

Package: zigg (via r-universe)

January 12, 2025

Type Package

Title Lightweight Interfaces to the 'Ziggurat' Pseudo Random Number Generator

Version 0.0.0

Date 2025-01-12

Description 'Ziggurat', originally introduced by Marsaglia and Tsang (2000, <[doi:10.18637/jss.v005.i08](https://doi.org/10.18637/jss.v005.i08)>) and further improved by Leong et al (2005, <[doi:10.18637/jss.v012.i07](https://doi.org/10.18637/jss.v012.i07)>) offers a lightweight and very fast pseudo-random number generator (or 'PRNG') for the normal, exponential, and uniform distributions. It is provided here in a small zero-dependency package. It can be used from R as well as from C(++) code in other packages as is demonstrated by four included sample packages using four distinct methods to use the PRNG presented here in client package. The implementation is influenced by our older package 'RcppZiggurat' which offers a comparison among multiple alternative implementations. These PRNGs provided are generally faster than the ones in base R: on our machine, the relative gains for normal, exponential and uniform are on the order of 7.4, 5.2 and 4.7 times faster than base R. However, these generators are of potentially lesser quality so if in doubt use of the base R function `runif` remains the general recommendation.

License GPL (>= 2)

Encoding UTF-8

RoxygenNote 6.0.1

Repository <https://eddelbuettel.r-universe.dev>

RemoteUrl <https://github.com/eddelbuettel/zigg>

RemoteRef HEAD

RemoteSha 34cbe8ed462dfbc36140b41964c22a7cd4d1a8b5

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zigg-package	<i>Lightweight Interfaces to the 'Ziggurat' Pseudo Random Number Generator</i>
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Description

'Ziggurat', originally introduced by Marsaglia and Tsang (2000, <doi:10.18637/jss.v005.i08>) and further improved by Leong et al (2005, <doi:10.18637/jss.v012.i07>) offers a lightweight and very fast pseudo-random number generator (or 'PRNG') for the normal, exponential, and uniform distributions. It is provided here in a small zero-dependency package. It can be used from R as well as from C(++) code in other packages as is demonstrated by four included sample packages using four distinct methods to use the PRNG presented here in client package. The implementation is influenced by our older package 'RcppZiggurat' which offers a comparison among multiple alternative implementations. These PRNGs provided are generally faster than the ones in base R: on our machine, the relative gains for normal, exponential and uniform are on the order of 7.4, 5.2 and 4.7 times faster than base R. However, these generators are of potentially lesser quality so if in doubt use of the base R function generatr remains the general recommendation.

Package Content

Index: This package was not yet installed at build time.

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zrnorm	<i>Ziggurat Pseudo Random Number Generators</i>
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Description

Pseudo random numbers drawn from one of three distributions are offered, as proposed by Marsaglia and Tsang (2000, <doi:10.18637/jss.v005.i08>) and improved by Leong et al (2005, <doi:10.18637/jss.v012.i07>).

Usage`znorm(n)``zexp(n)``zrunif(n)``zsetseed(s)`**Arguments**

<code>n</code>	The size of the returned vector
<code>s</code>	The chosen seed

Value

A vector of pseudo random-number generated draws from either the Normal, Exponential or Uniform distribution, as selected

References

[<doi:10.18637/jss.v005.i08>](https://doi.org/10.18637/jss.v005.i08) [<doi:10.18637/jss.v012.i07>](https://doi.org/10.18637/jss.v012.i07)

Examples

```
zsetseed(123)
znorm(3)
round(summary(zrunif(1e6)), 4)
```

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