CAP6673 EXAM

Question 4

We need to use generalized classification Rule

$$\text{class}(\,) = \begin{cases} \text{NFP if } \dfrac{f_{NFP}(\,)}{f_{FP}(\,)} \geq c \\ \text{FP otherwise} \end{cases}$$

(a) $\dfrac{0.75}{0.25} \overset{?}{\geq} 0.30$ Yes $\Rightarrow$ NFP

(b) $\dfrac{0.75}{0.25} \overset{?}{\geq} 2.5$ Yes $\Rightarrow$ NFP

Question 5

(a) $K = \frac{1+0+1}{3} = \frac{2}{3}$ faults

$L = \frac{9+12+8}{3} = \frac{29}{3}$ faults

$M = \frac{8+9+5}{3} = \frac{22}{3}$ faults

$N = \frac{2+2+1}{3} = \frac{5}{3}$ faults

(b) Majority Voting

$$class(\,) = \begin{cases} NFP \text{ if } \frac{P_{NFP}(\,)}{P_{FP}(\,)} \geq c \\ FP \text{ otherwise} \end{cases}$$

For K $P_{NFP} = \frac{3}{3} = 1$ and $P_{FP} = \frac{0}{3} = 0$

$\frac{1}{0} \overset{?}{\geq} 0.75$ yes $\Rightarrow$ NFP

For L $P_{NFP} = \frac{0}{3} = 0$ and $P_{FP} = \frac{3}{3} = 1$

$\frac{0}{1} \overset{?}{\geq} 0.75$ No $\Rightarrow$ FP

For M $P_{NFP} = \frac{0}{3} = 0$ and $P_{FP} = \frac{3}{3} = 1$

$\frac{0}{1} \overset{?}{\geq} 0.75$ No $\Rightarrow$ FP

For N $P_{NFP} = \frac{3}{3} = 1$, $P_{FP} = \frac{0}{3} = 0$

$\frac{1}{0} \overset{?}{\geq} 0.75$ Yes $\Rightarrow$ NFP

(c) We need to use clustering method

$$\text{class}(\ ) = \begin{cases} \text{NFP if } \frac{\bar{d}_{FP}}{\bar{d}_{NFP}} \geq c \\ \text{FP otherwise} \end{cases}$$

For K $\bar{d}_{NFP} = \frac{1+2+3}{3} = 2$ $\bar{d}_{FP} = \frac{14+15+18}{3} = \frac{47}{3}$

class = ? $\frac{\frac{47}{3}}{2} \overset{?}{\geq} 1.25$ Yes $\Rightarrow$ NFP

For L $\bar{d}_{NFP} = \frac{20+18+16}{3}$ $\bar{d}_{FP} = \frac{8+7+10}{3}$

class = ? $\frac{25}{54} \overset{?}{\geq} 1.25$ No $\Rightarrow$ FP

For M $\bar{d}_{NFP} = \frac{6+8+10}{3}$ $\bar{d}_{FP} = \frac{0+2+3}{3}$

class = ? $\frac{5}{24} \overset{?}{\geq} 1.25$ No $\Rightarrow$ FP

For N $\bar{d}_{NFP} = \frac{0+3+2}{3}$ $\bar{d}_{FP} = \frac{6+7+12}{3}$

class = ? $\frac{25}{5} \overset{?}{\geq} 1.25$ Yes $\Rightarrow$ NFP

Question 6

$$TPR = \frac{30}{40}$$

$$TNR = \frac{85}{90}$$

$$FPR = \frac{5}{90}$$

$$FNR = \frac{10}{40}$$

$$Precision = \frac{30}{35}$$

$$Recall = \frac{30}{40}$$

$$Accuracy = \frac{115}{130}$$

$$Error\ Rate = \frac{15}{130}$$