



Machine Learning

# Advice for applying machine learning

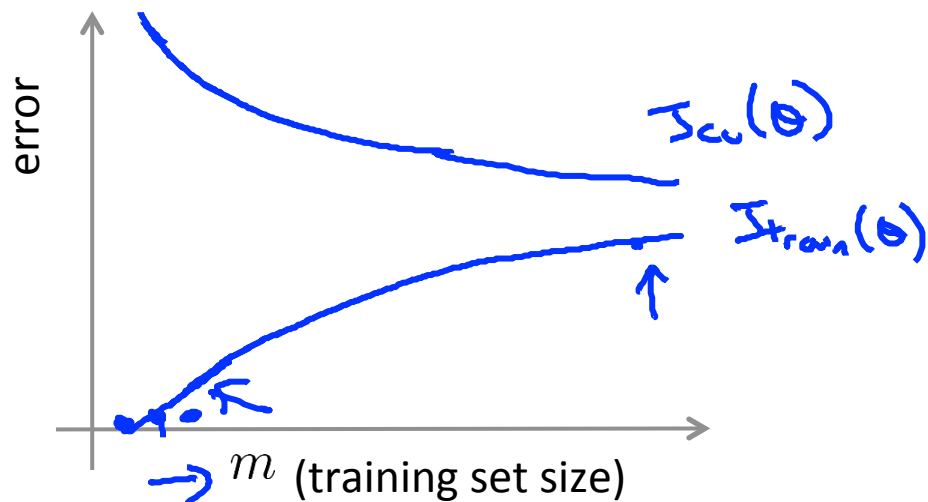
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## Learning curves

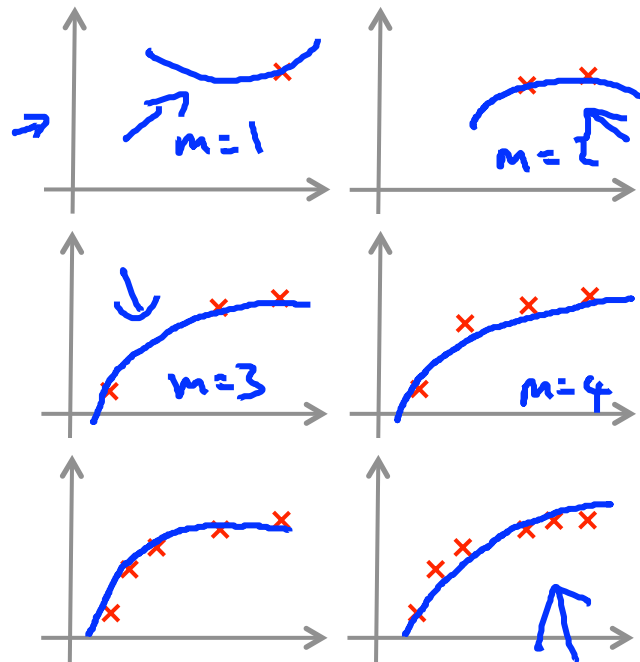
# Learning curves

$$\rightarrow \underline{J_{train}(\theta)} = \frac{1}{2m} \sum_{i=1}^m (h_{\theta}(x^{(i)}) - y^{(i)})^2 \leftarrow$$

$$\rightarrow J_{cv}(\theta) = \frac{1}{2m_{cv}} \sum_{i=1}^{m_{cv}} (h_{\theta}(x_{cv}^{(i)}) - y_{cv}^{(i)})^2$$

