



deeplearning.ai

Regularizing your neural network

Why regularization reduces overfitting

↳

■■■: 00:00:03.000



deeplearning.ai



■ 2 ■ / ■ 26 ■

■■■: keyframe_00-00-03-000_0001.jpg



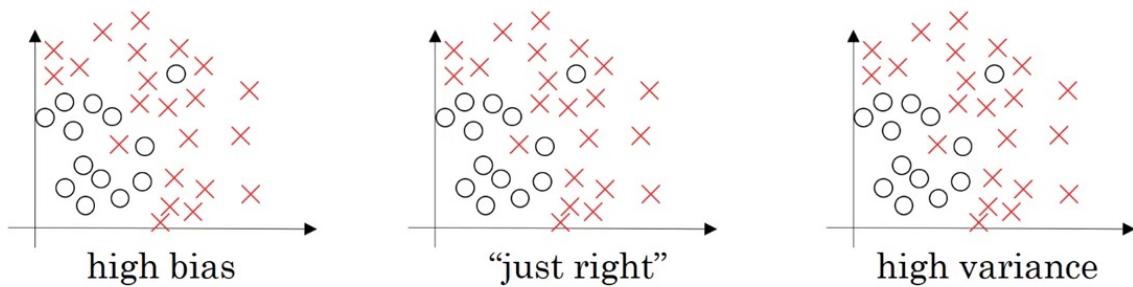
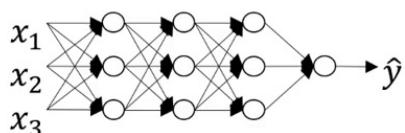
deeplearning.ai

Regularizing your
neural network

Why regularization
reduces overfitting

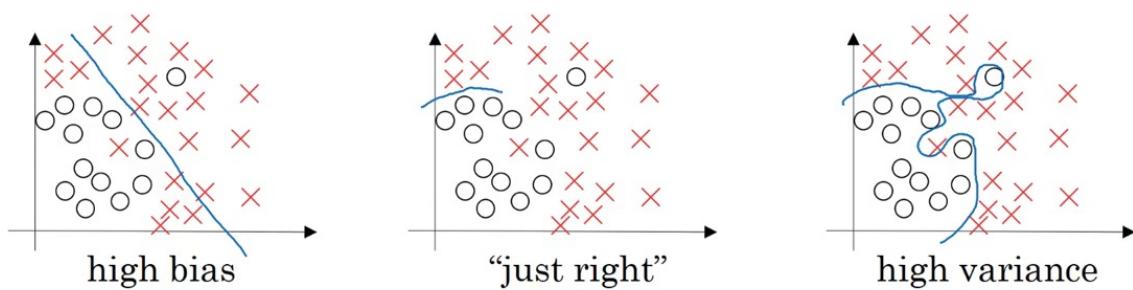
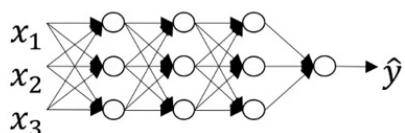
↳

How does regularization prevent overfitting?



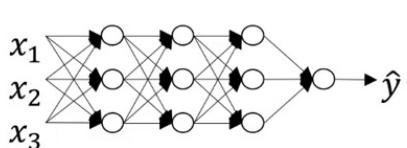
Andrew Ng

How does regularization prevent overfitting?

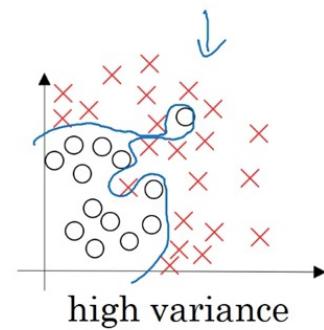
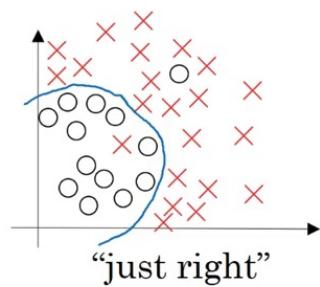
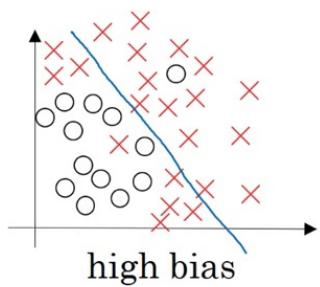


Andrew Ng

How does regularization prevent overfitting?

