Bagging biased-SVM

**Input:** data\_all (HAE=1 and HAE=0)

(those HAE=0 data will have a variable iter\_order=1,2,…20 pre-derived for iterations)

grid\_search <- expand.grid(cost=c(0.001, 0.01), weights=c(5, 10))

kfold = 5

**Output:** 20 SVM models

svm\_models = list()

For (i in 1:20) {

Samp = data\_all [which(HAE==1),] U data\_all[which(HAE==0 & iter\_order==i),]

AUPR=rep(0,20)

flds = createFolds(Samp $HAE, kfold) # kflold split

For (j in 1: nrow(grid\_search){

For (k in 1: kfold){

flds0=flds; names(flds0)[j] <- "val";

trainIndex = (1:n)[-flds0$val]; valIndex = (1:n)[flds0$val];

dat\_trn = Samp [trainIndex,]; dat\_val = Samp [valIndex,] ;

Svm\_fit = svm(data= dat\_trn, cost= grid\_search[j,]$cost, class.weights= grid\_search[j,]$ weights)

AUPR[j]= AUPR[j]+calculate\_AUPR(svm\_fit, dat\_val)/kfold

}

}

J0= which(AUPR==min(AUPR))

svm\_models[[i]] <- svm(data= Samp, cost= grid\_search[J0,]$cost, class.weights= grid\_search[J0,]$ weights, probability = TRUE)

}