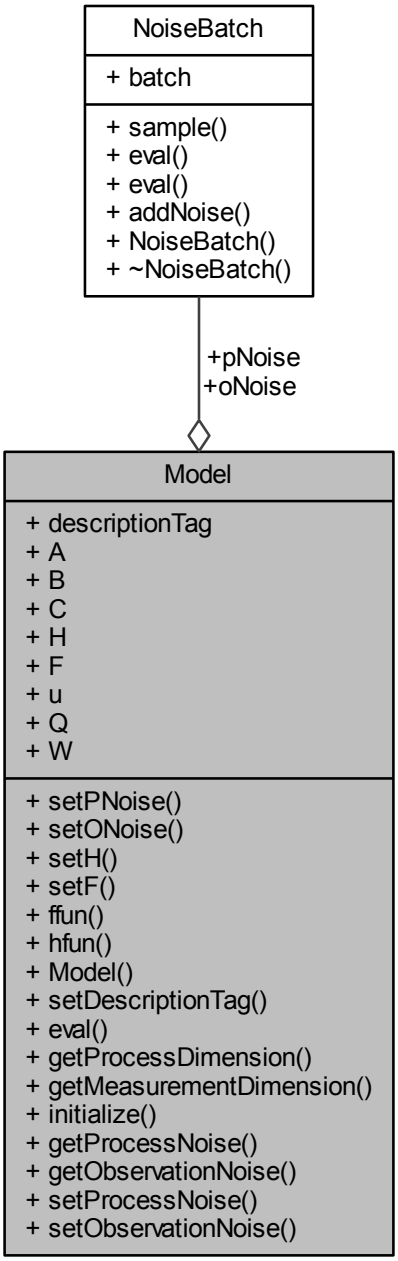
3.21 Model Class Reference

`#include <model.h>`

Inheritance diagram for Model:



Collaboration diagram for Model:



Public Member Functions

- virtual void **setPNoise** ()
- virtual void **setONoise** ()
- virtual void **setH** ()
- virtual void **setF** ()
- virtual fmat **ffun** (fmat ∗)

- virtual fmat **hfun** (fmat ∗)
- virtual void **setDescriptionTag** ()
- virtual frowvec **eval** (fmat ∗values)
- unsigned int **getProcessDimension** ()
- unsigned int **getMeasurementDimension** ()
- void **initialize** ()
- NoiseBatch **getProcessNoise** ()
- NoiseBatch **getObservationNoise** ()
- void **setProcessNoise** (NoiseBatch newPNoise)
- void **setObservationNoise** (NoiseBatch newONoise)

Public Attributes

- std::string **descriptionTag**
- NoiseBatch **pNoise**
- NoiseBatch **oNoise**
- fmat **A**
- fmat **B**
- fmat **C**
- fmat **H**
- fmat **F**
- fvec **u**
- fmat **Q**
- fmat **W**

3.21.1 Detailed Description

state space model base class

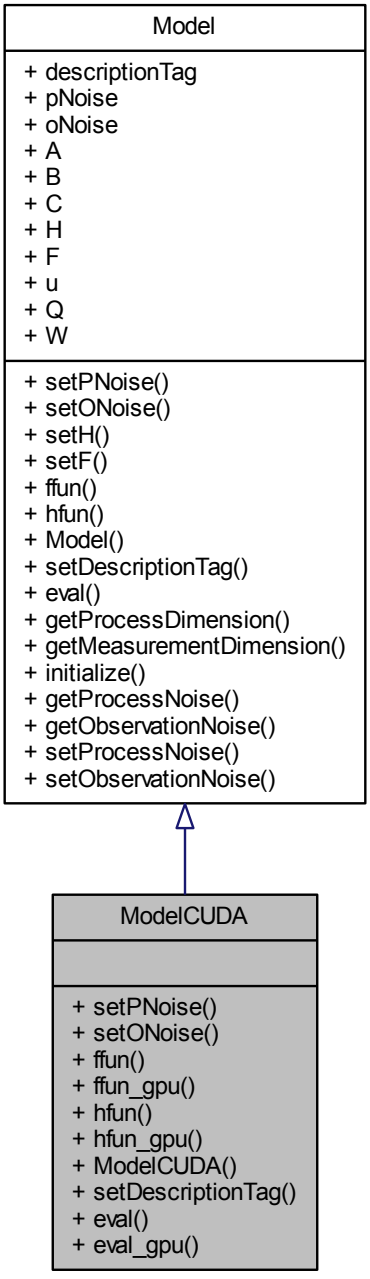
The documentation for this class was generated from the following files:

- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/model.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/model.cpp

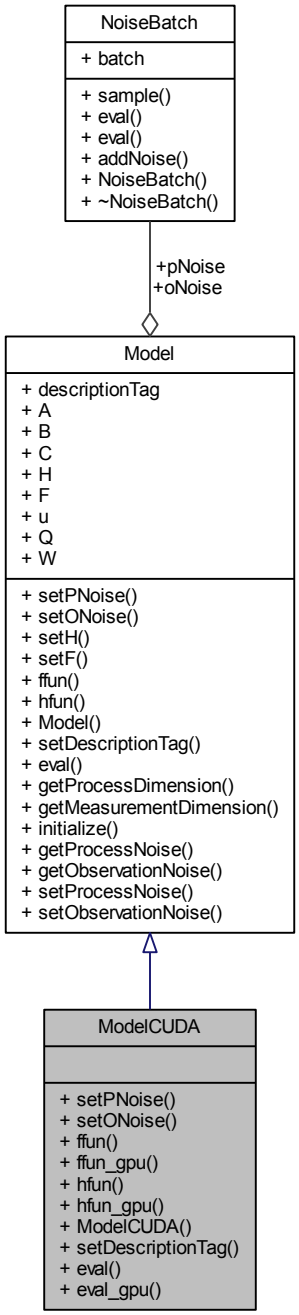
3.22 ModelCUDA Class Reference

`#include <model_cuda.h>`

Inheritance diagram for ModelCUDA:



