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Image Classification Between Two Animals

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ABSTRACT

We are going to examine the fine-grained object categorization problem of identifying the breed of animal from a picture. To this end we introduce a replacement annotated dataset of pets covering 37 different breeds of cats and dogs. The visual problem is extremely challenging for the cat and dog, particularly cats, are very deformable and there are often exactly subtle differences between their breeds. We make variety of contributions: we first introduce a model to classify cat and dog breed automatically from a picture.

The model adding the shape of the pet animals, captured by a deformable part model detecting the cat and dog face, and appearance, captured by a bag-of-words model that describes the pet fur. Fitting the model involves automatically segmenting the cat and dog within the image. Second, we compare two classification approaches: a hierarchical one, during which a pet animal is first assigned to the cat or dog family then to a breed, and a flat one, during which the breed is obtained directly.

Keywords : Classification, Classification of Cats and Dogs, Cats and Dogs.

I. INTRODUCTION

The research on object category identification has largely focused on the discrimination of well distinguished object categories. Most of the favored international benchmarks contain a couple of dozen object classes that, for the foremost part, are visually dissimilar. Even in the much larger Image Net database, categories are denned based on a high-level ontology and, as such, any visual similarity between them is more accidental than systematic.

The difficulty is within the incontrovertible fact that breeds may differ only by a couple of subtle phenotypic details that, thanks to the highly deformable nature of the bodies of such animals, can be difficult to measure automatically. Indeed, we have often focused on cats and dogs as example of highly deformable objects that identification and detection is especially challenging.

The Dogs vs. Cats image classification has been around for an extended time now. The Dogs vs. Cats competition from Cagle is trying to solve the CAPTCHA challenge, which relies on the problem of distinguishing images of dogs and cats. It is easy for humans, but evidence suggests that cats and dogs are particularly difficult to inform apart automatically. Many people have worked or are working on constructing machine learning classifiers to address

this problem. A classifier based on color features got 56.9% accuracy on the Astra dataset. An accuracy of 82.7% was achieved from a SVM classifier supported a mixture of color and texture features.

II. Related work

In this paper, a deep-learning algorithm based on convolution neural-network is implemented using python and tolerant for image classification. [1].

Kaggle's Dogs vs. Cats contest is trying to unravel the CAPTCHA challenge, which is predicated on the difficulty of distinguishing dog and cat images. It's easy for humans, but evidence suggests that the automatic separation of cats and dogs is particularly difficult. Many people have been working or working on building classifiers for machine learning to address this issue. A SVM classifier achieved an accuracy of 82.7 percent supported a mixture of color and texture characteristics. And in, they used the features of SIFT (Scale-Invariant Feature Transform) to coach a classifier then finally got a 92.9 percent accuracy. We also want to solve this problem in our plan and achieve higher efficiency. We've tried various strategies. We tried Dense-SIFT features, combining Dense SIFT and color features, and features learned from CNN, for instance . We also used SVMs on the learned features and eventually achieved 94.00 percent of our greatest classification accuracy [2].

Dog breed identification is important for several reasons, particularly for understanding individual breeds' conditions, health concerns, interaction behavior, and natural instinct. Then, the image augmentation with various settings is additionally applied on the training dataset, so as to enhance the classification performance. [3].

The first one may be a traditional pattern recognition model. For the second approach, we used Deep Convolution Neural Networks (CNN) to learn features of images and trained Back propagation (BP) Neural Networks and SVMs for classification. We tried various experiments to enhance our performance on the test dataset, and eventually got the simplest accuracy of 94.00% by the second approach. The Dogs vs. Cats competition from Kaggle is trying to unravel the CAPTCHA challenge, which relies on the matter of distinguishing images of dogs and cats. It is easy for humans, but evidence suggests that cats and dogs are particularly difficult to tell apart automatically [4].

Image classification, which is that the fundamental of most algorithms within the field, has been of interest to several researchers. In this work, an optimal binary classifier to differentiate cat and dog images was explored where various architectures and parameters were employed to realize the simplest results. To design our experiment, we considered the architectures with two and three convolution layers using two input image size when models were trained with and without Dropout against an identical dataset. The classification report of any models was produced to explore other metrics like precision, recall, and F1-score, and that they were aligned with the accuracy rates as this experiment was a balanced data situation [5].

Over fitting refers to the phenomenon when a network learns a function with very high variance like to perfectly model the training data. Unfortunately, many application domains don't have access to big data, like medical image analysis. T. The application of augmentation methods supported GANs is heavily covered during this survey. [6]

III. Proposed work

In the proposed technology we just find out the solution related to image classification problem. We

are creating the following modules in the proposed methodology.

1. MODULES:

1. Taking Image
2. Pre-Processing
3. Cat Segmentation
4. Dog Segmentation
5. Accuracy Result.

IV. Implementation of Proposed Methodology

Algorithm &Working:
K-Means Clustering Algorithm:-
1. Input total image (1…..n)
2. Tokenization
3. Comparing with data dictionary
4. Count the frequency
5. Add the image in the respective cluster.

V. Result and Conclusion

In this work provides the accuracy rate 98% Images in the training purpose are small and Grayscale images. The computational time for processing this images is very as compare to other normal JPEG images.

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