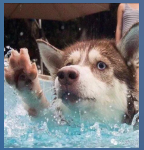


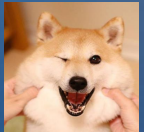
Dog Breed!

— Dog Breed Identifier iOS App

Group 8:



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Siyi Wang

C contents

Data Collection

Model Implementation

APP Development

Display



Data Collection



Dog Breed Description

Source: American Kennel Club

Detail: Provide information about dogs' personality, trainability, etc.



Dog Images

Source: ImageNet

Detail: 120 dog breeds, each breed has more than 150 images.

Example: French Bulldog



This affectionate and playful breed—known for its wrinkly, smushy face and bat-like ears—is a great companion for single pet-owners as well as families with young children. They need little exercise and grooming and are incredibly loyal to their people. Because of their somewhat stubborn nature, they require a bit of patience during training but are incredibly intelligent and eager to please.



Model Implementation

Self-built Model - CNN Model

Our total images set only contains around 20k images with 120 different labels.

Load Images

Through Rotation and flip to expand the sample images

Two convolutional layers , one flatten layer and two fully connected layers

Structure

Parameter Set
Batch size: 512
Validation size: 10%
Filter size: (5, 5, 32)

Training epoch: 5000

Train!

Accuracy
Validation Set: 12.1%

Pre-trained Model

Load the tensorflow graph and variables pre-trained on the ImageNet dataset

**load
model**

Use tensorboard to investigate the graph architecture

Remove the last layer, fix the weights of the remaining layers

**retrain
the
network**

Use what remains as a black-box function transforming images into derived feature vectors, and finally fit a new classifier on the derived feature vectors

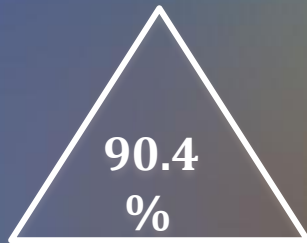
Evaluate the performance of the fine-tuned model

**retrain
the
network**

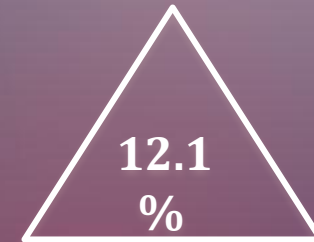
Accuracy
Validation Set: 90.4%

Model Comparison

Pre-trained Model:
Transfer learning
with
inception network



Self Built Model
with
Convolutional Layers



Notes:  means the accuracy of validation set



iOS APP

built on Tensorflow

APP Usage

Identify the dog breed based on pretrained CNN model when you focus on dog pictures/real dogs

Main
Functionality

Show the dog breed

Access the wikipedia to show the dog information

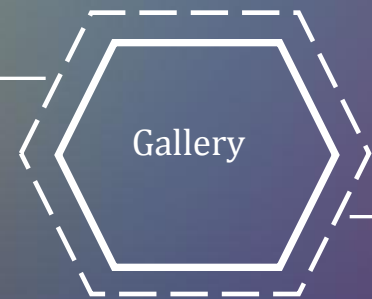
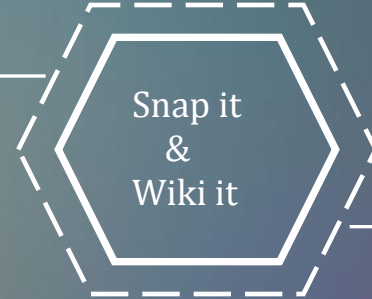
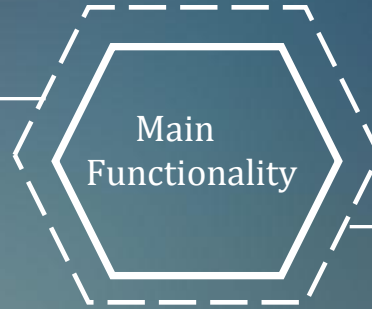
Snap it
&
Wiki it

Details about breed of dog

Get dog photos locally without internet

Gallery

Bunch of cute dog photos





Display





Thanks !