Prediction of Car Fuel Consumption

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Abstract

We produce a model that predicts a vehicle fuel consumption from its weight, with a estimated standard deviation smaller than 2 liters per 100 km. The model is based on the Auto-MPG dataset.

Introduction

TODO

Model

Our model is:

$$\text{fuel consumption} = 0.00899249 \times \text{vehicle weight} - 0.90305387$$

where the fuel consumption is measured in liters per 100 km and the vehicle weight in kg.

Error Distribution

Our model is practically unbiased

$$|\text{mean}| \leq 10^{-14}$$

and its standard deviation is

$$\text{std} \approx 1.815 < 2.0.$$

Dataset

Auto-mpg comes from Quinlan (1993).

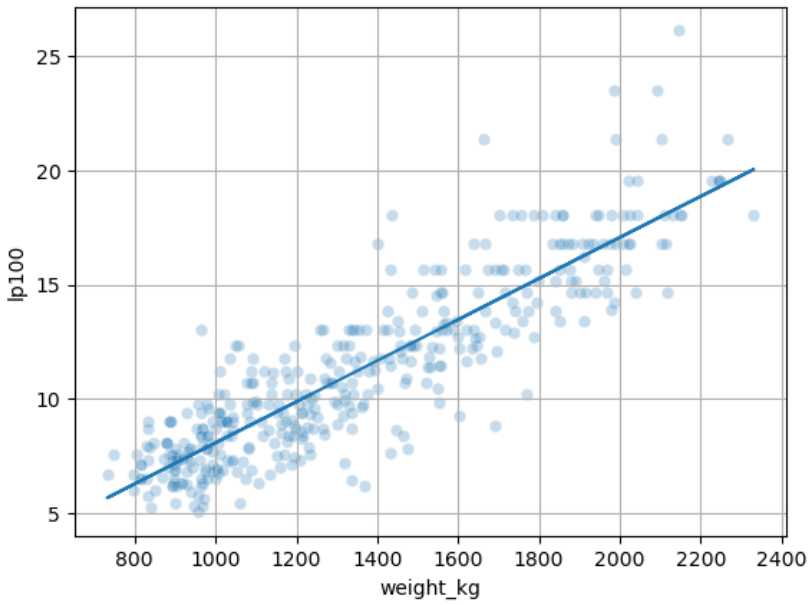

Figure 1: Fuel consumption vs weight in the auto-mpg data sets (semi-transparent dots) and the corresponding prediction model (line).

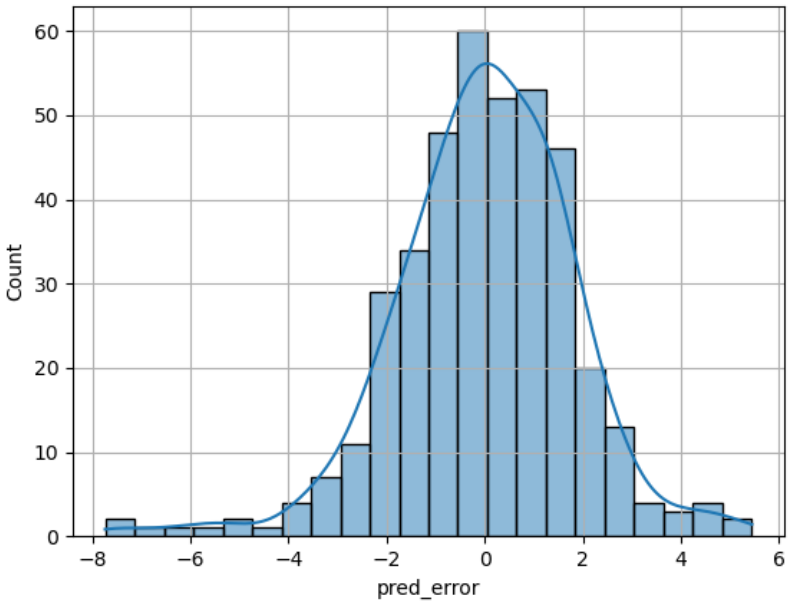

Figure 2: The consumption prediction error distribution.

References

Quinlan, R. 1993. "Auto MPG." UCI Machine Learning Repository. https://doi.org/10.24432/C5859H.