Package ‘surrosurvROC’

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Type Package
Title Surrogate Survival ROC
Version 0.1.0
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Description Nonparametric and semiparametric estimations of the time-dependent ROC curve for an incomplete failure time data with surrogate failure time endpoints.
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surrosurvROC-package  Surrogate Survival ROC

Description

Nonparametric and semiparametric estimations of the time-dependent ROC curve for an incomplete failure time data with surrogate failure time endpoints.

Details
surrosurvROC

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Version: 0.1.0
Date: 2018-08-17
License: GPL (>= 2)

Author(s)
Yunro Chung [cre]
Maintainer: Yunro Chung <yunro.chung@asu.edu>

References
Yunro Chung and Yingye Zheng, Improving efficiency of evaluating prognostic accuracy of biomarkers for incomplete failure-time data with surrogate outcome (in progress)

| surrosurvROC | Surrogate Survival ROC |

Description
Nonparametric and semiparametric estimations of the time-dependent ROC curve for an incomplete failure time data with surrogate failure time endpoints

Usage
surrosurvROC(DATA, method, pred.time, wt=NULL, span=NULL, b.rep=200)

Arguments
DATA data frame, consisting of Marker: Predictor or marker value; Survival time; Status: Event indicator (1: event; 0: censoring); STime: Surrogate survival Time; SStatus: Surrogate event indicator (1: event; 0: censoring)
method "KNN" for nonparametric model using nearest neighborhood kernel; "COX" for semiparametric proportional hazard model
pred.time Prediction time of the ROC curve
wt Weight, such as inverse probability weighting
span Smoothing bandwidth parameter for KNN
b.rep Number of bootstrap
Details
It provides a more efficient time-dependent ROC curve for an incomplete failure time data, when surrogate failure time endpoints are additionally observed for all subjects.

Author(s)
Yunro Chung [cre]

References
Yunro Chung and Yingye Zheng, Evaluating Prognostic Accuracy of Biomarkers for Incomplete and Right-Censored Data with Surrogate Outcome (in progress)

Examples
```r
DATA=data.frame(
  Time= c(1,2,5,3,9,NA,8,9,10,NA,NA,6,4,NA,NA,NA,NA,NA,NA,NA,NA,NA,NA,NA,NA),
  Status= c(1,1,0,0,1,NA,1,1,0, NA,NA,0,0,NA,NA,NA,NA,NA,NA,NA,NA,NA,NA),
  STime=  c(3,2,4,2,8,5,8,7,11,1,8,9,3,5,2,5,10,3,5,8,5,2,4,6,7),
  SStatus=c(1,0,1,0,1,1,0,0,1,1,1,0,1,0,1,0,1,0,1,0,1,0,0,1,0,0),
  Marker= c(1,5,1,2,3,1,2,3,4,5,9,8,5,7,3,4,2,5,3,4,7,5,9,3,8)
)

#COX at year 3
RES1=surrosurvROC(DATA, method="COX", pred.time=3)
print(RES1)

#KNN at year 3
nobs=sum(!is.na(DATA$Time))
span=0.25*nobs*(-0.20)
RES2=surrosurvROC(DATA, method="KNN",pred.time=3,span=span)
print(RES2)
```
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