CIS 635 Data Mining Name Sajal

Homework 5

Hand in sheet

Write in or copy and paste the answers for the following:

Part 1

1. -1
2. 1
3. 0

Part 2

1. confusion matrix

296	11	5
10	257	14
4	14	289

2. attach R script

```
x = read.table("hw05dataTrain.txt", header = TRUE)
y = read.table("hw05dataTest.txt", header = TRUE)
ind0 = x[, 3] == 0
ind1 = x[, 3] == 1
ind2 = x[, 3] == 2

# train 0 and 1
x01 = x[ind0 | ind1,]
ind = x01[, 3] == 0
x01[ind, 3] = 1
x01[!ind, 3] = -1
x01[, 3] = as.factor((x01[, 3]))
mod01 = svm(x01[, 1:2], x01[, 3])

# train 0 and 2
x02 = x[ind0 | ind2,]
ind = x02[, 3] == 0
x02[ind, 3] = 1
x02[!ind, 3] = -1
x02[, 3] = as.factor(x02[, 3])
mod02 = svm(x02[, 1:2], x02[, 3])

# train 1 and 2
x12 = x[ind1 | ind2,]
ind = x12[, 3] == 1
```

```
x12[ind, 3] = 1
x12[!ind, 3] = -1
x12[, 3]  = as.factor(x12[, 3])
mod12 = svm(x12[, 1:2], x12[, 3])

# predict
pred01 =  predict(mod01, y[, 1:2])
pred02 = predict(mod02, y[, 1:2])
pred12 = predict(mod12, y[,1:2])

res = data.frame(y[,3], pred01, pred02, pred12)
fpred = c()
for (i in 1:nrow(res)) {
  r = res[i,]
  d = c()
  # map prediction to class 0, 1 and 2
  if (r$pred01 == 1) {
    d= append(d, 0)
  } else {
    d=append(d, 1)
  }
  if (r$pred02 == 1) {
    d= append(d, 0)
  } else {
    d= append(d, 2)
  }
  if (r$pred12 == 1) {
    d= append(d, 1)
  } else {
    d= append(d, 2)
  }
  # add to final prediction using majority rule
  fpred = append(fpred, as.numeric(names(which.max(table(d)))))
}

cMatrix = table(fpred, y[,3])
print(cMatrix)
```