Package ‘GauPro’

November 1, 2016

Type Package

Title What the Package Does (Title Case)

Version 0.1

Date 2016-11-01

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Description A package to simulate conditional and unconditional Gaussian process (GauPro).

License What license is it under?

LazyData TRUE

LinkingTo Rcpp, RcppEigen

Imports Rcpp,
RcppEigen,
FastGP

RoxygenNote 5.0.1

R topics documented:

`GauPro-package` *GauPro: A package for simulating conditional and unconditional Gaussian Process.*

Description

The GauPro package provides R functions for Gaussian process (GP) modelling. The core functions are coded in C++ and based on the EIGEN library.

Features

- Conditional GP simulation
- Space-time GP
- GP with monomial mean functions
- GP conditioned to derivative observations

References

Several books!

`cholfac` *Return the lower Cholesky factor*

Description

Return the lower Cholesky factor L such that X = L t(L)

Usage

```
cholfac(x)
```

`covm` *Covariance matrix*

Description

Create a covariance matrix according to the model

Usage

```
covm(x, y, covModel, d = 0, dx = 1, ...)
```

gpCond *Conditional Gaussian Process simulation*

Description

Conditional Gaussian Process simulation

Usage

```
gpCond(obs, targ, covModels, sigma = 0, op = 0, bc = NULL, sigmat = 0)
```

gpSim *Simulate a Gaussian Process*

Description

Simulate a Gaussian Process

Usage

```
gpSim(A, L = NULL, n = 1)
```

invm *Inverse matrix*

Description

This function first try the Cholesky decomposition

Usage

```
invm(x)
```

linear *linear covariance matrix*

Description

linear covariance matrix

Usage

```
linear(x, y, covModel, d = 0, w = 1)
```

`matern` *Matern covariance matrix*

Description

Matern covariance matrix

Usage

```
matern(r, covModel, d = 0, w = 1)
```

`matGrid` *Create grid*

Description

Create grid

Usage

```
matGrid(x, y)
```

`mvrnorm2` *Multi-variate Gaussian simulation*

Description

A more robute alternative to the `mvrnorm` function.

Usage

```
mvrnorm2(n, mu, Sigma)
```

`se` *Squared Exponential Covariance Function*

Description

Squared Exponential Covariance Function (or radial basis or Gaussian) over-smoothness, infinitely differentiable at h=0

Usage

```
se(r, covModel, d = 0, w = 1)
```

`setPosTime` *Reshape target*

Description

Reshape target

Usage

```
setPosTime(xy, tt, val, xystar)
```

`vecGrid` *Create vecgrid*

Description

Create vecgrid

Usage

```
vecGrid(x, y)
```

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