CATS AND DOGS IMAGE CLASSIFICATION

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INTRODUCTION

- The theme of the project is to classify images of cats and dogs using a neural network. Distinguishing images of dogs and cats is easy for humans, but it is particularly difficult to tell apart automatically. The aim of the project is to create a model that will classify the images as accurately as possible.
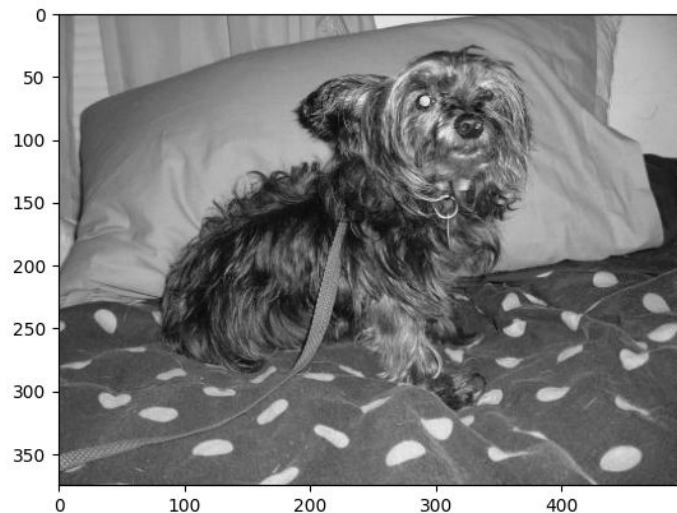
DATASET

- The dataset I choose is the Asirra dataset provided by Microsoft Research.
- The training set contains 24,900 images, including 12,450 images of dogs and 12,450 images of cats.
- The testing set contains 40 images.
- Around 60 images were found to be corrupted

PREPROCESSING

In order to convert this dataset to training data, images are reshaped so each one of them has the same dimensions and are also converted to grayscale.

THE TOOLS

Google Colaboratory is easy to use, there is no need to configure the environment and one can easily import libraries and datasets.
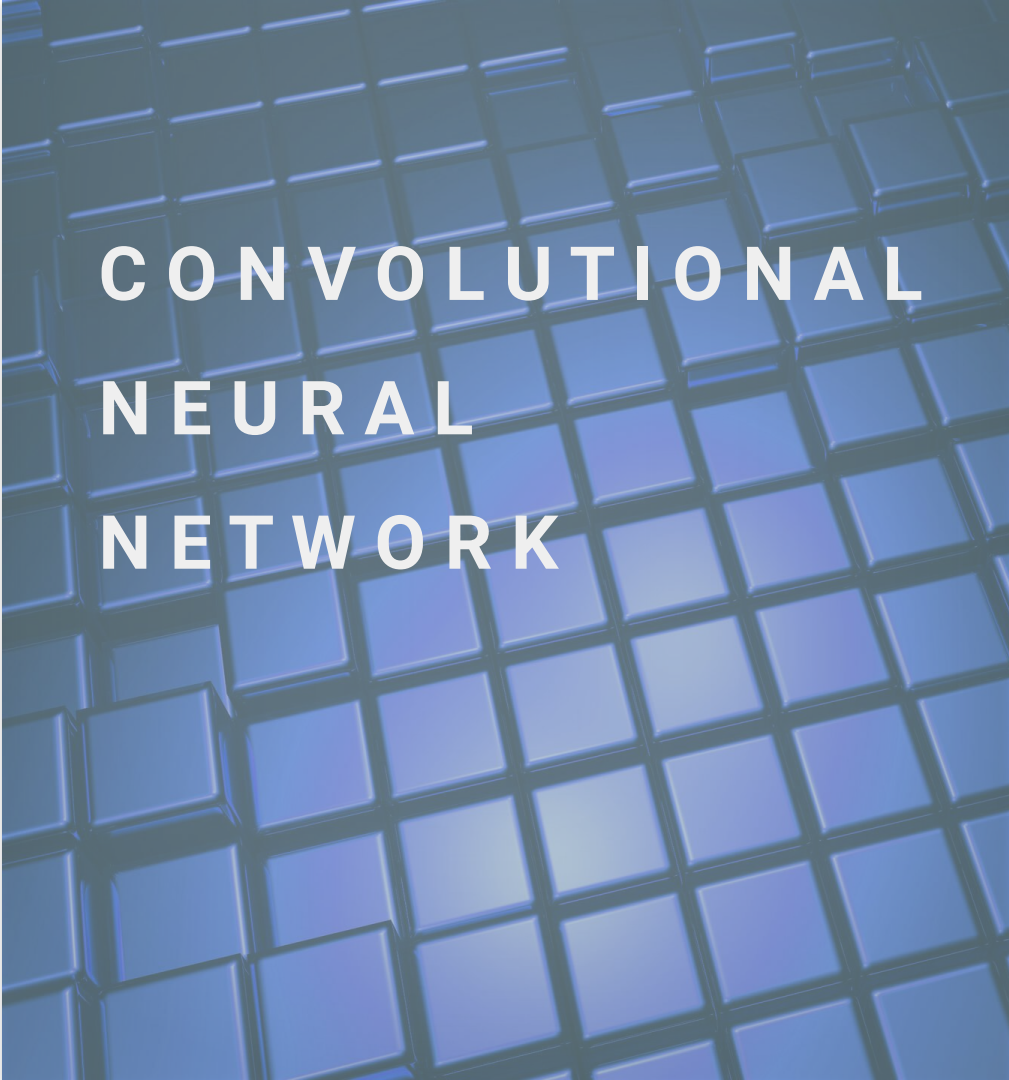
LIBRARIES