Collaboration diagram for ModelCUDA:



Public Member Functions

- virtual void **setPNoise** ()
- virtual void **setONoise** ()
- virtual fmat **ffun** (fmat ∗)
- virtual float ∗ **ffun_gpu** (fmat ∗current)
- virtual fmat **hfun** (fmat ∗)

- virtual float ∗ **hfun_gpu** (float ∗values, int numberOfParticles, int stateDimension)
- virtual void **setDescriptionTag** ()
- virtual frowvec **eval** (fmat ∗values)
- virtual frowvec **eval_gpu** (float ∗values, int numberOfParticles)

Additional Inherited Members

3.22.1 Detailed Description

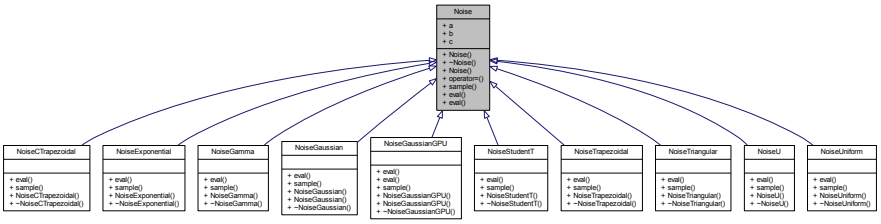
base class for a GPU accelerated state space model

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

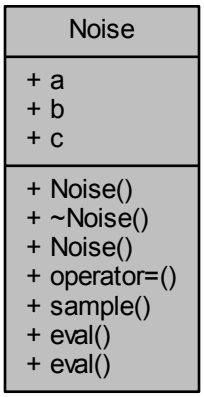
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/model_cuda.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/model_cuda.cpp

3.23 Noise Class Reference

Inheritance diagram for Noise:



Collaboration diagram for Noise:



Public Member Functions

- **Noise** (const Noise &)
- Noise & **operator=** (const Noise &)
- virtual frowvec **sample** (unsigned int)
- virtual frowvec **eval** (frowvec)
- virtual frowvec **eval** (float *input, int number, int dim, int numberOfDims)

Public Attributes

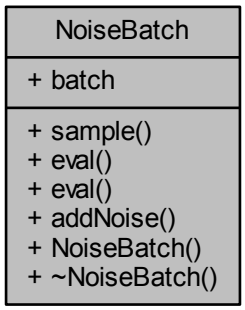
- float **a**
- float **b**
- float **c**

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

- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noise.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noise.cpp

3.24 NoiseBatch Class Reference

Collaboration diagram for NoiseBatch:



Public Member Functions

- fmat **sample** (unsigned int)
- frowvec **eval** (fmat *)
- frowvec **eval** (float *x, unsigned int number)
- void **addNoise** (Noise *)

Public Attributes

- std::vector< Noise * > **batch**

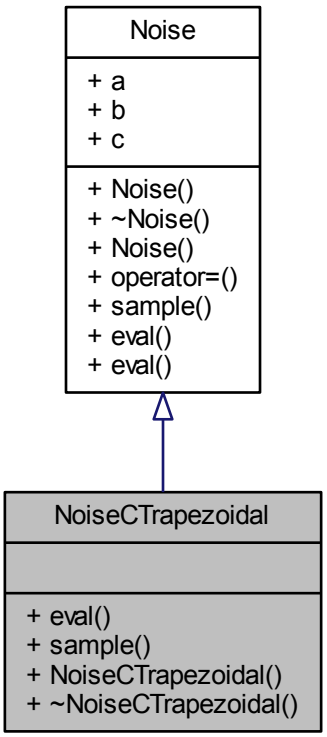
The documentation for this class was generated from the following files:

- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noise_batch.h

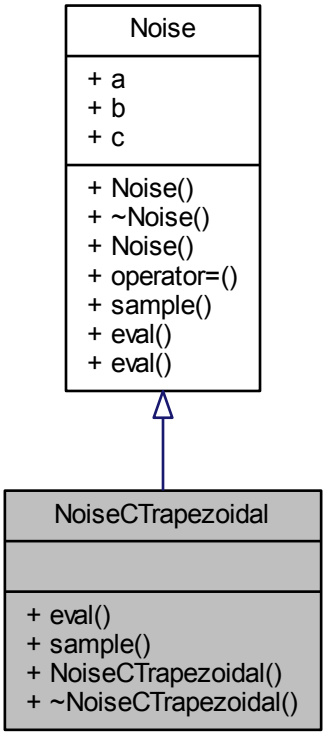
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noise_batch.cpp

3.25 NoiseCTrapezoidal Class Reference

Inheritance diagram for NoiseCTrapezoidal:



Collaboration diagram for NoiseCTrapezoidal:



Public Member Functions

- frowvec **eval** (frowvec)
- frowvec **sample** (unsigned int)
- **NoiseCTrapezoidal** (float, float, float, float)