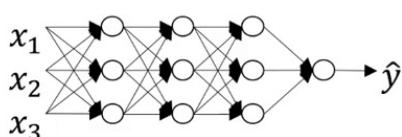


$\mathcal{J}(\omega^{(1)}, b)$

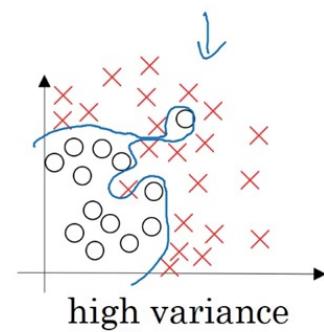
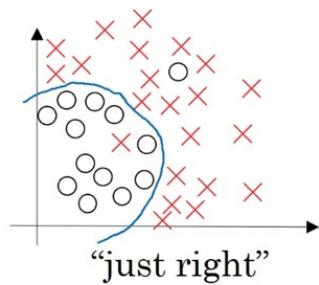
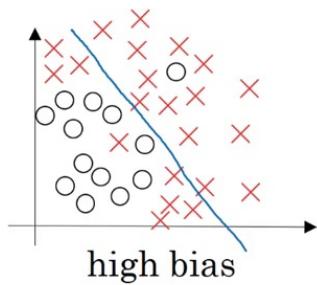


Andrew Ng

How does regularization prevent overfitting?

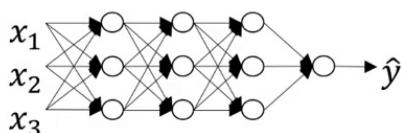


$$\mathcal{J}(\boldsymbol{\omega}^{(m)}, b^{(m)}) = \frac{1}{m} \sum_{i=1}^m L(y^{(i)}, \hat{y}^{(i)}) + \frac{\lambda}{2m} \sum_{l=1}^L \|\boldsymbol{\omega}^{(l)}\|$$



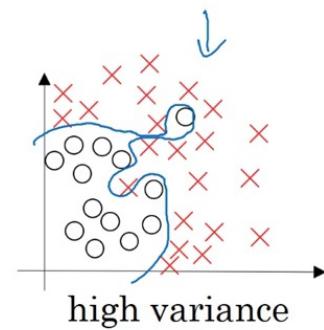
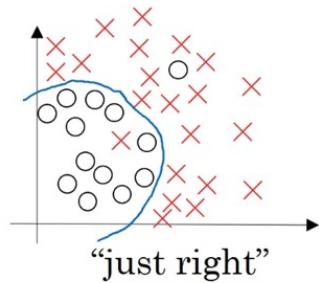
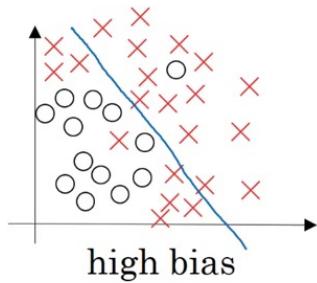
Andrew Ng

How does regularization prevent overfitting?



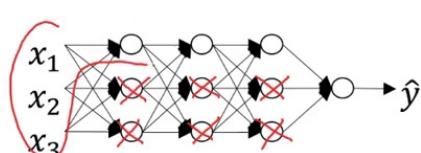
$$J(\omega^{(0)}, b^{(0)}) = \frac{1}{m} \sum_{i=1}^m L(y^{(i)}, \hat{y}^{(i)}) + \frac{\lambda}{2m} \sum_{l=1}^L \|\omega^{(l)}\|_F^2$$

ω



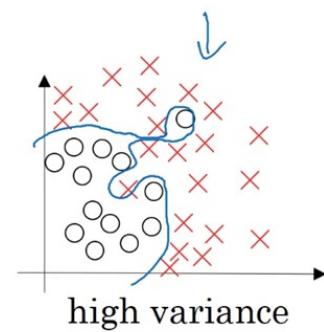
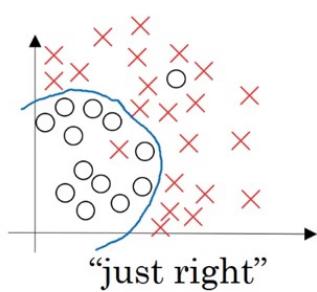
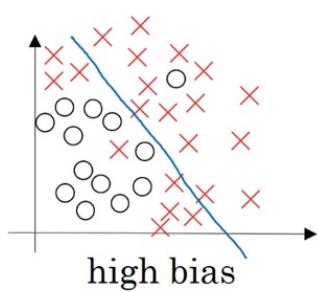
Andrew Ng

How does regularization prevent overfitting?



