Package 'ash'

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Title David Scott's ASH Routines

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Description David Scott's ASH routines ported from S-PLUS to R.

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R topics documented:

`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 $(1 - abs(i/m)^k opt(1))i^k opt(2)$; (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
```

ash2 *bivariate ASH*

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 bin2
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

```
# 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

```
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

```
x <- rnorm(100)         # data vector
ab <- 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

```
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

```
x <- matrix( rnorm(200), 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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