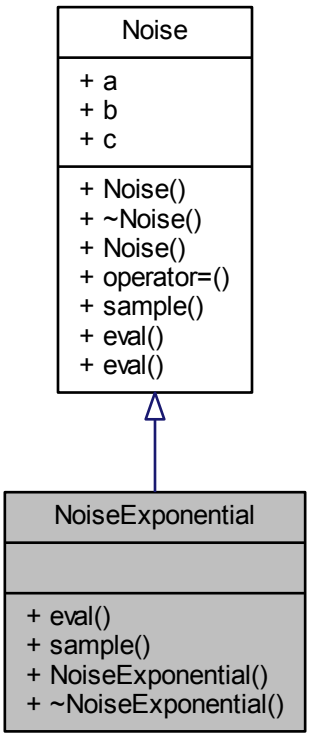
Additional Inherited Members

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

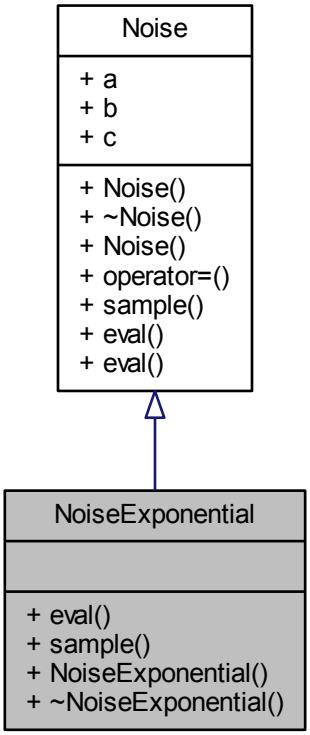
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noises/noise_ctrap.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noises/noise_ctrap.cpp

3.26 NoiseExponential Class Reference

Inheritance diagram for NoiseExponential:



Collaboration diagram for NoiseExponential:



Public Member Functions

- frowvec **eval** (frowvec)
- frowvec **sample** (unsigned int)
- **NoiseExponential** (float)

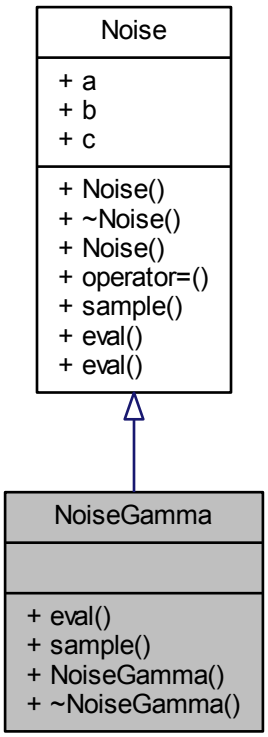
Additional Inherited Members

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

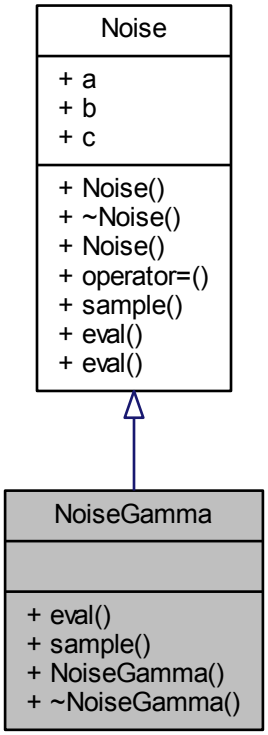
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noises/noise_exp.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noises/noise_exp.cpp

3.27 NoiseGamma Class Reference

Inheritance diagram for NoiseGamma:



Collaboration diagram for NoiseGamma:



Public Member Functions

- frowvec **eval** (frowvec)
- frowvec **sample** (unsigned int)
- **NoiseGamma** (unsigned int)

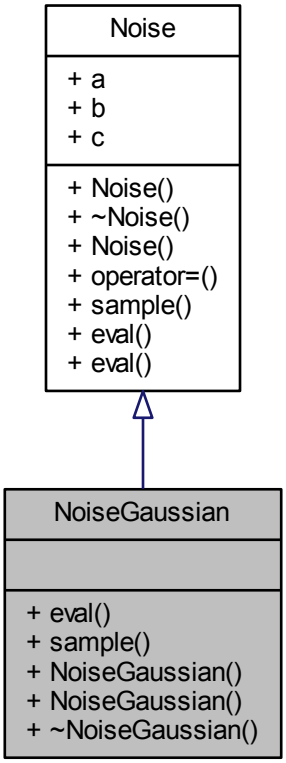
Additional Inherited Members

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

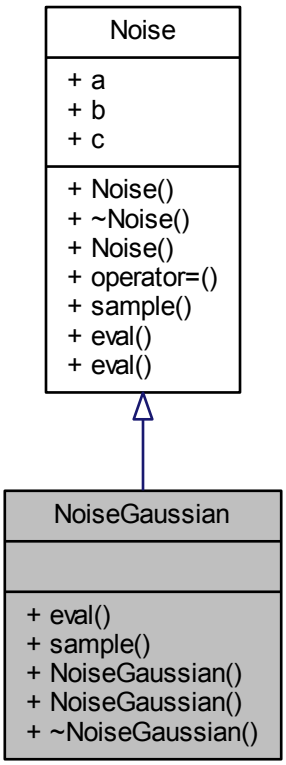
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noises/noise_gamma.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noises/noise_gamma.cpp

3.28 NoiseGaussian Class Reference

Inheritance diagram for NoiseGaussian:



Collaboration diagram for NoiseGaussian:



Public Member Functions

- frowvec **eval** (frowvec)
- frowvec **sample** (unsigned int)
- **NoiseGaussian** (float, float)
- **NoiseGaussian** (const NoiseGaussian &)

