
gig Documentation

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Draws from the Generalized Inverse Gaussian distribution

$$f(x) = x^{\lambda-1} e^{-\frac{1}{2}(\chi/x + \psi x)}$$

where λ is any real number, χ must be nonnegative (nonpositive) for positive (negative) λ and ψ must be nonnegative (nonpositive) for negative (positive) λ .

Install

Download and unpack the [latest version](#). In the unpacked folder, type

```
mkdir build  
cd build  
cmake ..  
make
```

It should create the shared and static libraries

```
libgig.[version].[extension]  
libgig_static.[extension]
```

You can enter

```
make test
```

to test it and

```
make install
```

to install it.

Usage example

Suppose you have the file

```
/* example.cpp */
#include "gig/gig.h"

#include <random>
#include <iostream>

int main()
{
    Random random(1);

    double lambda = 2.1;
    double chi = 0.1;
    double psi = 1.0;

    std::cout << random.gig(lambda, chi, psi) << std::endl;
}
```

Compiling, linking, and running it via

```
g++ -lgig example.cpp -o example
./example
```

should print:

```
1.30869
```

Interface

class Random

Generalized Inverse Gaussian distribution sampler.

Random: **:Random** (unsigned int *seed*)
Initialize sampler with a seed.

Parameters *seed* – Seed.

Random: **:Random** (std::default_random_engine &*generator*)
Initialize sampler with a random number generator.

Parameters *generator* – Generator.

double Random: **:gig** (double *lambda*, double *chi*, double *psi*)
Draw sample from GIG distribution.

Parameters

- **double** *lambda* – shape parameter.
- **double** *chi* – shape and scale parameter.
- **double** *psi* – shape and scale parameter.

Returns sample.

Disclaimer

This library is simply a wrapper around Josef Leydold and Wolfgang Hormann's implementation of a GIG sampler found in the [GIGrvg](#) package.

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