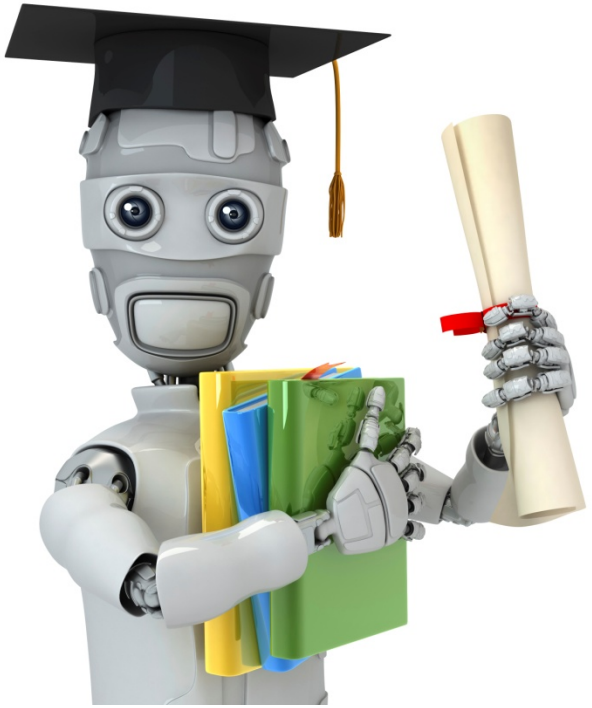

Machine Learning

Linear Regression with multiple variables

Normal equation and non-invertibility (optional)

Normal equation

$$\theta = (X^T X)^{-1} X^T y$$

- What if $X^T X$ is non-invertible? (singular/ degenerate)
- Octave: `pinv(X'*X)*X'*y`

What if $X^T X$ is non-invertible? causas de n ser invertivel?

1. Redundant features (linearly dependent).
   E.g. x_1 = size in feet^2
   ~~x_2 = size in m^2~~ eliminar variaveis redundantes
   $1_m = 3.28$ feet
   $x_1 = (3.28)^2 x_2$

2. Too many features (e.g. $m \leq n$).
   - Delete some features, or use regularization.

$\rightarrow m = 10$
$\rightarrow n = 100$
$\theta \in \mathbb{R}^{101}$

later

talvez LA