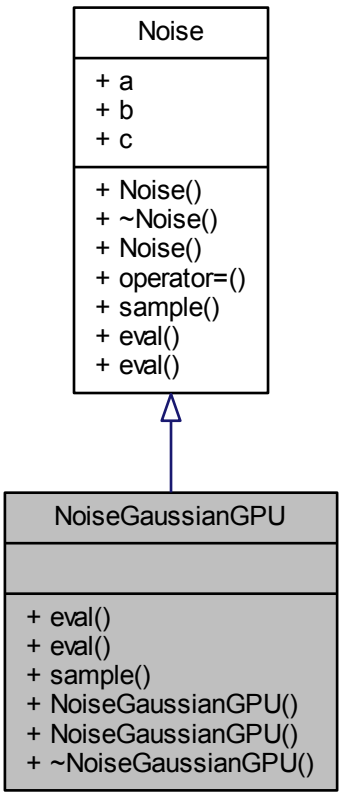
Additional Inherited Members

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

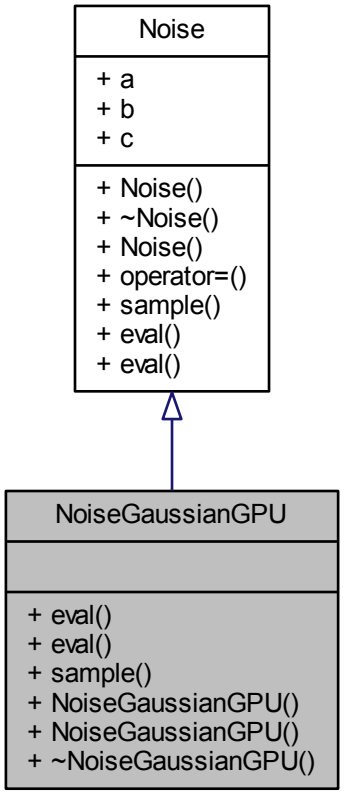
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noises/noise_gauss.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noises/noise_gauss.cpp

3.29 NoiseGaussianGPU Class Reference

Inheritance diagram for NoiseGaussianGPU:



Collaboration diagram for NoiseGaussianGPU:



Public Member Functions

- frowvec **eval** (frowvec)
- frowvec **eval** (float ∗input, int number, int dim, int numberOfDims)
- frowvec **sample** (unsigned int)
- **NoiseGaussianGPU** (float, float)
- **NoiseGaussianGPU** (const NoiseGaussianGPU &)

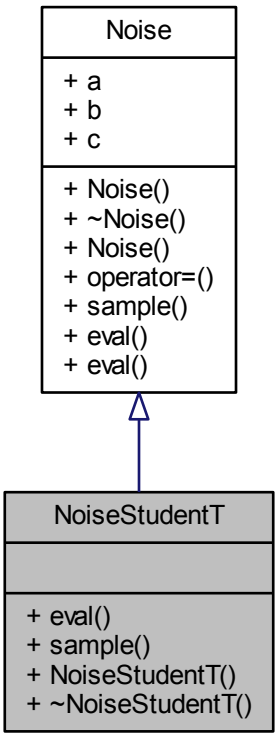
Additional Inherited Members

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

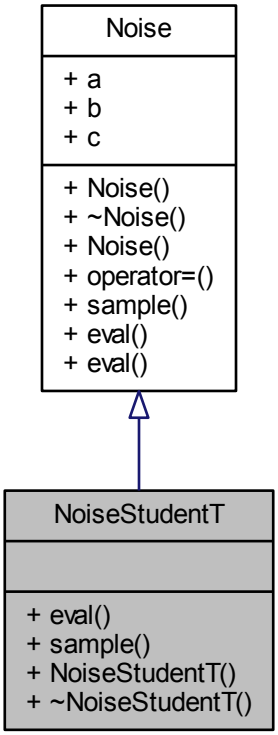
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noises/noise_gauss_gpu.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noises/noise_gauss_gpu.cpp

3.30 NoiseStudentT Class Reference

Inheritance diagram for NoiseStudentT:



Collaboration diagram for NoiseStudentT:



Public Member Functions

- frowvec **eval** (frowvec)
- frowvec **sample** (unsigned int)
- **NoiseStudentT** (float, float)

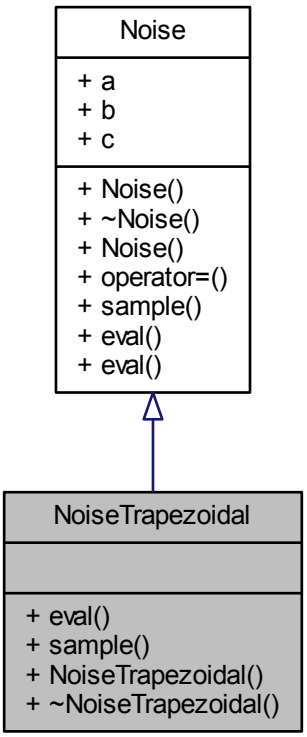
Additional Inherited Members

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

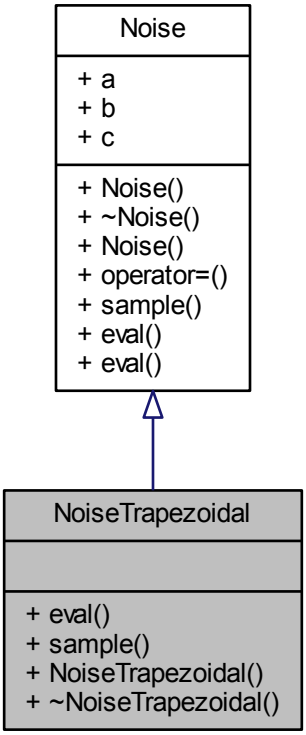
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noises/noise_studentt.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noises/noise_studentt.cpp

