Package ‘BGSIMD’

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Type Package

Title Block Gibbs Sampler with Incomplete Multinomial Distribution

Version 1.0

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Description Implement an efficient block Gibbs sampler with incomplete data from a multinomial distribution taking values from the k categories 1,2,...,k, where data are assumed to miss at random and each missing datum belongs to one and only one of m distinct non-empty proper subsets A1, A2,..., Am of 1,2,...,k and the k categories are labelled such that only consecutive A's may overlap.

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R topics documented:

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Efficient Block Gibbs Sampler with Data from an Incomplete Multinomial Distribution

Description

Implements an efficient block Gibbs sampler for Bayesian analysis with incomplete data from a multinomial distribution taking values from the k categories 1,2,...,k, where data are assumed to miss at random and each missing datum belongs to one and only one of m distinct non-empty proper subsets A1, A2,..., Am of 1,2,...,k and the k categories are labelled such that only consecutive A’s may overlap.

Details

Package: BGSIMD
Type: Package
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Date: 2009-02-06
License: GPL (>= 2)
LazyLoad: yes

Author(s)

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References

observed data belonging to the A's. The multinomial parameters are assumed to have a Dirichlet prior.

Usage

`block.gibbs(complete, missing, ms, prior, init, n)`

Arguments

- `complete`: A numeric vector. The counts of completely classified observations. The length of the vector is set to be $k$. By default, the multinomial distribution then has $k$ categories labelled from 1 to $k$.
- `missing`: A numeric vector. The counts of partially classified observations. By default, $m$ equals the length of `missing`.
- `ms`: A list containing the A's listed in the order of the counts of data in the A's listed in `missing`.
- `init`: A numeric vector. The initial parametric values for the Gibbs sampler.
- `n`: The number of Gibbs samples.

Author(s)

Kwang Woo Ahn and Kung-Sik Chan

References


See Also

`part`, `partition`, and `rdirichlet`

Examples

```r
complete<-c(20,655,17,15,11,8,5,10,4) # so k=9, and
# there are 20 observed counts of 1's, 655 counts of 2's, etc.
missing<-c(34,21,18) # so m=3
ms<-list(c(3,4),c(5,6,7),c(6,7,8,9)) # three kind of
# missing data, namely, some data are only known to belong to {3,4},
# some known to belong to {5,6,7} and some belong to {6,7,8,9}.
prior<-rep(1,9)
init<-rep(1/9,9)
n<-110
block.temp<-block.gibbs(complete,missing,ms,prior,init,n) # obtain 110 samples
apply(block.temp[,11:110],1,mean) # burn-in is 10 and obtain the posterior mean
```
Description

The function computes the three partition sets of two sets. That is, given two sets A and B, the function returns the set of A-B, AB and B-A where AB is the intersection of A and B, A-B=the intersection of A and B complement.

Usage

`part(ms1, ms2)`

Arguments

- `ms1` A numeric vector. The first set
- `ms2` A numeric vector. The second set

Value

A list consisting of the three partition sets.

Author(s)

Kwang Woo Ahn and Kung-Sik Chan

See Also

`setdiff`, `intersect`, and `partition`

Examples

```r
ms1 <- c(1,3,7,9,10)
ms2 <- c(7,9,10,12,13)
part(ms1, ms2)
```
**partition**

*The Coarsest Partition of a Finite Sequence of Sets for Which Only Consecutive Sets May Overlap*

**Description**

The function computes the coarsest partition of a finite sequence of sets for which only consecutive sets may overlap.

**Usage**

`partition(ms)`

**Arguments**

- `ms` the sequence of finite sets whose coarsest partition is required. These sets must be entered in the order under which only consecutive sets may have non-empty intersection.

**Value**

A list comprising the sets that make up the coarsest partition.

**Author(s)**

Kwang Woo Ahn and Kung-Sik Chan

**See Also**

`part` and `block.gibbs`

**Examples**

```r
t <list(c(3,4),c(5,6,7),c(6,7,8,9))
partition(t)
```

---

**rdirichlet**

*Random Sampling from the Dirichlet Distribution*

**Description**

The function outputs a random sample from the Dirichlet distribution.

**Usage**

`rdirichlet(n, alpha)`
Arguments

- `n` Sample size
- `alpha` Parameter vector

Author(s)

Code is taken from Greg’s Miscellaneous Functions (gregmisc). His code was based on code posted by Ben Bolker to R-News on 15 Dec 2000.

See Also

- `rbeta`

Examples

```r
x <- rdirichlet(10, c(1,2,3) )
```
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