CSE598 Introduction to Deep Learning

Project Proposal

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General project idea:

To recognize the breed of a dog in an image. There are so many different dog breeds in the world, however, most people can't precisely identify which breed of a dog is. So, by using deep learning models, we can easily identify the breed of a dog when given an image.

The problem:

In this task, our job is to train a model that inputs a picture of a dog and outputs the breed of this dog.

Input: An image file

Output: string(breed)

Dataset:

Given a training set and a test set of images of dogs. Each image has a filename that is its unique id. The dataset comprises 120 breeds of dogs.

Number of training data: 10222

Number of testing data: 10357

Number of labels: 120

Source link: https://www.kaggle.com/c/dog-breed-identification/data

Baselines and Evaluation Metrics:

Baselines:

We used DummyClassifier from sklearn as our baseline model

```
[ ]  clf_mf = DummyClassifier(strategy='most_frequent', random_state=0)
     clf_mf.fit(X_train, y_train)
     clf_mf.score(X_test, y_test)
```

```
0.008998435054773083
```

Evaluation:

We decide to compare two models by using the classification_report function from sklearn, getting the precision, recall, F1 score from the model.

Experiments and Results:

Our task is to train a model that can identify the breed of dog in the image. In this dataset, we found that it isn't enough for a baseline model to learn high accuracy. Therefore, instead of building and training a Dummy classifier, we'll use a pre-trained model applying transfer learning.

We might choose the pre-trained keras models as our experiments, and we expect that the performance will be much better than just training a Dummy baseline model because there is lots of research showing that transfer learning works very well.