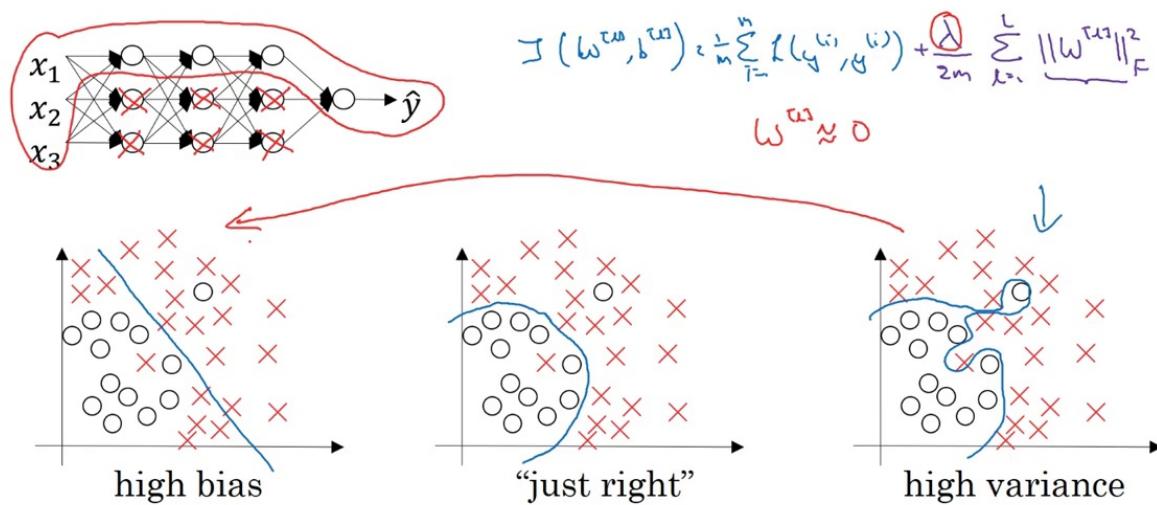
$$J(\omega^{(m)}, b^{(m)}) = \frac{1}{m} \sum_{i=1}^m L(y_i^{(i)}, \hat{y}_i^{(i)}) + \frac{\lambda}{2m} \sum_{l=1}^L \|\omega^{(l)}\|_F^2$$

$\omega^{(l)} \approx 0$



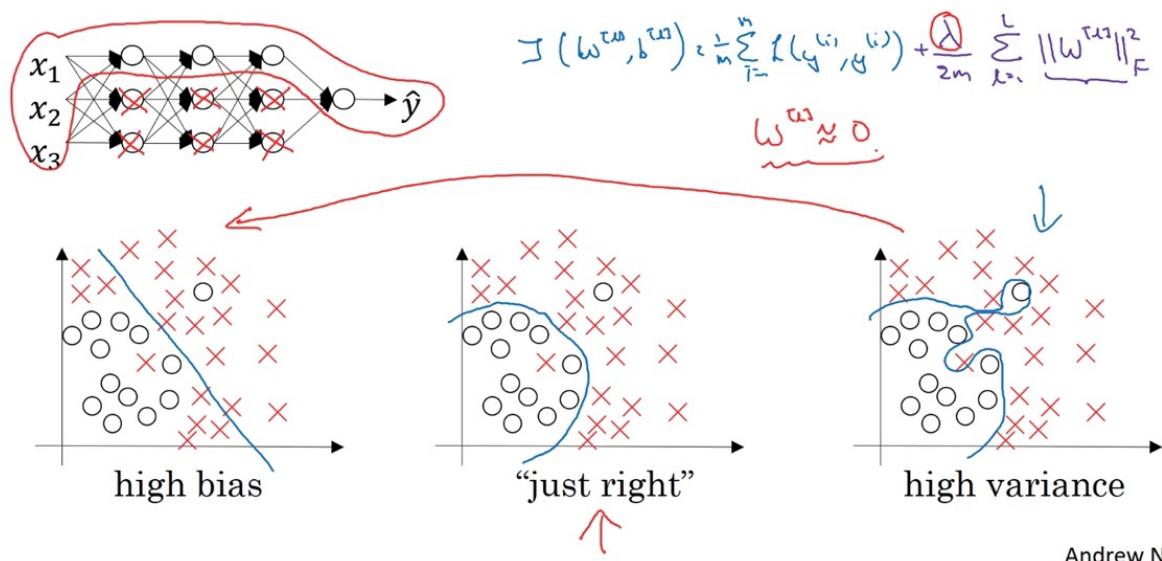
Andrew Ng

How does regularization prevent overfitting?

