Package ‘HiCseg’

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Type Package
Title Detection of domains in HiC data
Version 1.1
Date 2014-06-05
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Description This package allows you to detect domains in HiC data by rephrasing this problem as a two-dimensional segmentation issue.
License GPL-2
Depends R (>= 2.10)
NeedsCompilation yes
Repository CRAN
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R topics documented:

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\begin{verbatim}
HiCseg-package Analysis of HiC data
\end{verbatim}

Description

Two-dimensional segmentation for analyzing HiC data

Details
Package: HiCsegv6
Type: Package
Version: 1.0
Date: 2014-03-25
License: GPL-2

Author(s)
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Examples
library(HiCseg)
data(matrix)
n=200
Kmax=10
res=HiCseg_linkC_R(n,Kmax,"G",matrix,"D")
print(res)

HiCseg_linkC_R     Link between C and R

Description
This function makes the link between C language and the R software. It consists in a two-dimensional segmentation approach.

Usage
HiCseg_linkC_R(size_mat, nb_change_max, distrib, mat_data, model)

Arguments
size_mat       Size of the data matrix
nb_change_max  Maximal number of change-points
distrib        Distribution of the data: "B" is for Negative Binomial distribution, "P" is for the Poisson distribution and "G" is for the Gaussian distribution.
mat_data       Matrix of data
model          Type of model: "D" for block-diagonal and "Dplus" for the extended block-diagonal model.
**Value**

Contains three attributes:

- **t_hat**: Contains the estimated change-points.
- **J**: Values of the log-likelihood for different number of change-points up to some constants.
- **t_est_mat**: It gives the matrix of the estimated change-points for different number of change-points: in the first line when there is no change-point, in the second line when there is one change-point, in the third line when there are two change-points.

**Author(s)**

Celine Levy-Leduc

**References**

The method developed in this package is described in the paper "Two-dimensional segmentation for analyzing HiC data" by C. Levy-Leduc, M. Delattre, T. Mary-Huard and S. Robin, submitted to ECCB 2014.

**Examples**

```r
## The function is currently defined as
HiCseg_linkC_R <-
function(size_mat, nb_change_max, distrib, mat_data, model) {
  K=nb_change_max^2

  tmp=C("fonction_HiC_R", as.integer(size_mat), as.integer(nb_change_max),
        as.character(distrib), as.double(as.vector(mat_data)),
        t_hat=as.integer(rep(0,nb_change_max)), J=as.double(rep(0,0,nb_change_max)),
        t_est=as.integer(rep(0,K)), as.character(model))

  t_est_mat=matrix(tmp$t_est,ncol=nb_change_max,byrow=T)

  return(list(t_hat=tmp$t_hat, J=tmp$J, t_est_mat=t_est_mat))
}
```
Format

The format is: num [1:200, 1:200] 6.77 7.69 8.44 8.95 6.81 ... - attr(*, "dimnames")=List of 2 ..$ : NULL ..$ : chr [1:200] "V1" "V2" "V3" "V4" ...

Examples

library(Hicseg)
data(matrix)
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