



Machine Learning

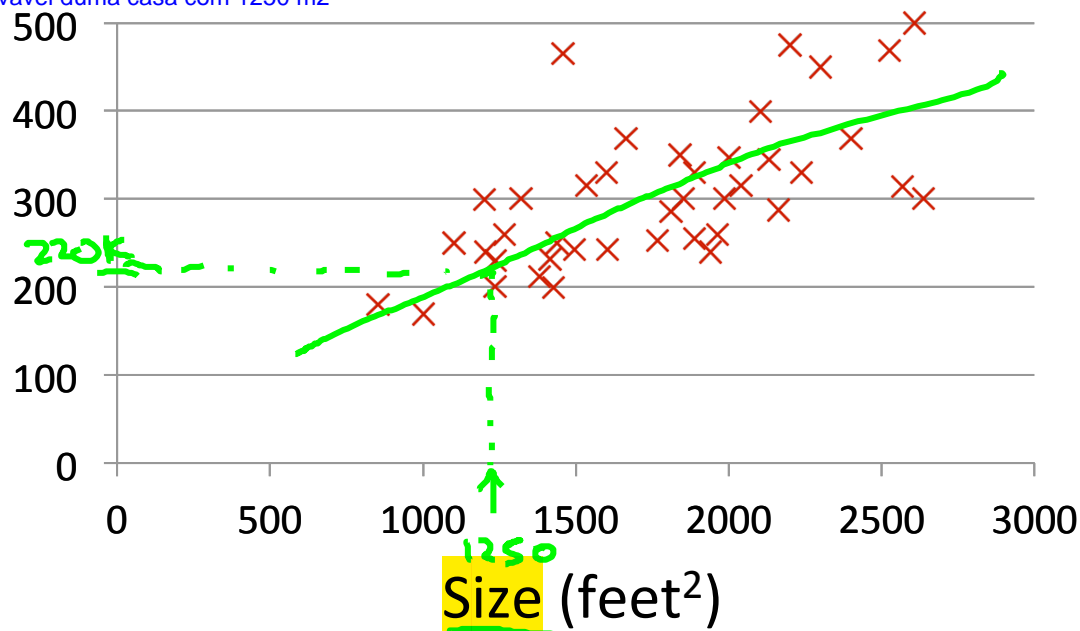
Linear regression with one variable

Model representation

temos um amigo que quer comprar uma casa nesta cidade.
temos estes dados prize/size e baseado nisso obtemos valor provavel duma casa com 1250 m2

Housing Prices (Portland, OR)

Price
(in 1000s
of dollars)



temos dados verdadeiras de casas vendidas

Supervised Learning

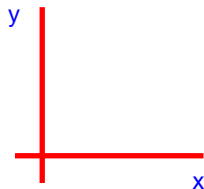
Given the “right answer” for
each example in the data.

Regression Problem

Predict real-valued output

Classification: Discrete-valued output

Training set of housing prices (Portland, OR)



Notation:

- m = Number of training examples
- x 's = "input" variable / features
- y 's = "output" variable / "target" variable

(x, y) - one training example

$(x^{(i)}, y^{(i)})$ - i^{th} training example

Size in feet ² (x)	Price (\$) in 1000's (y)
→ 2104	460
1416	232
→ 1534	315
852	178
...	...

$m = 47$

$$\begin{aligned} x^{(1)} &= 2104 \\ x^{(2)} &= 1416 \\ y^{(1)} &= 460 \end{aligned}$$

temos conjunto dados que damos ao nosso Learning Algorithm

o trabalho do algoritmo é retornar uma função h que recebe tamanho casa e retorna preço estimado

Training Set



Learning Algorithm



Size of house



h



Estimated price

(estimated value of y)

hypothesis

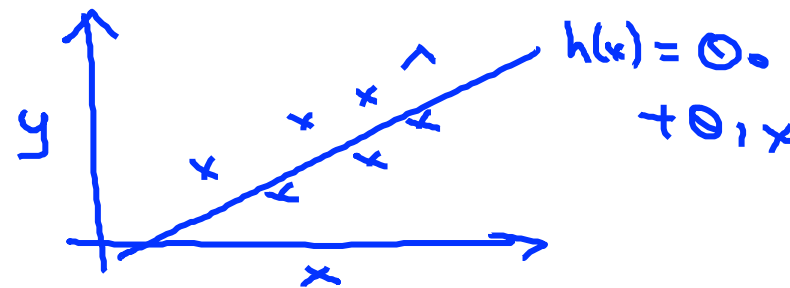
h maps from x 's to y 's.

mapeia de x para y

How do we represent h ?

$$h_{\theta}(x) = \theta_0 + \theta_1 x$$

Shorthand: $h(x)$



Linear regression with one variable. (x)
Univariate linear regression.

↳ one variable