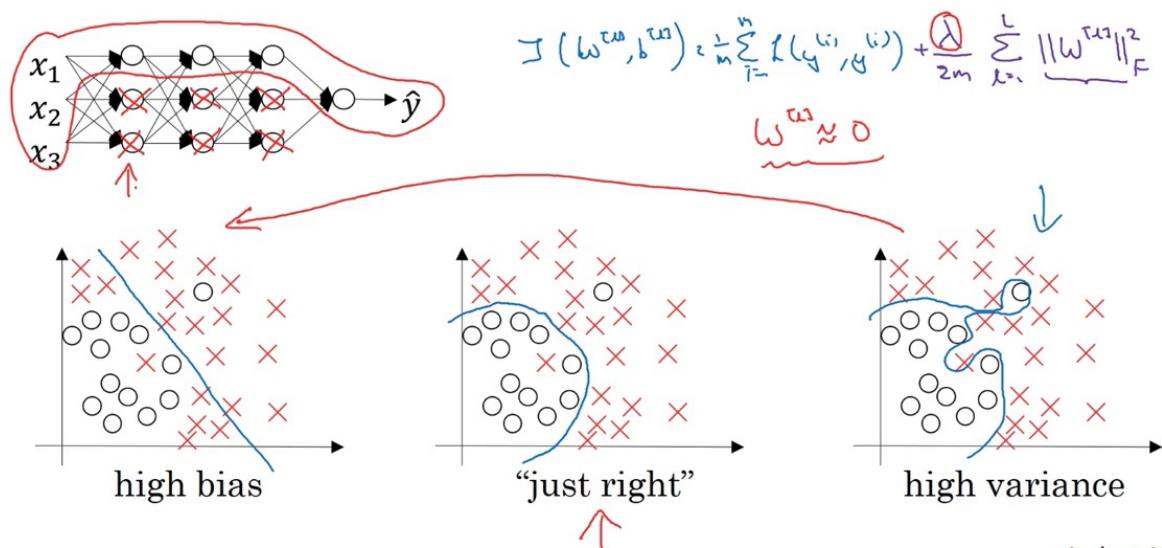


Andrew Ng

How does regularization prevent overfitting?

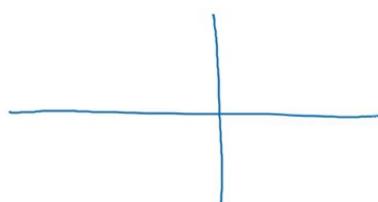


How does regularization prevent overfitting?



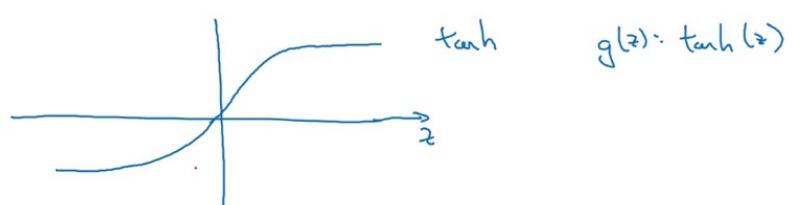
■■■: 00:03:00.000

How does regularization prevent overfitting?



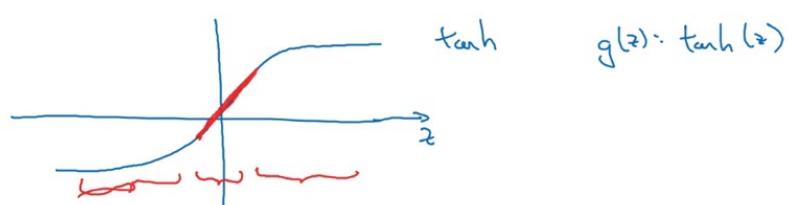
Andrew Ng

How does regularization prevent overfitting?



