Package 'VarED'

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Type Package

Title Variance Estimation using Difference-Based Methods

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Description

Generating functions for both optimal and ordinary difference sequences, and the difference-based estimation functions.

Depends R (>= 3.3.0)

License GPL-2

NeedsCompilation no

Repository CRAN

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R topics documented:

`optseq` *Optimal Difference Sequence*

Description

Generate an optimal difference sequence with order r(<=10).

Usage

```
optseq(r)
```

Arguments

r	the order of the generated difference sequence.

Value

The generated optimal difference sequence.

References

Hall, P., Kay, J. W. and Titterington, D. M. (1990). Asymptotically optimal difference-based estimation of variance in nonparametric regression, Biometrika 77: 521 - 528.

Examples

```
r<-2
optseq(r)
```

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ordseq *Ordinary Difference Sequence*

Description

Generate an ordinary difference sequence with order r.

Usage

```
ordseq(r)
```

Arguments

r	the order of the generated difference sequence.

Value

The generated ordinary difference sequence.

References

Hall, P., Kay, J. W. and Titterington, D. M. (1990). Asymptotically optimal difference-based estimation of variance in nonparametric regression, Biometrika 77: 521 - 528.

Dette, H., Munk, A. and Wagner, T. (1998). Estimating the variance in nonparametric regression - what is a reasonable choice?, Journal of the Royal Statistical Society, Series B 60: 751 - 764.

Examples

```
r<-2
ordseq(r)
```

`vardif` *Estimate Residual Variance with Differene-Based Method.*

Description

Estimate residual variance with differene-based method.

Usage

```
vardif(x, y, type, r, m)
```

Arguments

`x`	numeric Equally spaced design points.
`y`	numeric Responses
`type`	character Taking "opt" or "ord", default as "ord"
`r`	numeric The order of employed difference sequence.
`m`	numeric The bandwidth or the number of regressors.

Value

`u`	numeric The estimated variance.

References

Tong, T. and Wang, Y. (2005). Estimating residual variance in nonparametric regression using least squares, Biometrika 92: 821 - 830.

Wenlin Dai, Tiejun Tong and Lixing Zhu (2017) Optimal sequence or ordinary sequence? A unified framework for variance estimation in nonparametric regression, Statistical Science.

Examples

```
x<-1:100/100
y<-5*sin(2*pi*x)+rnorm(100)*0.5
type="ord"
r<-2
m<-10
vardif(x,y,type,r,m)
```

Index