3.31 NoiseTrapezoidal Class Reference

Inheritance diagram for NoiseTrapezoidal:



Collaboration diagram for NoiseTrapezoidal:



Public Member Functions

- frowvec **eval** (frowvec)
- frowvec **sample** (unsigned int)
- **NoiseTrapezoidal** (float, float, float, float)

Additional Inherited Members

3.31.1 Detailed Description

provides a noise with trapeziodal distribution

Warning

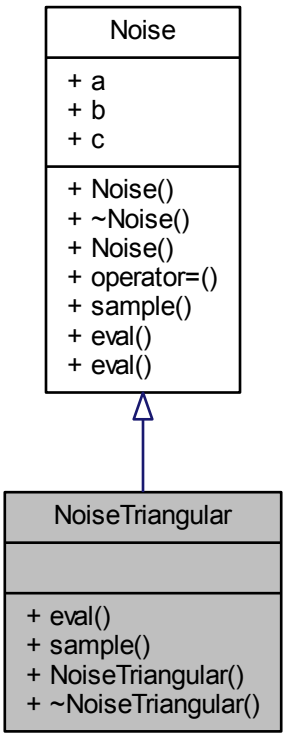
the evaluation doesn't work, because it needs four parameters and base class provides only three

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

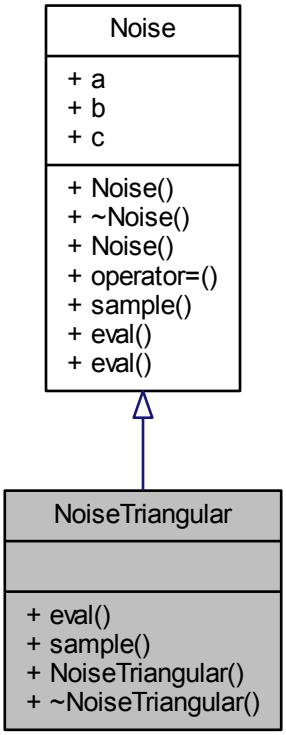
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noises/noise_trap.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noises/noise_trap.cpp

3.32 NoiseTriangular Class Reference

Inheritance diagram for NoiseTriangular:



Collaboration diagram for NoiseTriangular:



Public Member Functions

- frowvec **eval** (frowvec)
- frowvec **sample** (unsigned int)
- **NoiseTriangular** (float, float)

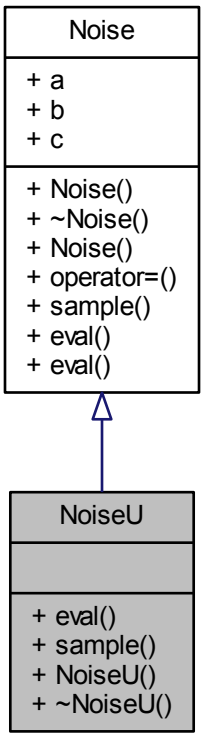
Additional Inherited Members

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

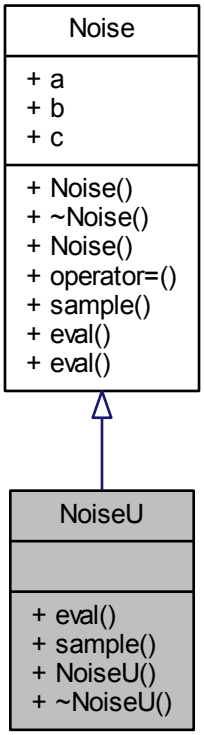
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noises/noise_tri.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noises/noise_tri.cpp

3.33 NoiseU Class Reference

Inheritance diagram for NoiseU:



Collaboration diagram for NoiseU:



Public Member Functions

- frowvec **eval** (frowvec)
- frowvec **sample** (unsigned int)
- **NoiseU** (float, float)

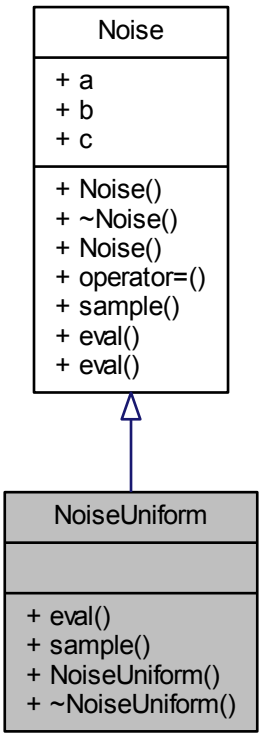
Additional Inherited Members

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

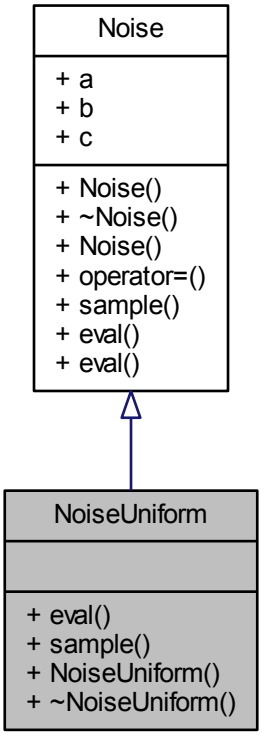
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noises/noise_u.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noises/noise_u.cpp

3.34 NoiseUniform Class Reference

Inheritance diagram for NoiseUniform:



