

# Linear Regression

osimpson

May 21, 2021

## 1 Problem statement

We want a model  $f$  that is a linear combination of the features:

$$f_{\Theta}(x) = \Theta^T x, \text{ where } x_0 := 1 \quad (1)$$

### 1.1 Problems suited to a linear regression model

Linear regression seeks to find a model which describes a linear relationship between features and points. Graphically, we are trying to fit a line to our training data points.

## 2 Objective function

Mean squared error:

$$\frac{1}{N} \sum_i (f_{\Theta}(x_i) - y_i)^2 \quad (2)$$