

Package ‘NPMLEcmprsk’

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Type Package

Title Non-parametric Maximum-Likelihood Estimation for Competing-Risks Data

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Description The package computes non-parametric Maximum-Likelihood Estimate and its asymptotic variance in a semiparametric mixture model for competing-risks data, as described in Chang et al. (2007b).

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NPMLEcmprsk	<i>Non-parametric Maximum-Likelihood Estimation for Competing-Risks Data</i>
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Description

The function computes non-parametric Maximum-Likelihood Estimate and its asymptotic variance in a semiparametric mixture model for competing-risks data, as described in Chang et al. (2007b).

Usage

```
NPMLEcmprsk(DATA, C, iteration)
```

Arguments

DATA	The N-by-P matrix of data. There are N samples rows in matrix, with one sample in each row. The P columns included the observable times which are time-to-event or censoring times, the status which are coded by the non-negative number for each observable times, and the P-2 covariates. Note that the censoring status are coded by zero.
C	The parameter influence the convergence of the algorithm. The larger value suggests the faster convergence. Default value is 50.
iteration	The number of iteration for the algorithm. Default value is 300.

Details

Fits the semiparametric mixture model for competing-risks data, in which proportional hazards models are specified for failure time models conditional on cause and a multinomial model is specified for marginal distribution of cause conditional on covariates, described in Chang, I. S. et al. (2007b). The efficient algorithms for the computation of the non-parametric Maximum-Likelihood Estimation are described in Change, I. S. et al. (2007a).

Value

Returns a list with components

Lambda	The cumulative hazard function. The format is a n-by-k matrix, where n is the number of event times and k is the type of status.
alpha	The coefficients on the probability of risk-sepcific failures, defined by a logistic model. The format is a (p-1)-by-(k-1) matrix, where p-1=(p-2)+1, the p-2 covariates and a constant.
beta	The coefficients on the survival function for time-to-event. The format is a (p-2)-by-k matrix.

Note

The missing value (NA) in the DATA is not allowed in this version.

Author(s)

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References

Chang, I. S. et al. (2007a) A fast algorithm for the nonparameteric maximum likelihood estimate in the Cox-gene model. *Statist. Sinica* 17, 841-856.
 Chang, I. S. et al. (2007b) Non-parametric maximum-likelihood estimation in a semiparametric mixture model for competing-risks data. *Scand. J. Statist.* 34, 870-895.

See Also

none

Examples

```
## Not run:
# setting the seed
set.seed(1000)

# setting the sample size
N=300

# setting the real parameters
alpha=c(-2,5)
beta=c(0.5,-0.5)
Lambda=1/c(4,5)
Z=runif(N)
censoring.time=rexp(N,1/(50*(1-Z)))

# generating the data
W=c((exp(cbind(1,Z)
T=-log(matrix(runif(2*N),2,N))/Lambda*exp(-t(cbind(1,Z))*beta)
survival.time=sapply(1:N,function(i) T[W[i],i])

temp=survival.time<=censoring.time
X=sapply(1:N,function(i) if(temp[i]) survival.time[i] else censoring.time[i])
delta=sapply(1:N,function(i) if(temp[i]) W[i] else 0)

# estimating the parameters
data=cbind(X,delta,Z)
result=NP_competingRisk(data,0,300)

result$alpha
result$beta

## End(Not run)
```

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