Collaboration diagram for NoiseUniform:



Public Member Functions

- frowvec **eval** (frowvec)
- frowvec **sample** (unsigned int)
- **NoiseUniform** (float, float)

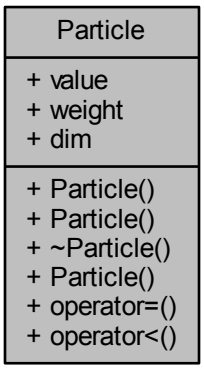
Additional Inherited Members

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

- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noises/noise_uni.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/noises/noise_uni.cpp

3.35 Particle Class Reference

Collaboration diagram for Particle:



Public Member Functions

- **Particle** (int)
- **Particle** (const Particle &)
- Particle & **operator=** (const Particle &)
- bool **operator**< (const Particle &) const

Public Attributes

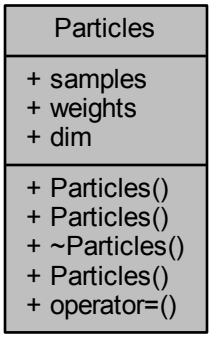
- float * **value**
- float **weight**
- int **dim**

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

- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/particle.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/particle.cpp

3.36 Particles Class Reference

Collaboration diagram for Particles:



Public Member Functions

- **Particles** (int)
- **Particles** (const Particles &)
- Particles & **operator=** (const Particles &)

Public Attributes

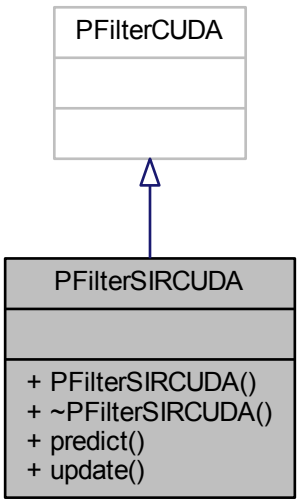
- fmat **samples**
- frowvec **weights**
- int **dim**

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

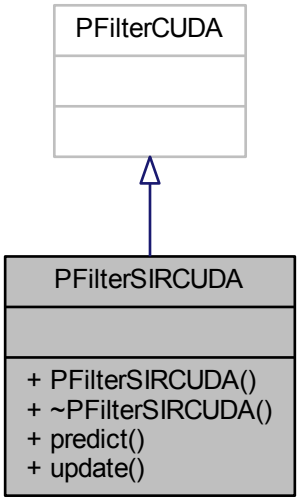
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/particles.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/particles.cpp

3.37 PFilterSIRCUDA Class Reference

Inheritance diagram for PFilterSIRCUDA:



Collaboration diagram for PFilterSIRCUDA:



Public Member Functions

- void **predict** ()

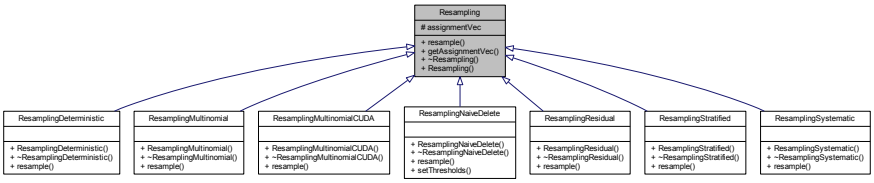
- void **update** (fvec)

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

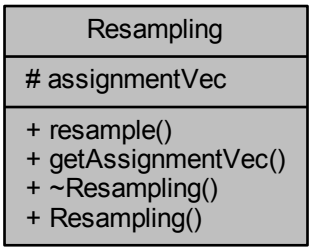
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/bf_rpf_cuda.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/bf_rpf_cuda.cpp

3.38 Resampling Class Reference

Inheritance diagram for Resampling:



Collaboration diagram for Resampling:



Public Member Functions

- virtual Particles **resample** (Particles *)
- std::vector< int > **getAssignmentVec** ()

Protected Attributes

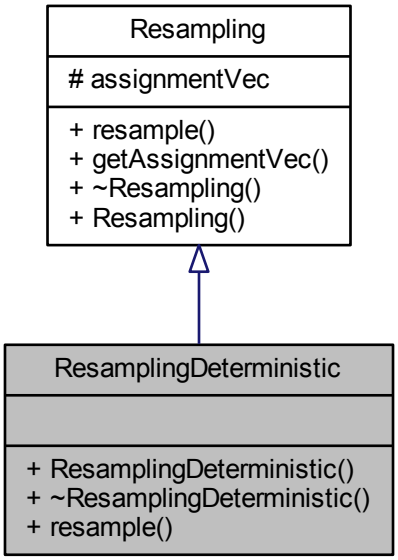
- std::vector< int > **assignmentVec**

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

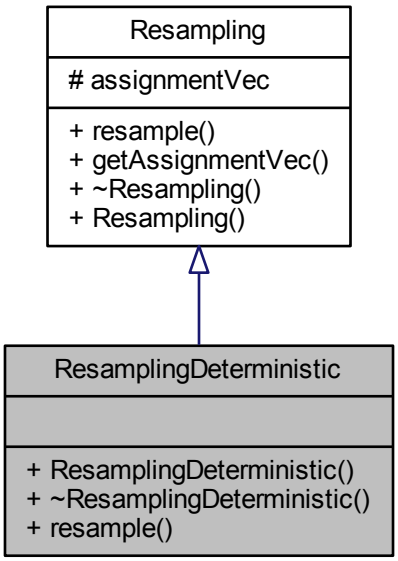
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/resampling.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/resampling.cpp

