Building image recognition models on the Stanford car data set

In this report, I will analyse the Stanford car data set and build two CNN models and evaluate their performance. The aim is to build a reliable CNN model that classifies car images correctly. This may be useful for training autonomous driving models where one needs to distinguish between cars and other objects. Another use case might be in police chase situations, where advanced city camera systems can be able to distinguish the specific make, model and year of the car being chased. First, let's perform some Exploratory Data Analyses.

First, we will select 50 random classes from the 196 classes of the original train data. Then, we do a 80-20 split of the data into a train and validation data sets. Let's examine how many car images we have for each of the 50 selected classes.

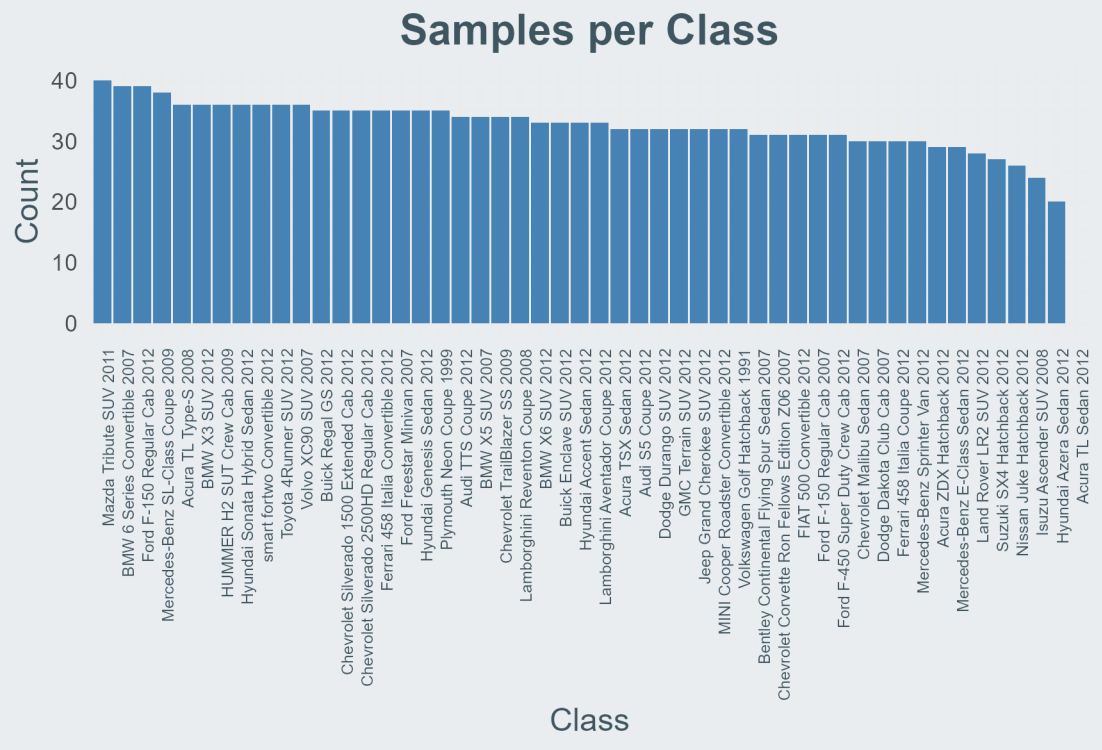

Figure 1: Number of samples for each class

We see that each class is represented relatively equally, i.e., we do not have a class that is overly presented nor under presented, which might create problems with the prediction abilities of our model.