Package: covRobust (via r-universe)

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Title Robust Covariance Estimation via Nearest Neighbor Cleaning

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Description The cov.nnve() function implements robust covariance estimation by the nearest neighbor variance estimation (NNVE) method of Wang and Raftery (2002) <DOI:10.1198/016214502388618780>.

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Depends R (>= 2.15.1)

License GPL (>= 2)

Repository https://hanase.r-universe.dev

RemoteUrl https://github.com/hanase/covrobust

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cov.nnve *Robust Covariance Estimation via Nearest Neighbor Cleaning*

Description

The cov.nnve function for robust covariance estimation by the nearest neighbor variance estimation (NNVE) method of Wang and Raftery (2002, *JASA*).

Usage

```
cov.nnve(datamat, k = 12, pnoise = 0.05, emconv = 0.001, bound = 1.5,
         extension = TRUE, devsm = 0.01)
```

Arguments

datamat	matrix in which each row represents an observation or point and each column represents a variable
k	desired number of nearest neighbors (default is 12)
pnoise	percent of added noise
emconv	convergence tolerance for EM
bound	value used to identify surges in variance caused by outliers wrongly included as signal points (bound = 1.5 means a 50 percent increase)
extension	whether or not to continue after reaching the last chi-square distance. The default is to continue, which is indicated by setting extension = TRUE.
devsm	when extension = TRUE, the algorithm stops if the relative difference in variance is less than devsm. (default is 0.01)

Value

A list with the following components:

cov	covariance matrix
mu	mean vector
postprob	posterior probability
classification	classification (0=noise otherwise 1) obtained by rounding postprob
innc	list of initial nearest neighbor cleaning results (components are the covariance, mean, posterior probability and classification)

Note

terms of use: GPL version 2 or newer.

References

Wang and Raftery (2002),Nearest neighbor variance estimation (NNVE): Robust covariance estimation via nearest neighbor cleaning (with discussion), *Journal of the American Statistical Association* 97:994-1019

see also University of Washington Statistics Technical Report 368 (2000) http://www.stat.washington.edu/www/research/reports

Examples

```
data(iris)
cov.nnve(iris[-5])
```

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