Puppy Scanner

Predict your dog's breed with its picture

Kyaw Saw Htoon

Problem Statement

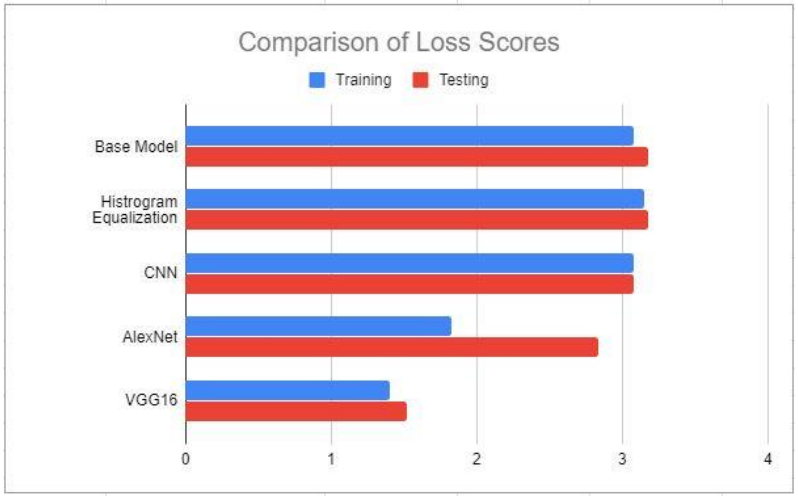
- Knowing your pet's breed is vital
  - Health issues predisposed to based on their breed
  - Food limitations
  - Training style
- Breeds informed by Sellers or Shelters are often unreliable
- Visual identification can be inaccurate
- DNA Testing can be expensive

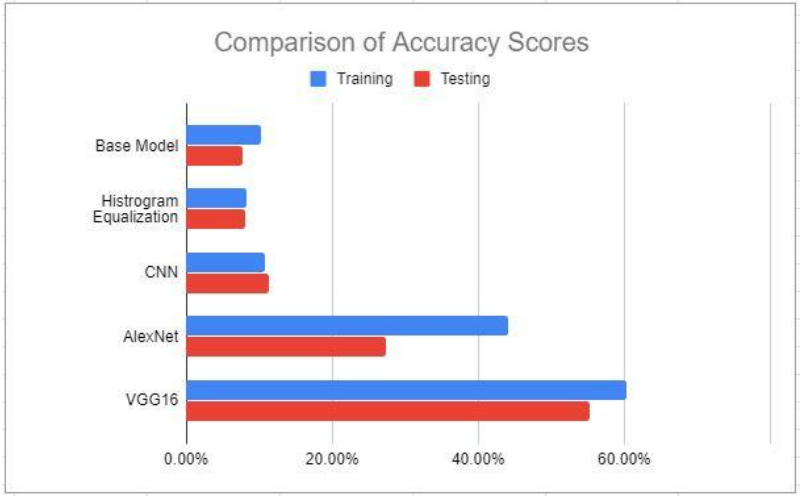
Model Development

- Stanford Dogs Dataset
  - 120 dog breeds
  - 20580 images
- Use only 25 breeds for faster training
- Image data preprocessing and augmentation
  - Histogram equalization
  - 30° rotation
  - Horizontal flip
- Explore multiple neural networks

Model Selection

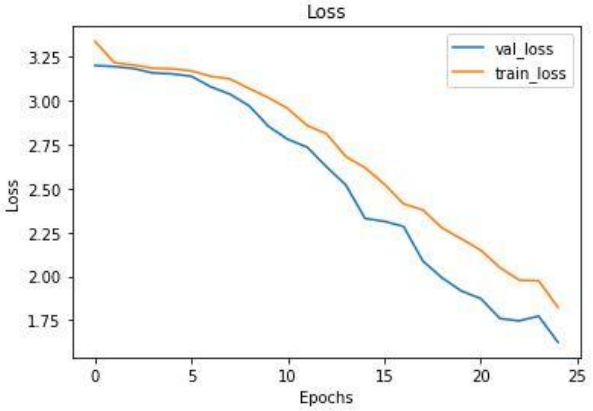
- 5 Models were trained
- Based on Loss and Accuracy scores

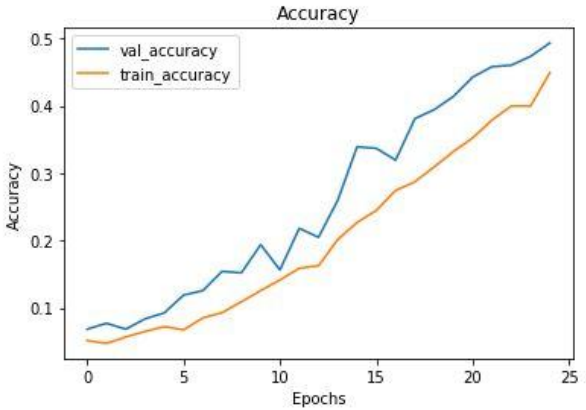




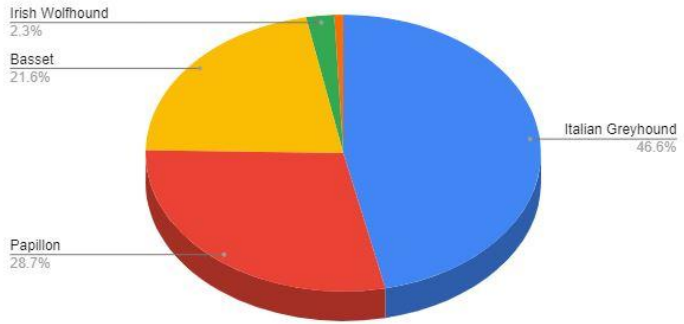
Final Model - VGG16

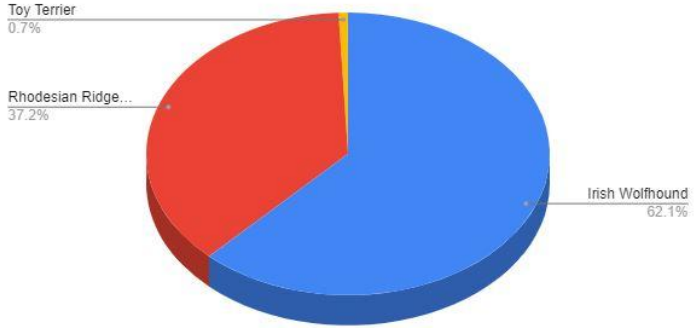
- Convolutional neural network
- Good for large-scale image recognition
- Use image url as the input
- Output is 5 breeds with highest probabilities
    - Useful for mixed breeds
- 55% Accuracy





Testing the Model





Areas for Improvements

- Use the entire dataset of 120 breeds
- Additional preprocessing of image data
  - Cropping images to decrease the noise and focus on the dogs
  - Explore different color spaces
  - Explore other augmentations such as edge enhancement, de-texturization etc.
- Train for more epochs
- Try other CNN models
  - DenseNet
  - ResNet50
  - Xception

The End

Thank You