CATegories

Using Convolutional Neural Networks To Classify Cat Breeds

Goals

Data Science ML Goals

1. Build out multiple convolutional neural network models
2. Start with binary classification of cat breeds
3. Expand to multi class

4. Make cat breed classifier on Streamlit

Applications

Applications

1. **Recreational Use of Streamlit App**
2. **Identifying cat breeds in animal shelters**
3. **Identifying cat breeds on street, for data collection**

Workflow

DataCollection

- *Scraped over 10,000 cat images from GettyImages*
- *Used 6,000 images amounting to 3 different breeds, 2,000 Each*
- *Siberian,Scottish Fold, and Persian*

Organizing Directories

- *Separated classes into Train/Val/Test Directories*
- *Train/Val/Test = 2400/800/800*

Baseline Model

- *Convolutional Neural Network*
- *Relu Activation for hidden layers*
- *Sigmoid Activation for output layer*

Transfer Learning (Multi & Binary)

- *Trained Features on VGG16 model*
- *Used as base for Convolutional Neural Network*
- *Used Relu and Sigmoid Activation*

Image Augmentation(Binary)

- *Used VGG16 as base*
- *Used train-datagen for image cropping*
- *Used Relu and sigmoid activation*

RESULTS

Baseline(Convet) : 81% Accuracy

Layers

- **5 convolutional layers**
  - **filters = 32,64,128,256,256**
  - **Kernel shape = 3*3**
  - **Activation = Relu**
- **4 max pooling layers**
  - **Size = 2**
- **1 Output layer**
  - **Activation Sigmoid**

Final(Transfer): 90% Accuracy

Convolutional Base: VGG16

- **See appendix for architecture**

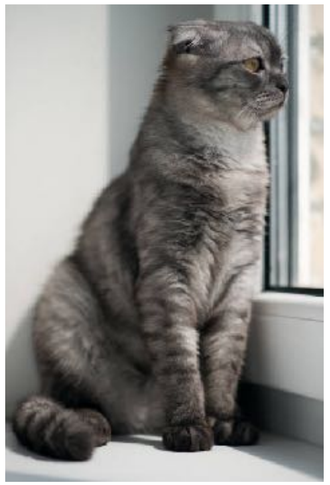
On Top

- **1 Densely connected layer**
- **Filters = 256**
- **Kernels = 3*3**
- **Activation = Relu**

Output layer

- **Activation Sigmoid**

Scottish Fold Breed



Siberian Breed

Where did the model go wrong… ?

Scottish Fold
(Input Image)

Siberian
(Predicted Breed Example)

Where did the model go wrong ?

Siberian
(Input Image)

Scottish Fold
(Predicted Breed Example)

Future Work

- Build out a multi class model, and try to extend it to all cat breeds
- Develop Application on Streamlit
- Expand data set
  - Specifically increasing the number of images per breed