Fontys Hogescholen ICT

Open Programme

Project Report

Dogs Breed Identification by Zhaklin Yanakieva

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Overview:

The aim of this project is to create a dog breed identification application using CNNs. This design can be applied to image classification problems. The code will accept images of dogs as input. If a dog is detected in the image, it will provide an estimate of the dog's breed.

Modelling:

In this project I decided that it would be best to use CNN (Convolutional neural networks). This ML algorithm has been used to great effect in applications such as object classification, scene recognition.

Evaluation Metrics:

The evaluation metrics of this problem is simply the Accuracy Source for the designed algorithm. At first, I used CNN after processing the images to be the same size in order to easily train the model. However, the small number of train images was about to create a problem and make the model overfitted. Fortunately, after researching, I decided to use ‘transfer learning’ to minimize the overfitting as much as possible. Eventually, after using transfer learning (ResNet-50), with twenty epochs, the test accuracy was improved to 80.8612% ~ 81%.

Conclusion:

To conclude, in this project I built and trained a CNN model as well as applied transfer learning with the intention to improve the model’s accuracy from 3.2% to 81%. What I did not expect, but impressed me the most, was how transfer learning can be used to increase accuracy that much while reducing training time significantly. I started this project with the aim of getting started with neural networks and I had the opportunity to find the best techniques for training this model.