

Thursday Jan 30, 2025

In-class Handout

COSC 410A Applied Machine Learning

Prof. Forrest Davis

Name:

Discuss and complete the following questions with the person nearest you. You **may** be asked to share your thoughts with the class.

1. Consider the following confusion matrix. Calculate the  $F_1$  score for the underlying classifier by-hand.

True \ Predicted	Cat	Dog
Cat	45	5
Dog	15	35

$$P_{\text{Cat}} = \frac{45}{45+15} = 0.75$$

$$R_{\text{Cat}} = \frac{45}{45+5} = 0.90$$

$$F_{1\text{Cat}} = \frac{2(0.75)(0.90)}{0.75+0.90} \approx 0.82$$

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$$P_{\text{Dog}} = \frac{35}{35+5} = 0.875$$

$$R_{\text{Dog}} = \frac{35}{35+15} = 0.70$$

$$F_{1\text{Dog}} = \frac{2(0.875)(0.70)}{0.875+0.70} \approx 0.78$$