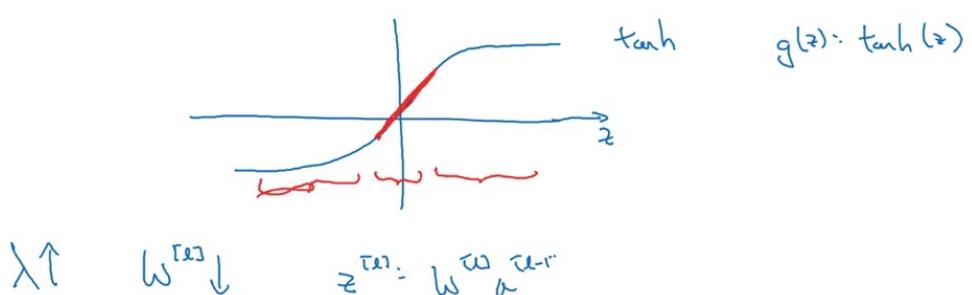
Andrew Ng

How does regularization prevent overfitting?



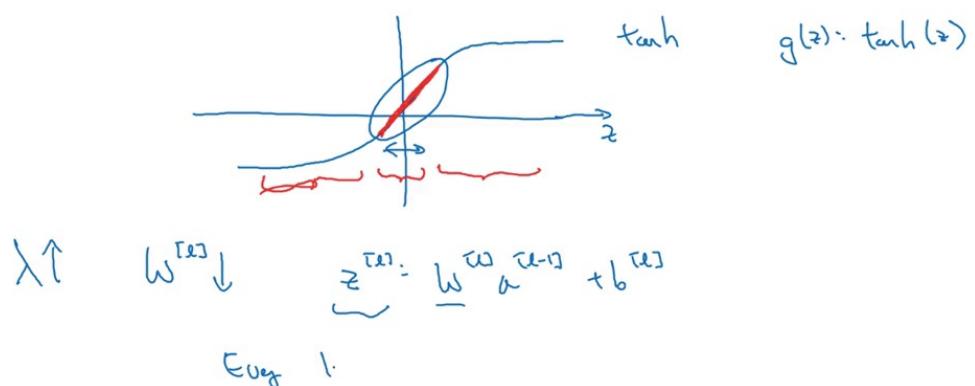
Andrew Ng

How does regularization prevent overfitting?



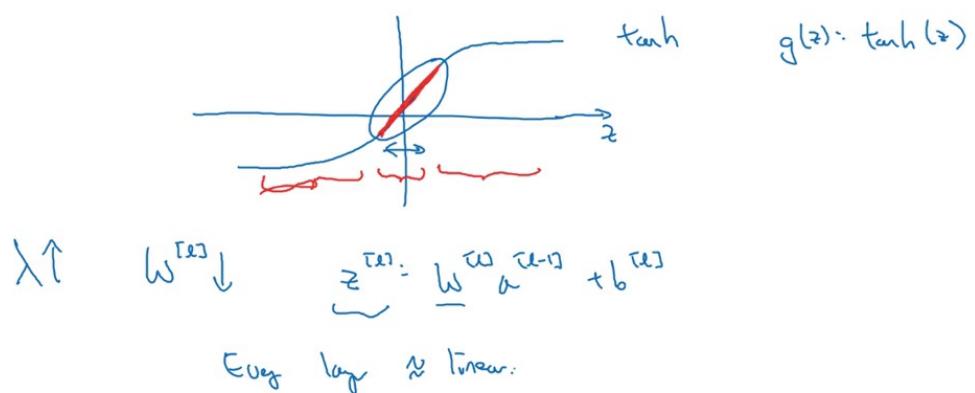
Andrew Ng

How does regularization prevent overfitting?



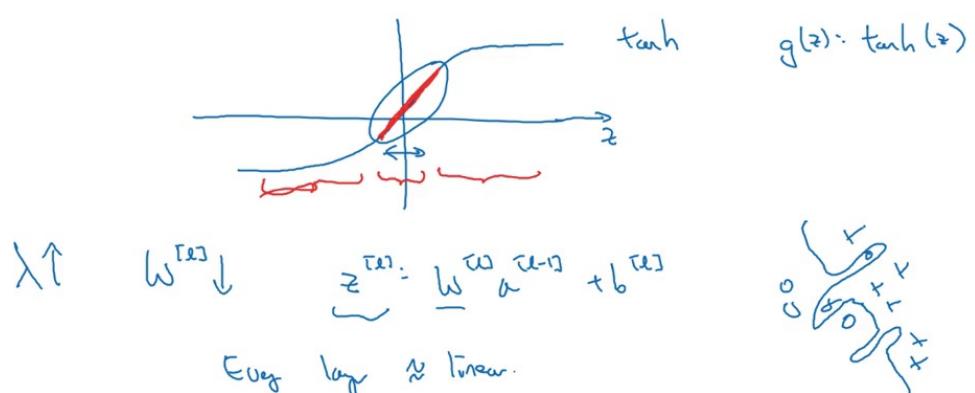
Andrew Ng

How does regularization prevent overfitting?



