Pet Image Classification on Oxford-IIIT Pet Dataset

Wiwat Pholsomboon — 1254311 — INFO-6147 PyTorch
Capstone Project Proposal

March 11, 2025

Project Description

This project aims to classify pet images from the Oxford-IIIT Pet Dataset. The dataset contains 37 different classes of pets (both dogs and cats), but only 12 classes of cats will be used for this project. Each class contains approximately 180-200 images. The system will leverage deep learning techniques and PyTorch to automatically identify and classify different cat breeds with high accuracy.

Why it is it good?

- Dataset has different size of images, good for study preprocessing image.
- Dataset is for different cat breeds, good for study if model can classify cat breeds effectively or not.

How do you think you will do it?

- Preprocessing images to standardize input into pytorch model
- Data Augmentation to increase the amount of dataset
- Transfer learning to improve performance of the model as there is limited images data for each class

What data will you use?

- Oxford-IIIT Pet Dataset (https://www.robots.ox.ac.uk/ vgg/data/pets/)
- Only 12 classes of cats will be used
- Each class contains approximately 180-200 images

How will you evaluate your system performance?

- K-Fold Cross Validation
- Learning Curve to detect overfitting and underfitting
- Confusion Matrix
- Accuracy, Precision, Recall, and F1 Score
- ROC-AUC Score