cppgp

Generated by Doxygen 1.9.1

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

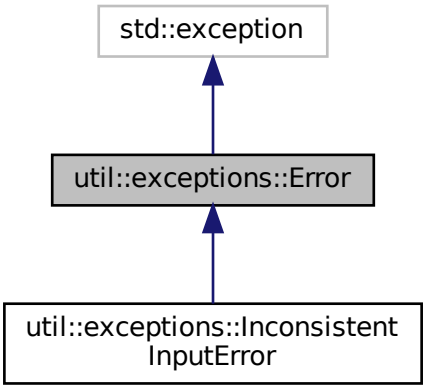
Here are the classes, structs, unions and interfaces with brief descriptions:

Chapter 3

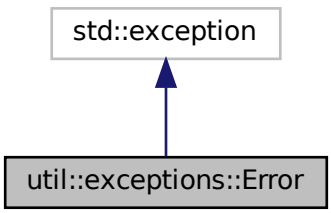
Class Documentation

3.1 util::exceptions::Error Class Reference

Inheritance diagram for util::exceptions::Error:



Collaboration diagram for util::exceptions::Error:



Public Member Functions

- **Error** (std::string message)
- std::string **getCustomMessage** () const
- void **setCustomMessage** (const std::string message)
- virtual std::string **message** () const

Protected Attributes

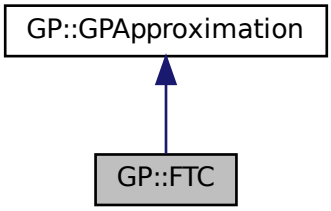
- std::string **msg**

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

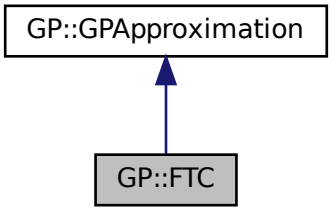
- libutil/libutil/exceptions.hpp

3.2 GP::FTC Class Reference

Inheritance diagram for GP::FTC:



Collaboration diagram for GP::FTC:



Additional Inherited Members

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

- libgp/ftcapprox.h

3.3 gp::GaussianProcess Class Reference

Public Member Functions

- **GaussianProcess** (const GaussianProcess &m)
- **GaussianProcess** (const Eigen::MatrixXd &X, const Eigen::MatrixXd &y)
- **GaussianProcess** (const GPKernel &kernel, const Eigen::MatrixXd &X, const Eigen::MatrixXd &y)
- **GaussianProcess** (const GPKernel &kernel)
- virtual GaussianProcess * **copy** () const
- void **setObservation** (const Eigen::MatrixXd &X, const Eigen::MatrixXd &y)
- void **getObservation** (Eigen::MatrixXd &X, Eigen::MatrixXd &y) const
- virtual void **setParameters** (const Eigen::VectorXd &params)
- virtual void **getParameters** (Eigen::VectorXd &params) const
- virtual size_t **nParameters** () const
- void **setKernel** (const GPKernel &kernel)
- const std::shared_ptr< const GPKernel > **getKernel** ()
- void **posteriorMeanVar** (Eigen::MatrixXd &mu, Eigen::MatrixXd &varSigma, const Eigen::MatrixXd &Xin) const
- void **posteriorMean** (Eigen::MatrixXd &mu, const Eigen::MatrixXd &Xin) const
- double **computeNegativeLogMarginalLikelihood** ()

Protected Attributes

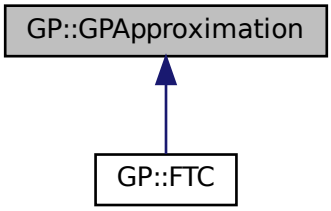
- Eigen::MatrixXd **obsX**
- Eigen::MatrixXd **obsY**
- std::shared_ptr< GPKernel > **kernel**
- std::shared_ptr< GPApproximation > **approx**
- Eigen::RowVectorXd **bias**
- Eigen::RowVectorXd **scale**
- Eigen::MatrixXd **obsYnormalized**

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

- libgp/gaussianprocess.hpp
- libgp/gaussianprocess.cpp

3.4 GP::GPApproximation Class Reference

Inheritance diagram for GP::GPApproximation:



Public Member Functions

- virtual void **getParameters** (Eigen::VectorXd &params) const =0
- virtual void **setParameters** (const Eigen::VectorXd &params)=0
- virtual size_t **nParameters** () const =0
- void **updateKernelPrecomputations** (const std::shared_ptr< GPKernel > &kernel, const Eigen::MatrixXd &obsX, const Eigen::MatrixXd &obsYnormalized)
- void **KinvScalarProduct** (Eigen::VectorXd &XTKinvX, const Eigen::MatrixXd &Xin) const
- void **alphaProduct** (Eigen::MatrixXd &prod, const Eigen::MatrixXd &lfactor) const
- virtual double **computeNegativeLogMarginalLikelihood** (const Eigen::MatrixXd &obsYnormalized)=0
- bool **setNoise** (const double noise)
- double **getNoise** () const
- void **setNoiseFixed** (bool isNoiseFixed)
- bool **isNoiseFixed** () const
- double **getLogDetK** ()