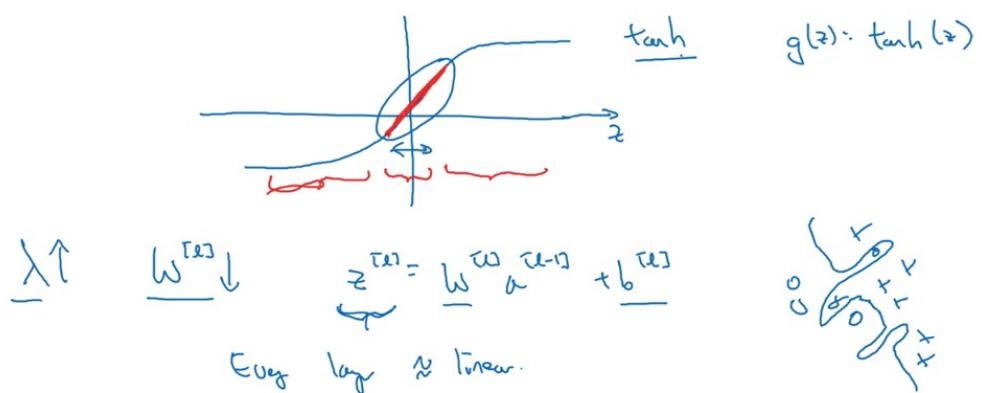
Andrew Ng

How does regularization prevent overfitting?



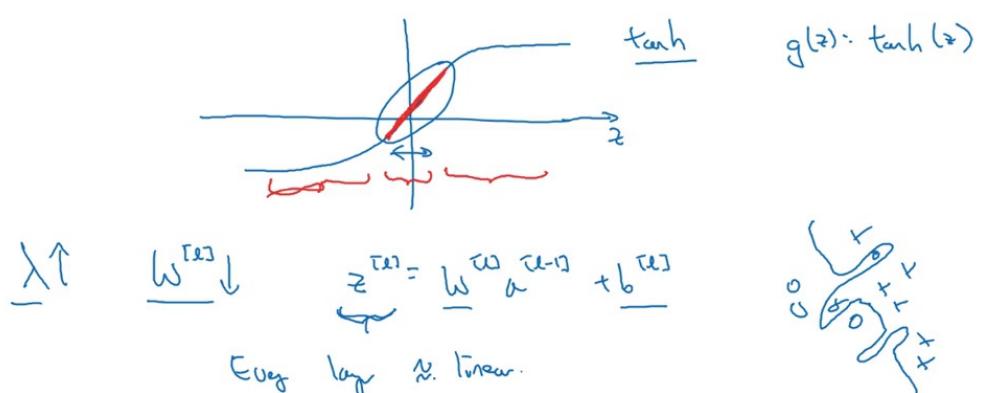
Andrew Ng

How does regularization prevent overfitting?



