**Lab 10 - Vanilla CNN and Fine-Tune VGG16 - for Dogs and Cats Classification**

In this lab, we will work through a common practice of Deep Learning Engineers - that is - take an existing model, that does something similar to what the engineer is interested doing, and fine-tune it for the specific task at-hand.

Notice to follow a [good notebook structure](https://github.com/CSCN8010/CSCN8010/blob/main/class_notebooks/notebook_structure/notebook_structure.ipynb), and focus on readability and clarity of the code, insights and conclusions.

1. Obtain the Data: Get the Dogs vs Cats dataset (see CSCN8010 class notebook)
2. EDA: Explore the data with relevant graphs, statistics and insights (**1.5 points**)
3. Train two networks (make sure to use callbacks to save the best model version as done in lab 9):
   1. Define a Neural Network of your choice (**0.5 points**)
   2. Fine-Tune VGG16 (pre-trained on imagenet). Make sure to use validation to test for over-fitting. Plot the appropriate graph (**0.5 points**)
4. Explore the relative performance of the models (make sure to load the best version of each model) (**2.5 points**):
   1. accuracy
   2. confusion metric
   3. precision, recall, F1-score,
   4. precision-recall curve.
   5. Explore specific examples in which the model failed to predict correctly.
5. Add your conclusions. (**1 point**)