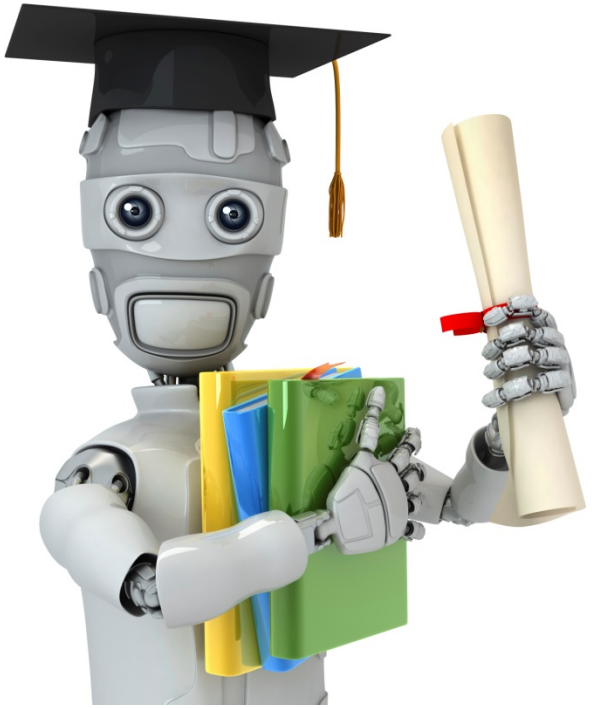
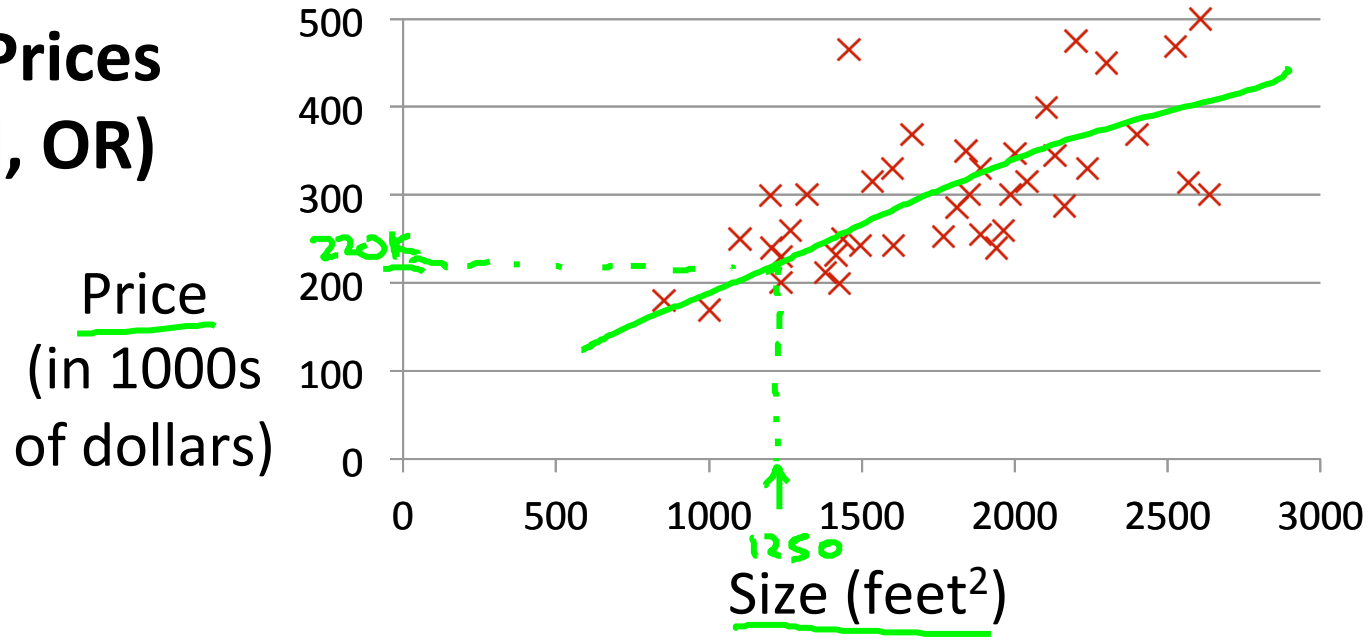


