Package ‘ash’
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Title David Scott's ASH Routines
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R topics documented:

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ash-internal Internal ash functions

Description

Internal ash functions

Details

These functions are not intended to be called by the user.
ash1

univariate ASH

Description

Computes univariate averaged shifted histogram (polynomial kernel)

Usage

ash1(bins, m, kopt)

Arguments

- bins (input list) $nc=integer vector of bin counts and $ab=bin interval
- m (input) optional integer smoothing parameter; default=5.
- kopt (input) vector of length 2 specifying the kernel, which is proportional to $(1 - abs(i/m)^{k_{opt}(1)})^{k_{opt}(2)}$; (2,2)=biweight (default); (0,0)=uniform; (1,0)=triangle; (2,1)=Epanechnikov; (2,3)=triweight.

Value

returns structure suitable for input to plot dd

- x=t vector of bin center locations
- y=f vector of ash estimates
- ier 0=normal exit; 1=estimate nonzero outside interval ab

See Also

bin1

Examples

x <- rnorm(100)  # data
f <- ash1(bin1(x, nbin=50), 5)  # compute ash estimate
plot(f, type="l")  # line plot of estimate
Description

Compute bivariate ASH estimate (product polynomial kernel)

Usage

ash2(bins, m, kopt)

Arguments

- **bins** (input list) bin count matrix nc and interval matrix ab from binR
- **m** (input integer vector of length 2) x and y direction smoothing parameters. Default is 5 by 5.
- **kopt** see ash1

Value

Matrix of ASH estimates returned. Components x,y,z can be given to the contour function directly. Other input variables returned in list for record keeping.

See Also

bin2

Examples

```r
# Continuing example from help(bin2)
m <- c(5,5)
f <- ash2(bins,m)
image(f$x,f$y,f$z)
contour(f$x,f$y,f$z,add=TRUE)
```
bin1  

*univariate binning*

**Description**

Function to compute array of bin counts for a data vector

**Usage**

```r
bin1(x, ab, nbin=50)
```

**Arguments**

- `x` (input) data vector
- `ab` (input vector of length 2): half-open interval for bins \([a, b)\). If no value is specified, the range of `x` is stretched by 5\% at each end and used the interval.
- `nbin` (input integer): number of bins desired. Default 50.

**Value**

`bin1` returns a list including the vector of integer bin counts and the `ab` vector and the number of points outside the `ab` interval.

**See Also**

`ash1`

**Examples**

```r
x <- rnorm(100)  # data vector
anb <- c(-5,5)    # bin interval
bins <- bin1(x, ab, 10)  # bin x into 10 bins over ab
```

---

bin2  

*2D binning*

**Description**

Bin bivariate data `x`

**Usage**

```r
bin2(x, ab, nbin)
```
Arguments

- **x**: (input matrix with 2 columns) data sample
- **ab**: (input 2 x 2 matrix) rows 1 and 2 contain x and y axis bin intervals, respectively. If not specified, the ranges are stretched by 5% at each end for each dimension.
- **nbin**: (input vector of length 2) number of bins along x and y axes. Default is 20 by 20.

Value

`bin2` returns a list including the bivariate bin matrix and the number of points outside the ab rectangle.

See Also

`ash2`

Examples

```r
x <- matrix(rnorm(100), 100, 2)  # bivariate normal n=100
ab <- matrix(c(-5,-5,5,5), 2, 2)  # interval [-5,5) x [-5,5)
nbin <- c(20, 20)  # 400 bins
bins <- bin2(x, ab, nbin)  # bin counts, ab, nskip
```
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