3.39 ResamplingDeterministic Class Reference

Inheritance diagram for ResamplingDeterministic:



Collaboration diagram for ResamplingDeterministic:



Public Member Functions

- Particles **resample** (Particles ∗)

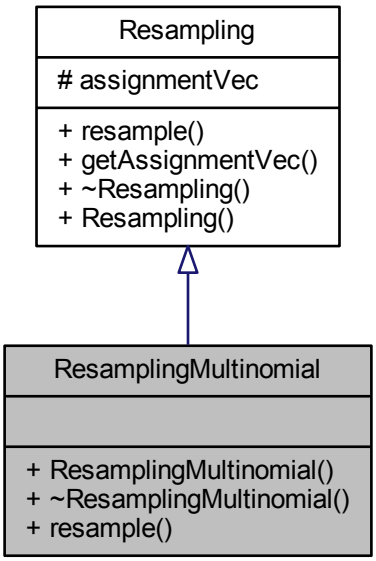
Additional Inherited Members

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

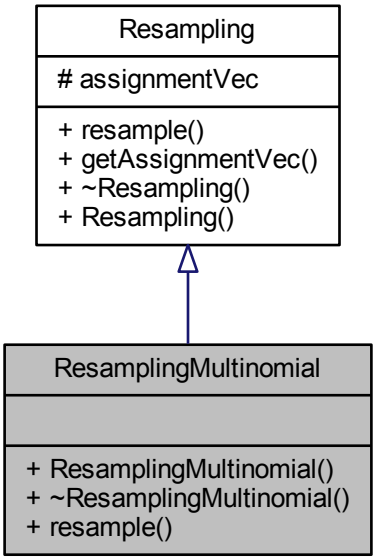
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/resampling_deterministic.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/resampling_deterministic.cpp

3.40 ResamplingMultinomial Class Reference

Inheritance diagram for ResamplingMultinomial:



Collaboration diagram for ResamplingMultinomial:



Public Member Functions

- Particles **resample** (Particles *)

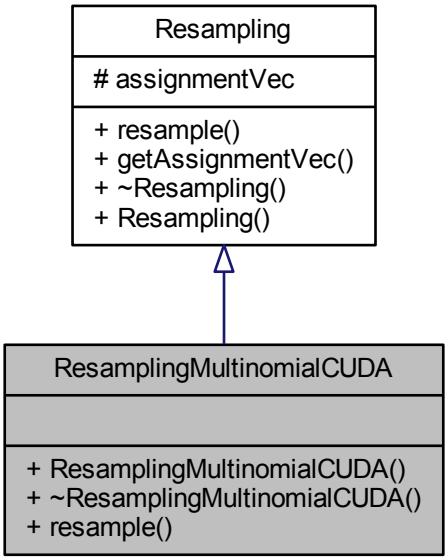
Additional Inherited Members

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

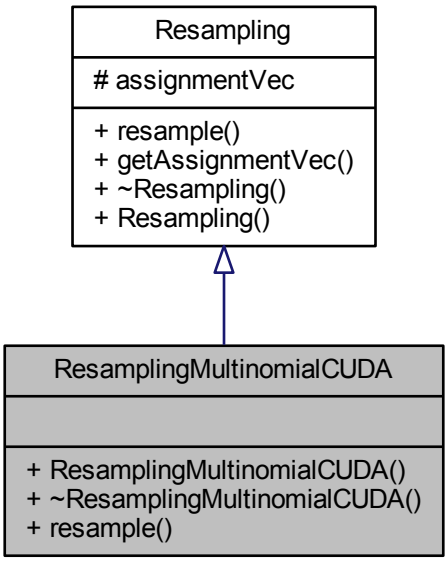
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/resampling_multinomial.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/resampling_multinomial.cpp

3.41 ResamplingMultinomialCUDA Class Reference

Inheritance diagram for ResamplingMultinomialCUDA:



Collaboration diagram for ResamplingMultinomialCUDA:



Public Member Functions

- Particles **resample** (Particles *)

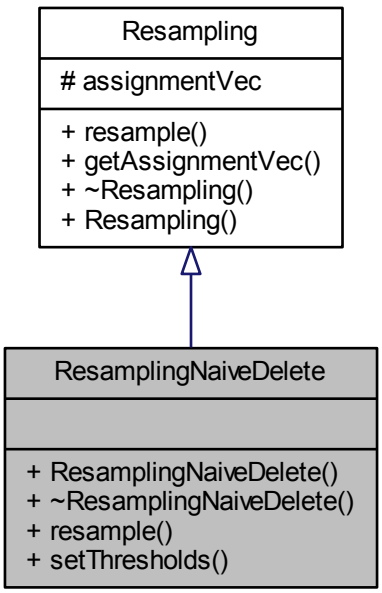
Additional Inherited Members

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

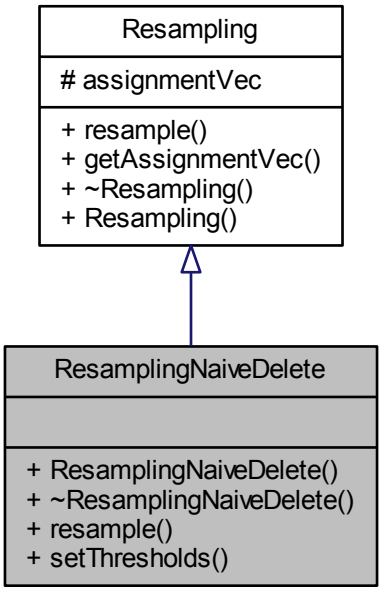
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/resampling_multinomial_cuda.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/resampling_multinomial_cuda.cpp