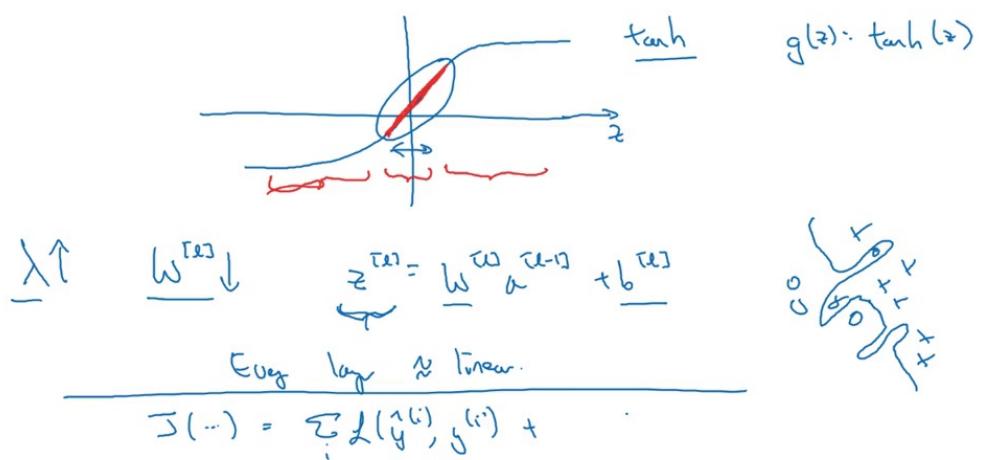
Andrew Ng

How does regularization prevent overfitting?



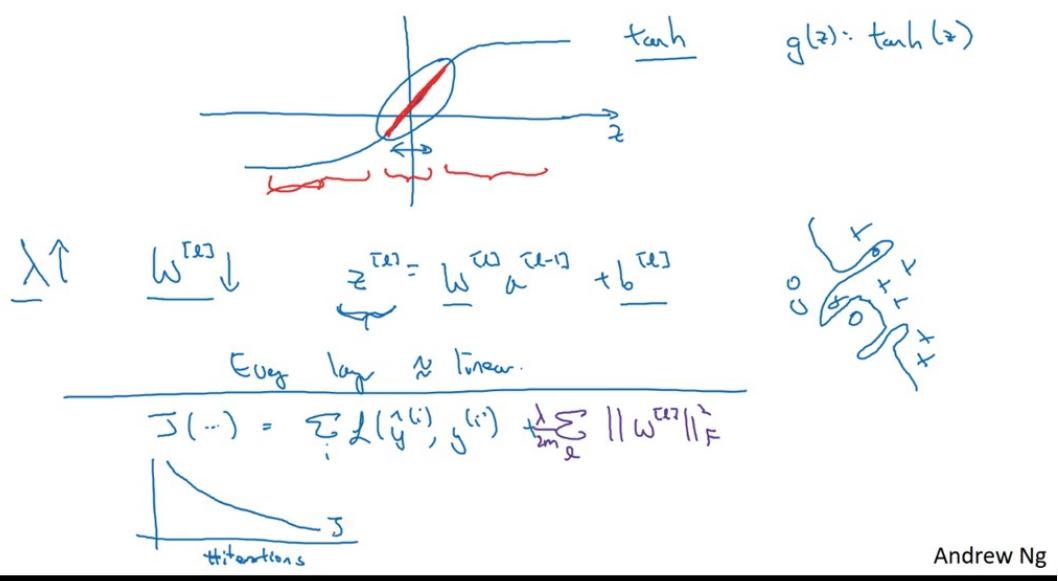
Andrew Ng

How does regularization prevent overfitting?

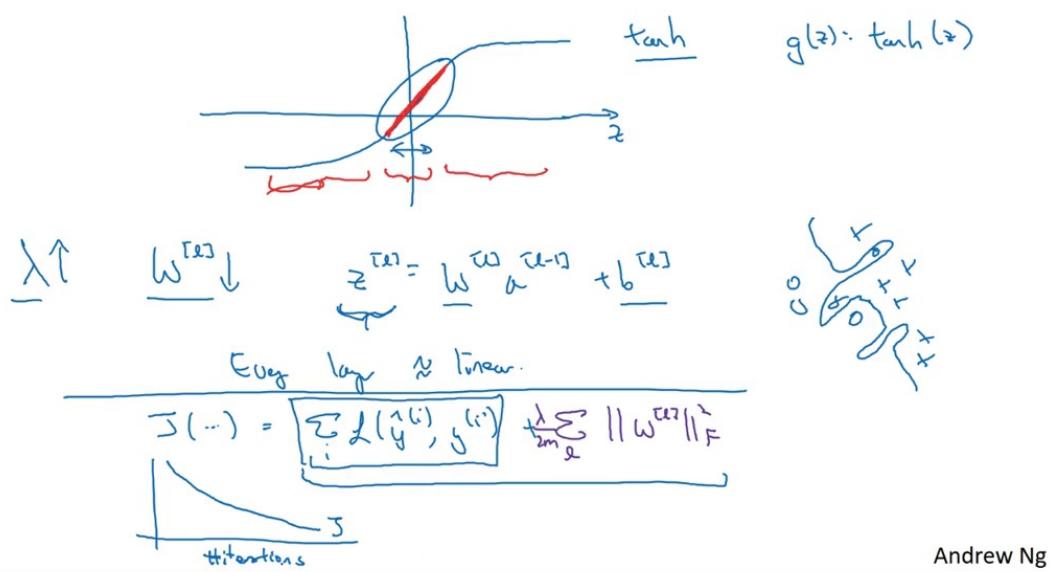


Andrew Ng

How does regularization prevent overfitting?

