CS6PSA

ADITYA RAGHUWANSHI 170052

F-Score

$P = \{O1, O2, O5, O4\}$

$N = \{O5, O6, O7, O8, O9, O10\}$

$P' = \{O1, O2, O4, O5, O8\}$

$N' = \{O3, O6, O7, O9, O10\}$

$TP = \{O1, O2, O4\}$

$TN = \{O6, O7, O9, O10\}$

$FP = \{O5, O8\}$

$FN = \{O3\}$

(P) $\text{Precision} = \frac{|TP|}{|P'|} = \frac{3}{5} = 0.6$

(R) $\text{Recall} = \frac{|TP|}{|P|} = \frac{3}{4} = 0.75$

$$\text{F-score (in } \beta \text{ terms)} = \frac{(\beta^2+1) \cdot \text{Precision} \cdot \text{Recall}}{\beta^2 \cdot \text{Precison} + \text{Recall}}$$

for $\beta = 1$, $\text{F-score} = \frac{2.P.R}{P+R} = \frac{2(0.6)(0.75)}{2 0.6 + 0.75} = \boxed{0.67}$

for $\beta = 2$, $\text{F-score} = \frac{5.P.R}{4.P+R} = \frac{5(0.6)(0.75)}{(4)(0.6)+(0.75)} = \boxed{0.714}$

for $\beta = 1/2$, $\text{F-score} = \frac{(5/4)P.R.}{(1/4)P+R} = \frac{5/4(0.6)0.75)}{(1/4)(0.6)+(0.75)} = \boxed{0.625}$