Capstone 2 – Dogs Vs Cats Classification - MileStone Report

Overview

Image classification is used to recognize the objects or species in an image. The dataset is obtained from Kaggle through Microsoft Research team who acquired it from Asirra (Animal Species Image Recognition for Restricting Access). The dataset consists of 25000 images where each image is of dog or cat labelled for training, 12500 images where each image is of dog or cat unlabelled for testing. Here the objective is to identify if the testing image is of dog or cat using training dataset.

Who is our client?

Asirra in partnership with petfinders.com assists in finding home for homeless pets.

The dataset was originally used as a CAPTCHA (or Completely Automated Public Turing test to tell Computers and Humans Apart), that is, a task that it is believed a human finds trivial, but cannot be solved by a machine, used on websites to distinguish between human users and bots. Specifically, the task was referred to as "Asirra" or Animal Species Image Recognition for Restricting Access, a type of CAPTCHA. The task was described in the 2007 paper titled "Asirra: A CAPTCHA that Exploits Interest-Aligned Manual Image Categorization".

Dataset preparation

Data is downloaded from Kaggle. Dataset contains 25000 images of dog and cat combined in train folder.

Plot dogs and cats photos separately to check.
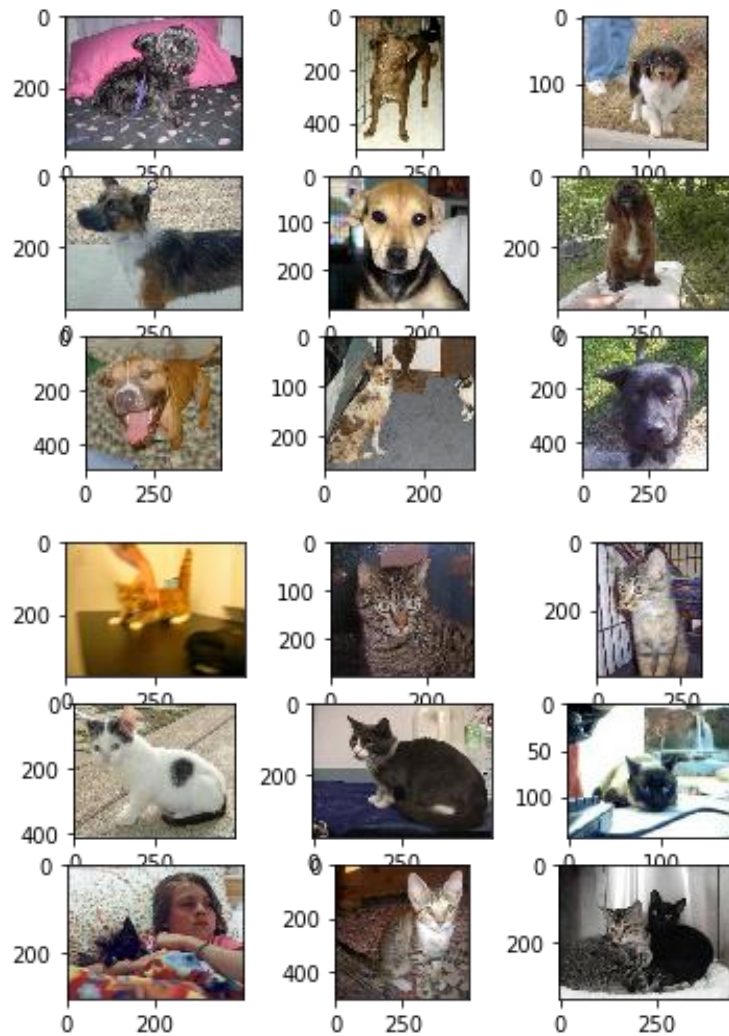
We can observe that some images are in portrait and some images are in landscape. In some photos there are two animals.

The photos will have to be reshaped prior to modeling so that all images have the same shape. This is often a small square image.

There are many ways to achieve this, although the most common is a simple resize operation that will stretch and deform the aspect ratio of each image and force it into the new shape.

We could load all photos and look at the distribution of the photo widths and heights, then design a new photo size that best reflects what we are most likely to see in practice.

Smaller inputs mean a model that is faster to train, and typically this concern dominates the choice of image size. In this case, we will follow this approach and choose a fixed size of 50×50 pixels.

The input data will be used to divide into training and test datasets. 25% of the dataset is used for testing.

Further Work

Model selection and testing with trained data.