Package ‘SobolSequence’

January 20, 2025

Type Package

Title Sobol Sequences with Better Two-Dimensional Projections

Version 1.0

Date 2017-07-03

Author Frances Kuo [aut],
Stephen Joe [aut],
Makoto Matsumoto [ctb],
Shinsuke Mori [ctb],
Mutsuo Saito [cre]

Maintainer Mutsuo Saito `<sai10@hiroshima-u.ac.jp>`

Description R implementation of S. Joe and F. Y. Kuo(2008) <DOI:10.1137/070709359>. The implementation is based on the data file new-joe-kuo-6.21201 <`http://web.maths.unsw.edu.au/~fkuo/sobol/`>.

License BSD_3_clause + file LICENSE

Imports Rcpp (>= 0.12.9)

LinkingTo Rcpp

Suggests knitr, rmarkdown, testthat

VignetteBuilder knitr

URL `http://web.maths.unsw.edu.au/~fkuo/sobol/`

RoxygenNote 6.0.1

NeedsCompilation yes

Repository CRAN

Date/Publication 2017-07-07 06:13:14 UTC

Contents

`SobolSequence-package` *Sobol Sequence*

Description

R implementation of S. Joe and F. Y. Kuo, "Constructing Sobol sequences with better two-dimensional projections", SIAM J. Sci. Comput. 30, 2635-2654 (2008).

Details

The implementation is based on the data file new-joe-kuo-6.21201 <http://web.maths.unsw.edu.au/~fkuo/sobol/>.

Porting to R by Mutsuo Saito. The R version does not returns cordinate value zero, but returns value very near to zero, 2^-64.

Acknowledgments

I, Mutsuo Saito, wish to thank Frances Kuo and Stephen Joe for their research, and agreement to use thier source code.

The development of this R code is partially supported by JST CREST.

Reference

S. Joe and F. Y. Kuo, "Constructing Sobol sequences with better two-dimensional projections", SIAM J. Sci. Comput. 30, 2635-2654 (2008).

Examples

```
srange <- sobolSequence.dimMinMax()
mrange <- sobolSequence.dimF2MinMax(srange[1])
points <- sobolSequence.points(dimR=srange[1], dimF2=mrange[1], count=10000)
points <- sobolSequence.points(dimR=srange[1], dimF2=mrange[1], count=10000,
                               digitalShift=TRUE)
```

`sobolSequence.dimF2MinMax` *get minimum and maximum F2 dimension number.*

Description

get minimum and maximum F2 dimension number.

Usage

```
sobolSequence.dimF2MinMax(dimR)
```

Arguments

`dimR`	dimention.

Value

supportd minimum and maximum F2 dimension number.

`sobolSequence.dimMinMax` *get minimum and maximum dimension number of Sobol Sequence*

Description

get minimum and maximum dimension number of Sobol Sequence

Usage

```
sobolSequence.dimMinMax()
```

Value

supportd minimum and maximum dimension number.

`sobolSequence.points` *get points from SobolSequence*

Description

This R version does not returns cordinate value zero, but returns value very near to zero, 2^-64.

Usage

```
sobolSequence.points(dimR, dimF2 = 10, count, digitalShift = FALSE)
```

Arguments

`dimR`	dimention.
`dimF2`	F2-dimention of each element.
`count`	number of points.
`digitalShift`	use digital shift or not.

Value

matrix of points where every row contains dimR dimensional point.

Index