3.42 ResamplingNaiveDelete Class Reference

Inheritance diagram for ResamplingNaiveDelete:



Collaboration diagram for ResamplingNaiveDelete:



Public Member Functions

- Particles **resample** (Particles *)
- void **setThresholds** (float, unsigned int)

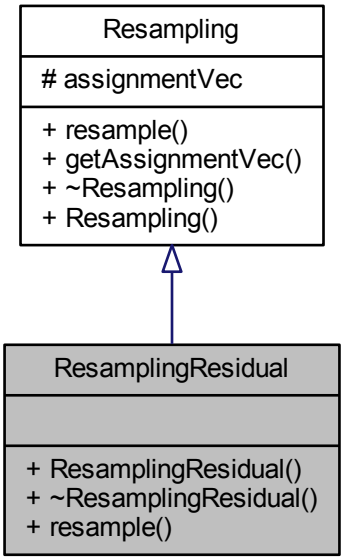
Additional Inherited Members

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

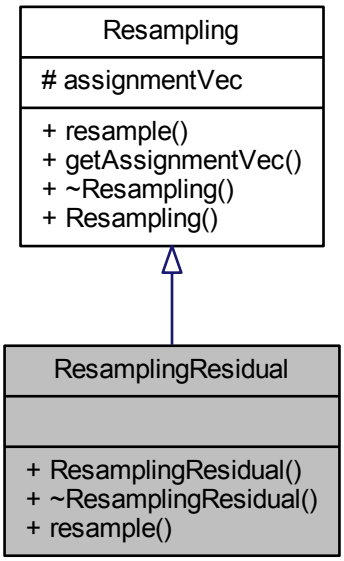
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/resampling_naive_delete.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/resampling_naive_delete.cpp

3.43 ResamplingResidual Class Reference

Inheritance diagram for ResamplingResidual:



Collaboration diagram for ResamplingResidual:



Public Member Functions

- Particles **resample** (Particles ∗)

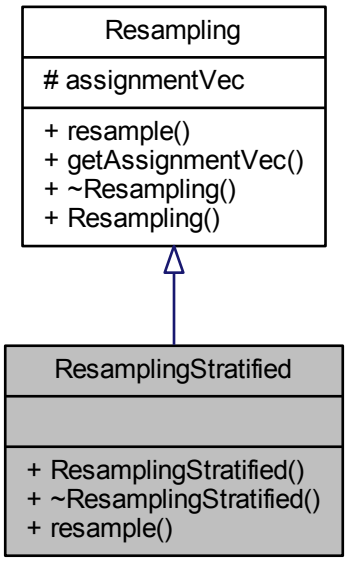
Additional Inherited Members

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

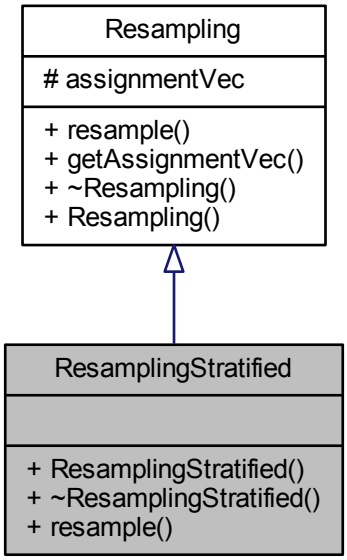
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/resampling_residual.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/resampling_residual.cpp

3.44 ResamplingStratified Class Reference

Inheritance diagram for ResamplingStratified:



Collaboration diagram for ResamplingStratified:



Public Member Functions

- Particles **resample** (Particles *)

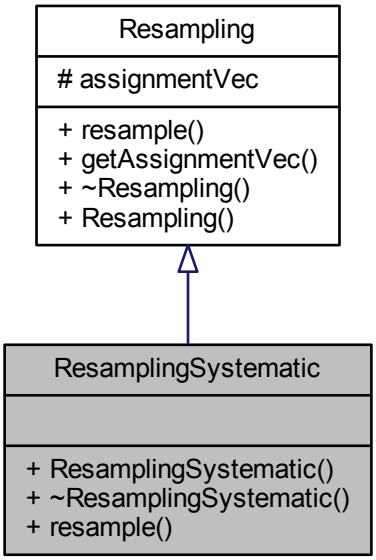
Additional Inherited Members

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

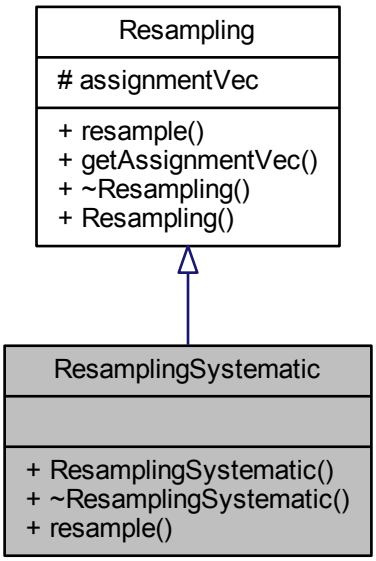
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/resampling_stratified.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/resampling_stratified.cpp

3.45 ResamplingSystematic Class Reference

Inheritance diagram for ResamplingSystematic:



Collaboration diagram for ResamplingSystematic:



Public Member Functions

- Particles **resample** (Particles *)

Additional Inherited Members

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

- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/resampling_systematic.h
- D:/_gca/05 Repos/parallel-bayesian-toolbox/src/pbt/resampling_systematic.cpp

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