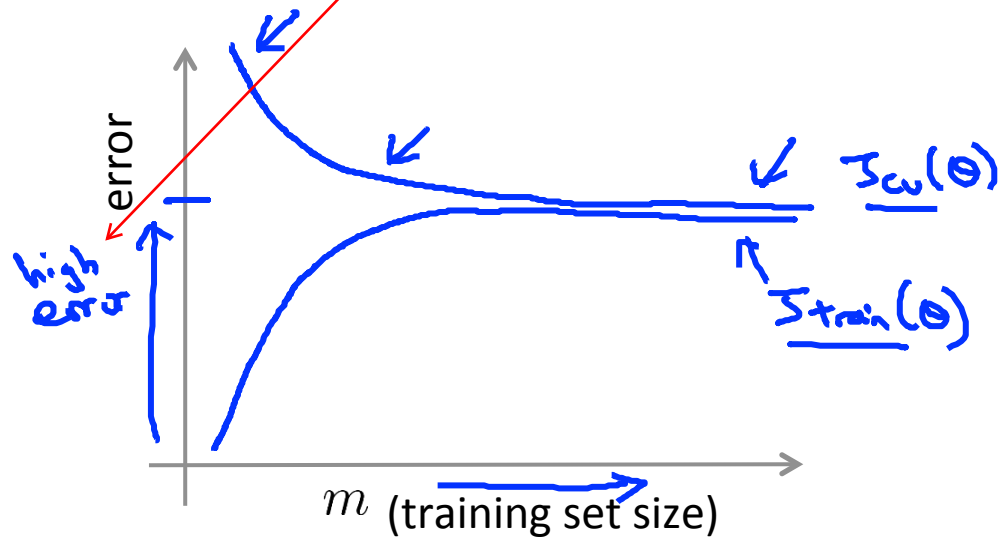


$$h_{\theta}(x) = \theta_0 + \theta_1 x + \theta_2 x^2$$



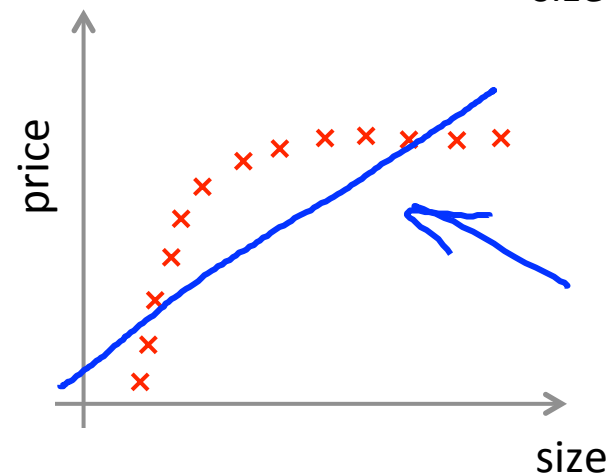
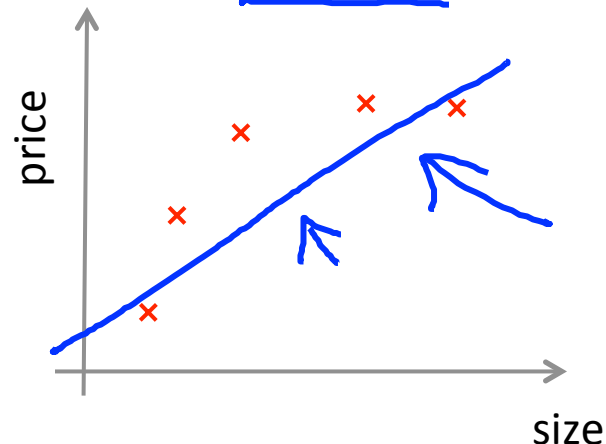
## High bias

os erros nos 2  
sao altos

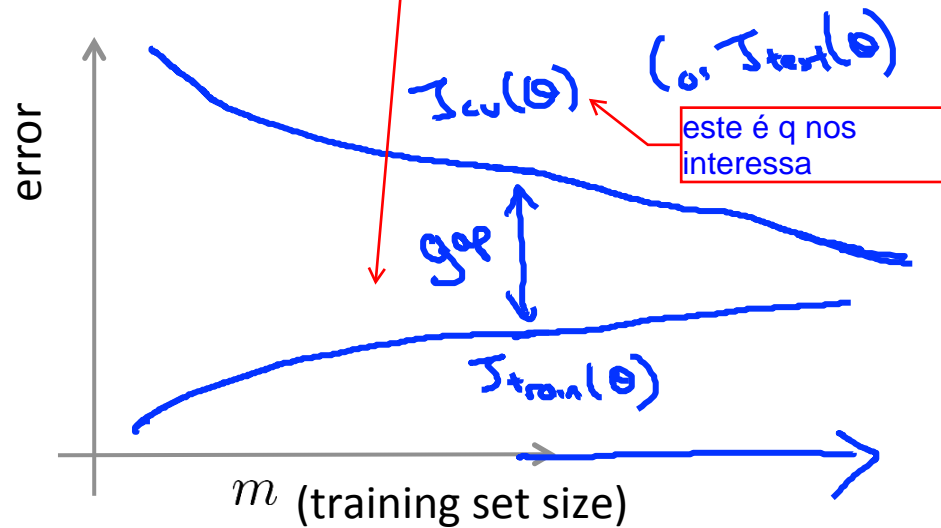


If a learning algorithm is suffering from high bias, getting more training data will not (by itself) help much.

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



## High variance



como é mais  
difícil fazer fit dos  
dados ate ajuda

este é q nos  
interessa

$$\rightarrow h_{\theta}(x) = \theta_0 + \theta_1 x + \dots + \theta_{100} x^{100}$$

(and small  $\lambda$ )

If a learning algorithm is suffering from high variance, getting more training data is likely to help.  $\leftarrow$