Project is written in Python

- Pandas
- Numpy
- Matplotlib.pyplot
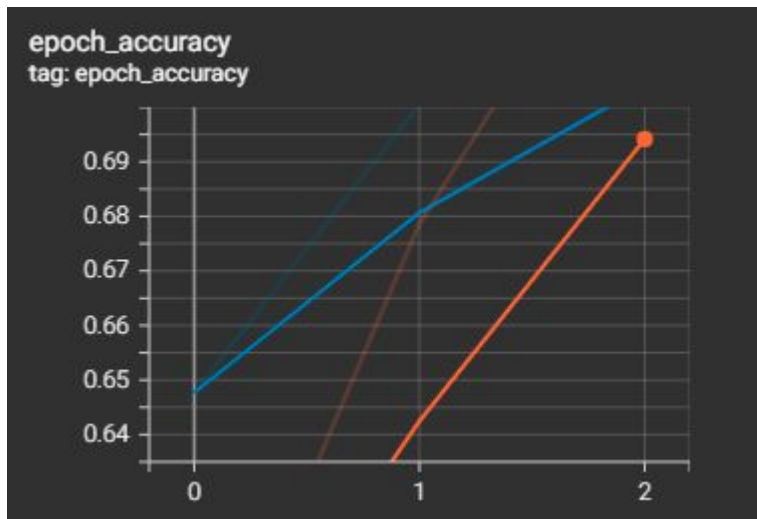- Opencv
- Pickle
- Tensorflow and Keras

- The Convolutional Neural Network gained popularity through its use with image data
- The basic CNN structure is as follows: Convolution -> Pooling -> Convolution -> Pooling -> Fully Connected Layer -> Output

CONVOLUTIONAL NEURAL NETWORK
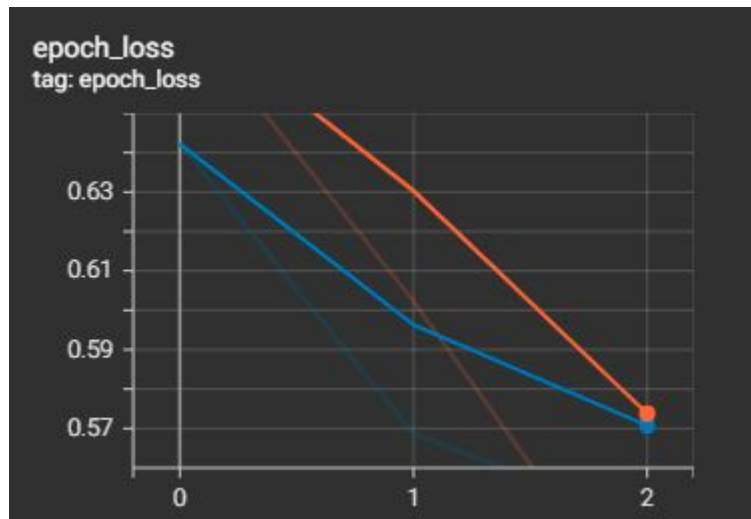
NEURAL NETWORK MODEL

Our first model contains the following layers:

- Conv2D # 64 filters, relu activation function
- Conv2D # 64 filters, relu activation function
- Flatten
- Dense   # 64 nodes, relu activation function
- Dense   # 1 node, sigmoid activation function

INITIAL DATA ANALYSIS

◆ - training acc   ◆ - validation acc

◆ - training loss   ◆ - validation loss

BIBLIOGRAPHY

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- https://www.geeksforgeeks.org/keras-conv2d-class/
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