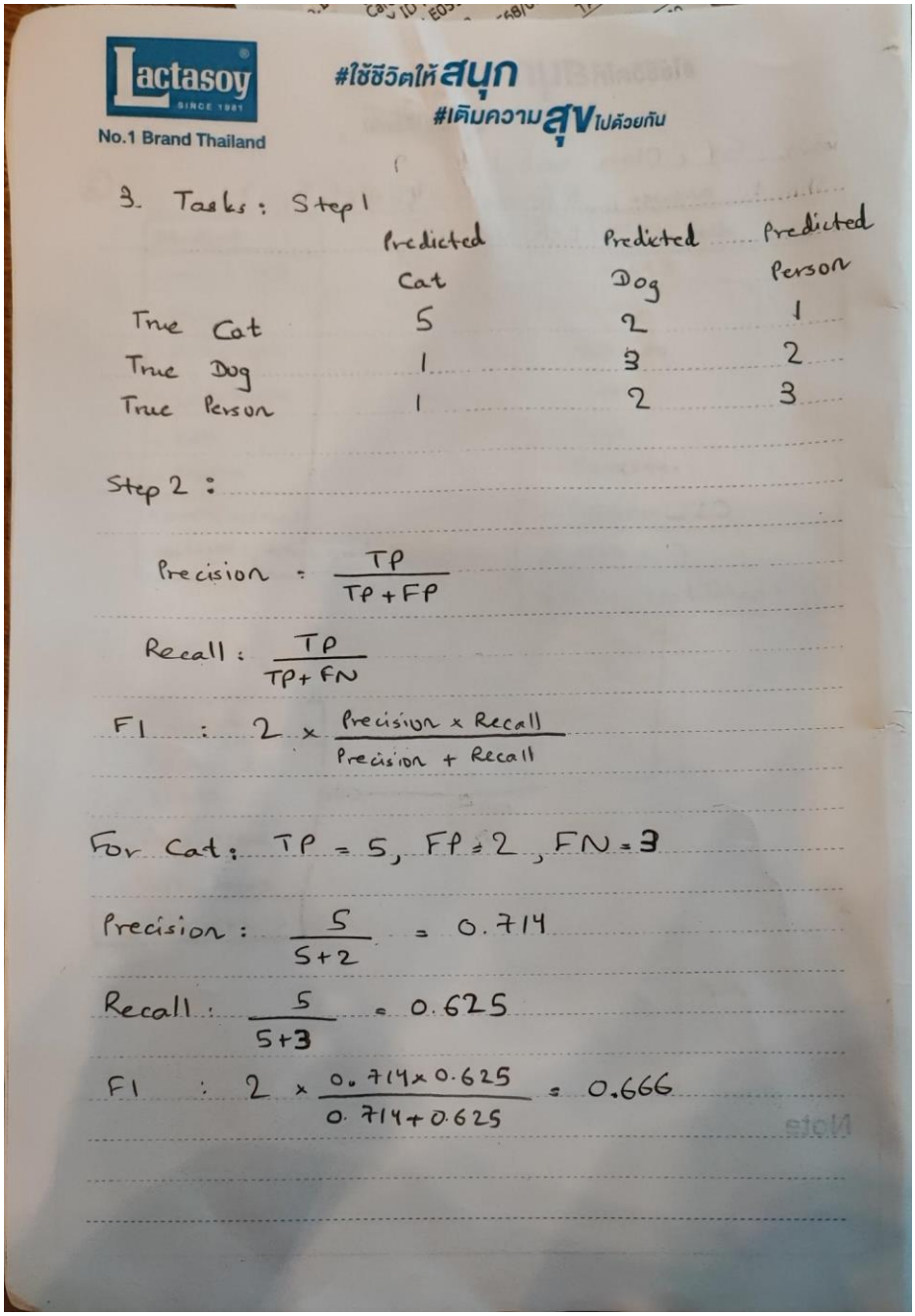
Assignment 13: Image Classification Analysis

3. Tasks:

• Step 1: Construct a 3x3 confusion matrix based on the above data. Here's the format for your matrix:



For Dog : TP = 3, FP = 4, FN = 3

$$\text{Precision} = \frac{3}{3+4} = 0.429$$

$$\text{Recall} = \frac{3}{3+3} = 0.5$$

$$\text{F1} = 2 \times \frac{0.429 \times 0.5}{0.429 + 0.5} = 0.462$$

For Person : TP = 3, FP = 3, FN = 3

$$\text{Precision} = \frac{3}{3+3} = 0.5$$

$$\text{Recall} = \frac{3}{3+3} = 0.5$$

$$\text{F1} = 2 \times \frac{0.5 \times 0.5}{0.5 + 0.5} = 0.5$$

Note

Step 3: Analysis

- **Cat**: Moderate precision (71.4%) but lower recall (62.5%). The model correctly identifies most Cats but misses some.
- **Dog**: Poor precision (42.9%) and recall (50%). The model frequently misclassifies Dogs as Cats or Persons.
- **Person**: Balanced precision and recall (50% each), indicating average performance with room for improvement.