

Linear Regression

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March 24, 2020

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Introduction

Linear regression is a prototypical machine learning algorithm. To get a feel for it, let's look at some data on the relationship between engine size and gas mileage for a group of cars (see [UCI-auto-mpg](#) or, for a nicely formatted csv version, [kaggle-auto-mpg](#)).

In its simplest version, we start with the assumption that a particular quantity y that we would like to understand depends on a quantity x that we know through a linear relationship: Also, we have $x \in \mathbf{R}$.

Here is a picture:

