MECENG 276

Quiz 4

Q1

Confusion Matrix

Y \ $\hat{Y}$	1	0
1	TP	FN
0	FP	TN

$$FP = \sum^{N} (\hat{y}_i == 1 \text{ and } y_i == 1)$$

$$FP = \sum^{N} (\dots$$

. - - -

—

$N = 10 \rightarrow$

y \ $\hat{y}$	1	0
1	5 TP	2 FN
0	1 FP	2 TN

Q2

1) $34 + 9 + 5 + 51 = 99$

2) $acc = \frac{TP + TN}{N} = \frac{34 + 51}{99} = \frac{85}{99} \approx 0.859$

3) $TPR = \frac{TP}{TP + FN} = \frac{34}{43} \approx 0.790$

4) $TNR = \frac{TN}{TN + FP} = \frac{51}{56} \approx 0.911$

Q3

Find the 5 nearest neighbors:

(2.73, 0), (2.75, 0),
(2.69, 1), (2.58, 0),
(2.92, 0)

(with k-nn k=5)

$\rightarrow P(1 \mid x=2.7) = \frac{\sum^{all}(y==1)}{N} = \frac{1}{5} = \underline{0.2}$

Q4

$$acc_k = \frac{TP_k + TN_k}{N_k}$$

TN_k = Sum of all non k numbers

$$TPR_k = \frac{TP_k}{TP_k + FN_k}$$

TP_k = k ... k

$$TNR_k = \frac{TN_k}{TN_k + FP_k}$$

FN_k = k ... k ... k ← sum

FP_k = k ... k | ← sum

1) $TPR_{c1} = \frac{12}{12+11} = \frac{12}{23} \approx 0.522$

2) $acc_{c2} = \frac{8+17}{33} \approx 0.7576$

3) $TNR_{c3} = \frac{28}{28+4} = 0.875$