Machine Learning

# Linear regression with one variable

# Model representation

# Housing Prices (Portland, OR)




## 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)**

| Size in feet$^2$ (x) | Price ($) in 1000's (y) |
|---|---|
| 2104 | 460 |
| 1416 | 232 |
| 1534 | 315 |
| 852 | 178 |
| … | … |

m = 47

Notation:

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

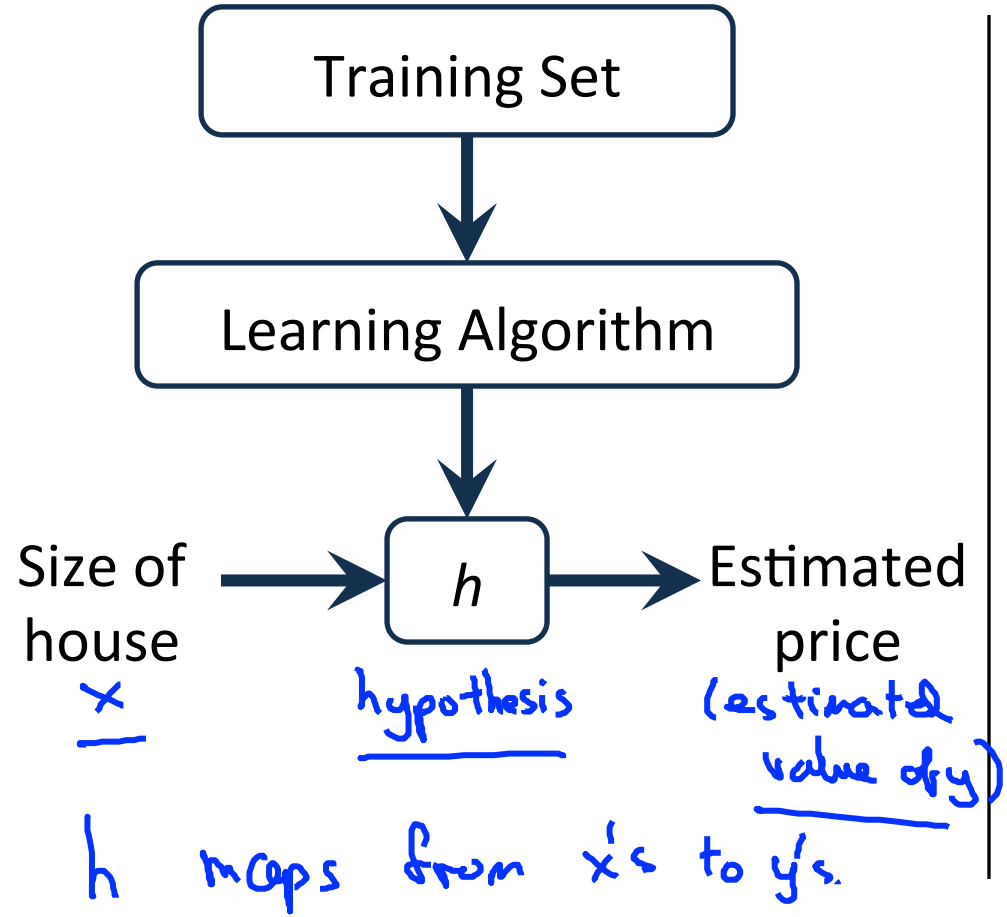
$x^{(1)} = 2104$

$x^{(2)} = 1416$

$y^{(1)} = 460$

$(x, y)$ - one training example

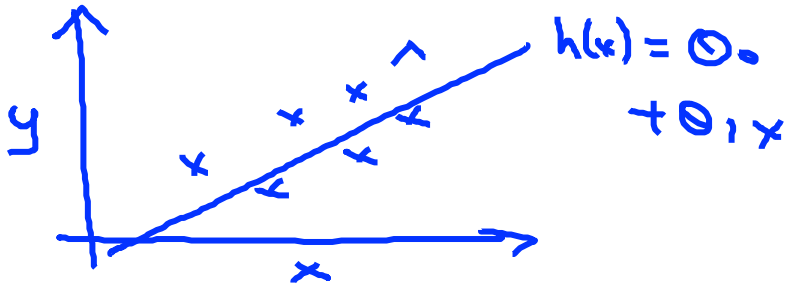
$(x^{(i)}, y^{(i)})$ - $i^{th}$ training example




## 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