Dog breed Identifier Application

Domain Background: Image Classification and Transfer Learning

Problem statement: This project involves classifying whether an image is that of a dog or not and if it is a dog, identify the breed of the dog.

Datasets and Inputs: This work would be carried out using pertained machine learning models (e.g. VGG16, RESNET, AlexNET, Inception v3 etc) trained on ImageNet dataset with up to 1000 classes. Also, the dog and human datasets available from the notebook workspace would be used to also train model from scratch and results and performance would be compared with existing state of the art pretrained models

Evaluation metric: The metric to measure performance should be finding the amount of correctly classified images. Basically, this is the accuracy.

Solution Statement: The solution is to design an end to end computer vision popeline where users can upload an image to web interface and the use would et an output of the dog breed and if it is a human that is uploaded, the algorithm should tell that it is human and which particular dog breed it resembles.

A benchmark model: The solution can be compared with the ground truth itself on whether dogs are correctly classified or not.

Project Design:

- Import Datasets

- Detect Humans in Images: This can be done with Viola Jones algorithm using existing haarcascades classifiers. Pretrained models like VGG can also be used
- Detect Dogs
- Creating a CNN to Classify Dog Breeds from Scratch
- Create a CNN to Classify Dog Breeds using Transfer Learning
- Writing and testing the Algorithm to determine if human, find the dog breed it resembles, and if dog is classified, which breed is it