Non-Linear Classification!

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eg. x_1 = size
x_2 = # bedrooms
x_3 = # floors
⋮
x_{100}

And if $g(\theta_0 + \theta_1 x_1 + \theta_2 x_2 + \theta_3 x_1^2 + \theta_4 x_1 x_2 \dots)$
$\approx$ 5000 features w/ $O(n^2)$ runtime

→ computationally expensive
→ prone to overfitting
→ reducing # features also reduces accuracy of hypothesis

Why is this important?
eg. Computer vision.
50x50 pixel img = 2500 features (or 7500 if RGB)

$$x = \begin{bmatrix} \text{pixel 1 intensity } (0\text{-}255) \\ \text{pixel 2} \quad \text{"} \\ \vdots \\ \text{pixel 2500} \quad \text{"} \end{bmatrix}$$

Neural networks are algorithms that try to mimic the brain.

↳ Their resurgence is mainly due to the increase in computing power.

↳ They are also state-of-the-art algorithms for many applications.

The brain has an amazing learning algorithm which can make sense of any data from any attached sensor. If we can figure what this learning algorithm is and how to implement it, we may be able to achieve truly intelligent machines.