

Cats vs Dogs Project

- ❖ This is a **classic** image classification Project but done in a more advanced way.
- ❖ The data was organized into 3 folders
 - Train and Validation folders each had 2 subfolders
 - Cats
 - Dogs
 - Test folder.
- ❖ Then [image dataset from directory](#) was used to get batches of images to train a model.
 - Loading the whole images directories was going to take so many resources and a lot of time.
- ❖ Two models of ResNet50 were used which is an Artificial Neural Network
 - The first one was implemented from scratch with Convolution, BatchNormalization, Pooling and Dense layers.
 - The second one was implemented using Transfer Learning from the [keras](#) .
- ❖ [Callbacks](#) such as ReduceLROnPlateau and TensorBoard were used to control and monitor the training process.
 - TensorBoard showed using graphs the comparison between the training and validation in aspects of epoch accuracy and epoch loss.
- ❖ The ResNet model which was implemented from scratch after just ten epochs reached
 - A training accuracy of 0.98 and training loss of 0.05.
 - A validation accuracy of 0.94 and validation loss of 0.18.
- ❖ The Keras ResNet model after just 3 epochs reached
 - A training accuracy of 0.997 and training loss of 0.0075.
 - A validation accuracy of 0.98 and validation loss of 0.0915.
- ❖ By using [matplotlib.pyplot](#) and [numpy.random.randint](#) to ensure the randomness of the forty images that were plotted to check the trained model on the test images, both models had a test accuracy of 100%.