Dog Breeder Classifier

Domain Background:

The project revolves around Convolutional Neural Networks (CNN) to classify images into categories. The challenging part is taking real-world images and classifying into different dog breeds using CNN models. The different dog breeds are difficult to identify even for the human eye. We need to build a model that can distinguish between different dog images and classify according to their breeds.

Problem Statement: From a given set images, identify the breed of dog if its is a dog image. If the image is of a human, identify the breed of dog a human face resembles.

Dataset and Inputs: We are given two datasets of human images (13233 images) and dog images (8351 images). The dog data is divided into three subsets of test, validation and training.

Solution Statement: We need to first identify if the input image is a human face or a dog face. Once the model identifies the dog face, we need to model the network architecture to identify dog breed. The model accuracy can be improved by using ResNet50.

Benchmark Model: For this problem, it is suggested to use VGG16 and Transfer Learning for accurate ——–image classification.

Evaluation Metrics:

The accuracy of the CNN Classifier should be above 75% to start with. It should correctly distinguish dog from human. It should identify the human resemblance to a dog breed.

Project Design: I plan to approach this project as –

1. Identifying Human and Dog faces
2. Transform images
3. Implement a CNN classifier (from scratch)
4. Improve accuracy with a better classifier (Transfer Learning)
5. Test on images other than dataset

References:

[Deep Inside Convolutional Networks: Visualising Image Classification Models and Saliency Maps](#)

https://cv-tricks.com/cnn/understand-resnet-alexnet-vgg-inception/

https://towardsdatascience.com/transfer-learning-with-convolutional-neural-networks-in-pytorch-dd09190245ce