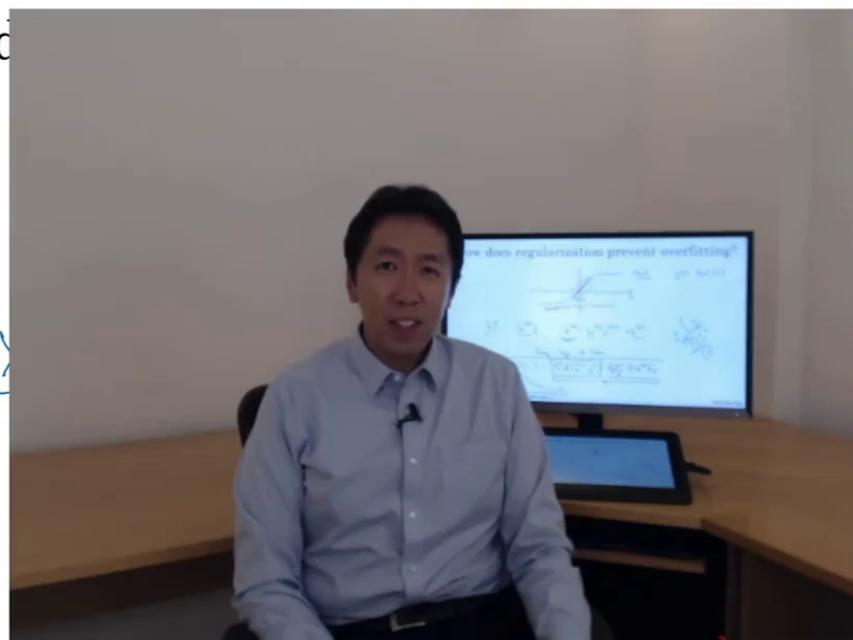


How does regularization prevent overfitting?



■■■: 00:06:54.000

How does regularization prevent overfitting?



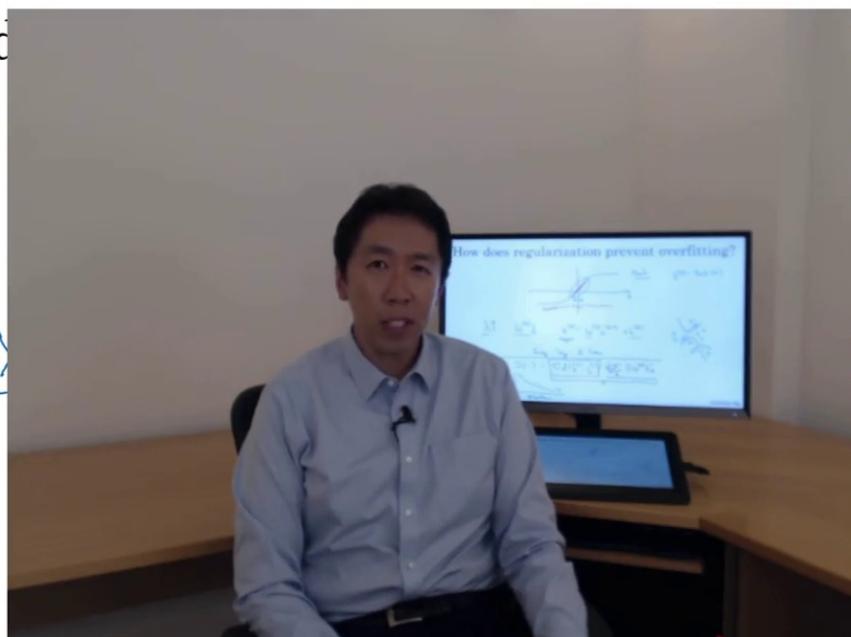
carh (≈)

Andrew Ng

■■■: 00:07:00.000

How do we prevent overfitting?

lambda (λ)



Andrew Ng

■ 26 ■ / ■ 26 ■

■■■: keyframe_00-07-00-000_0025.jpg