How to use vsrfit

How to use the vsrfit package to fit rules to survival data

In this example, we show how to use vsrFit with the help of an example. We the ovarian data from the survival package to show this:

Required Packages

```
library(survival)
library(ranger)
library(osqp)
```

Load and process the ovarian data

```
data("ovarian")
ovarian$resid.ds <- as.factor(ovarian$resid.ds)
ovarian$rx <- as.factor(ovarian$rx)
ovarian$ecog.ps <- as.factor(ovarian$ecog.ps)
newdata <- ovarian
remove(ovarian)
```

Now load the installed vsrFit package and run the following commands:

```
library(vsrfit)
formula = Surv(futime,fustat)~.
rules.obj <- get_rules(formula, newdata, ntree = 200)
```

```
## 400 rules (length<=1) were extracted from the first 200 trees.
## 708 rules (length<=2) were extracted from the first 200 trees.
## 984 rules (length<=3) were extracted from the first 200 trees.
```

```
rdata.obj <- create_ruledata(rules.obj)
```

```
## [1] "626 duplicate rules and corresponding columns were removed"
```

```
rdata<-rdata.obj$rdata
model <- vsrfit(rdata.obj, gamma = 0.001, lambda1 = c(2,3))
```

Get the regression coefficients and final rules:

```
beta <- model$beta
rules <- model$rules
```

```
rules[1:5]
```

```
## [1] "X[,2]<=59.74245"   "X[,2]>59.74245"    "X[,4] %in% c('1')"
## [4] "X[,4] %in% c('2')" "X[,2]<=68.2534"
```

```
#beta[1] is the coefficient of the intercept
beta[1:5]
```

```
## [1]  2.302780e+02  1.695314e-10 -8.343802e-11  9.006667e-11  1.375791e-10
```

The first item in beta is the coefficient of the intercept of the regression, and the others are coefficients of each of the rules in model$rules.