Protected Member Functions

- bool **isInverseKComputed** () const

Protected Attributes

- Eigen::LLT< Eigen::MatrixXd > **llt**
- Eigen::MatrixXd **K**
- double **logDetK**
- Eigen::VectorXd **innerProducts**
- Eigen::MatrixXd **alpha**

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

- libgp/gpapproximation.hpp
- libgp/gpapproximation.cpp

3.5 gp::kernel::GPKernel Class Reference

Public Member Functions

- GPKernel ()

  Abstract kernel class.
- GPKernel (const Eigen::VectorXd &params)

  Create a new GPKernel object using the given parameters.
- GPKernel (const GPKernel &m)

  Copy constructor to create a new GPKernel object.
- virtual std::shared_ptr< GPKernel > **copy** () const =0
- virtual void **computeCov** (Eigen::MatrixXd &K, const Eigen::MatrixXd &X) const =0
- virtual void **computeCrossCov** (Eigen::MatrixXd &K, const Eigen::MatrixXd &X1, const Eigen::MatrixXd &X2) const =0
- virtual void **computeCovDiag** (Eigen::VectorXd &K, const Eigen::MatrixXd &X) const =0
- virtual void **setParameters** (const Eigen::VectorXd &params, const int index=0)
- virtual void **getParameters** (Eigen::VectorXd &params) const
- virtual void **getParameters** (Eigen::VectorXd &params, const int index=0) const
- virtual size_t **nParameters** () const

3.5.1 Constructor & Destructor Documentation

3.5.1.1 GPKernel() [1/3]

```
gp::kernel::GPKernel::GPKernel ( )  [inline]
```

Abstract kernel class.

Create new GPKernel object.

3.5.1.2 GPKernel() [2/3]

```
gp::kernel::GPKernel::GPKernel (
            const Eigen::VectorXd & params )  [inline]
```

Create a new GPKernel object using the given parameters.

Parameters

Parameters	to initialize the GP kernel.

3.5.1.3 GPKernel() [3/3]

```
gp::kernel::GPKernel::GPKernel (
```

```
const GPKernel & m )  [inline]
```

Copy constructor to create a new GPKernel object.

Parameters

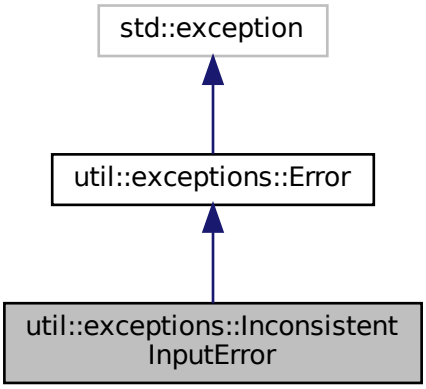
Existing	GPKernel that is used to initialize the parameters.

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

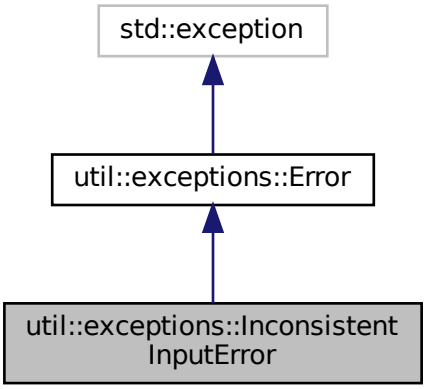
- libgp/kernels/gpkernel.hpp

3.6 util::exceptions::InconsistentInputError Class Reference

Inheritance diagram for util::exceptions::InconsistentInputError:



Collaboration diagram for util::exceptions::InconsistentInputError:



Public Member Functions

- **InconsistentInputError** (std::string message)
- virtual std::string **message** () const override

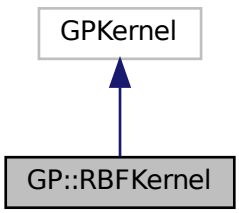
Additional Inherited Members

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

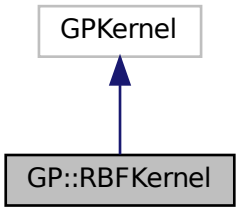
- libutil/libutil/exceptions.hpp

3.7 GP::RBFKernel Class Reference

Inheritance diagram for GP::RBFKernel:



Collaboration diagram for GP::RBFKernel:



Public Member Functions

- **RBFKernel** (const Eigen::VectorXd &params)
- **RBFKernel** (const RBFKernel &m)
- virtual std::shared_ptr< GPKernel > **copy** () const override
- virtual void **computeCov** (Eigen::MatrixXd &K, const Eigen::MatrixXd &X) const override
- virtual void **computeCrossCov** (Eigen::MatrixXd &K, const Eigen::MatrixXd &X1, const Eigen::MatrixXd &X2) const override
- virtual void **computeCovDiag** (Eigen::VectorXd &K, const Eigen::MatrixXd &X) const override
- virtual void **setParameters** (const Eigen::VectorXd &params) override
- virtual void **getParameters** (Eigen::VectorXd &params) const override

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

- libgp/kernels/rbfkernel.hpp
- libgp/kernels/rbfkernel.cpp

Index