Package ‘someKfwer’

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Type Package
Title Controlling the Generalized Familywise Error Rate
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Description This package collects some procedures controlling the Generalized Familywise Error Rate.
License GPL (>= 2)
LazyLoad yes
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someKFWER-package Controlling the k-FWER (Generalized Familywise Error Rate)

Description

This package collects some procedures controlling the Generalized Familywise Error Rate: Lehmann and Romano (2005), Guo and Romano (2007) (single step and stepdown), Finos and Farcomeni (2009).

Details
Procedures controlling the k-FWER (Generalized Familywise Error Rate)

Package: kfwe
Type: Package
Version: 1.0
Date: 2009-10-30
License: GPL (>= 2)
LazyLoad: yes

Author(s)

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References


Examples

```r
set.seed(13)
y = matrix(rnorm(3000), 3, 1000) + 2 # create toy data
p = apply(y, 2, function(y) t.test(y)$p.value) # compute p-values
M2 = apply(y^2, 2, mean) # compute ordering criterion
kord = kfweOrd(p, k = 5, ord = M2) # ordinal procedure
kgr = kfweGR(p, k = 5) # Guo and Romano
kord = kfweOrd(p, k = 5, ord = M2, GD = TRUE) # ordinal procedure (any dependence)
klr = kfweLR(p, k = 5) # Lehman and Romano (any dependence)
```

Procedures controlling the k-FWER (Generalized Familywise Error Rate)

Controlling the Generalized Familywise Error Rate

Description

This library collects some procedures controlling the Generalized Familywise Error Rate: Lehmannn and Romano (2005), Guo and Romano (2007) (single step and stepdown), Finos and Farcomeni (2009).
Procedures controlling the k-FWER (Generalized Familywise Error Rate)

Usage

\begin{verbatim}
kfweLR(p, k = 1, alpha = 0.01, disp = TRUE)
kfweGR(p, k = 1, alpha = 0.01, disp = TRUE, SD=TRUE, const = 10, alpha.prime = getAlpha(k = k, s = length(p), alpha = alpha, const = const))
kfweOrd(p, k = 1, alpha = 0.01, ord = NULL, alpha.prime = alpha, J = qbinom(alpha,k,alpha.prime), disp = TRUE, GD=FALSE)
getAlpha (s, k = 1, alpha = 0.01, const = 10)
\end{verbatim}

Arguments

- \textbf{p}: vector of p-values of length s
- \textbf{s}: number of p-values (i.e. hypotheses)
- \textbf{k}: number of allowed errors in kFWE controls
- \textbf{alpha}: global significance level
- \textbf{ord}: the vector of values based on which the p-values have to be ordered
- \textbf{const}: Bigger is better (more precise but slower)
- \textbf{J}: number of allowed jumps before stopping
- \textbf{disp}: display output? TRUE/FALSE
- \textbf{SD}: Step-down version of the procedure? (TRUE/FALSE) the step-down version is uniformly more powerful than the single step one.
- \textbf{alpha.prime}: univariate alpha for single step Guo and Romano procedure
- \textbf{GD}: Logic value. Should the correction for general dependence be applied? (See reference below for further details)

Value

kfweOrd, kfweLR, kfweGR, kfweGR.SD return a vector of kFWE-adjusted p-values. It respects the order of input vector of p-values p.

getAlpha returns the alpha for Guo and Romano procedure.

Author(s)

L. Finos and A. Farcomeni

References

For Lehmann and Romano procedure see:

For Guo and Romano procedure see:
Procedures controlling the $k$-FWER (Generalized Familywise Error Rate)


For Ordinal procedure see:


Examples

```r
set.seed(13)
y=matrix(rnorm(3000),3,1000)+2  #create toy data
p=apply(y,2,function(y) t.test(y)$p.value)  #compute p-values
m2=apply(y^2,2,mean)  #compute ordering criterion

kord=kfweord(p,k=5,ord=M2)  #ordinal procedure
kgr=kfwegr(p)  #Guo and Romano

kord=kfweord(p,k=5,ord=M2,GD=TRUE)  #ordinal procedure (any dependence)
klr=kfwelr(p,k=5)  #Lehman and Romano (any dependence)
```
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