



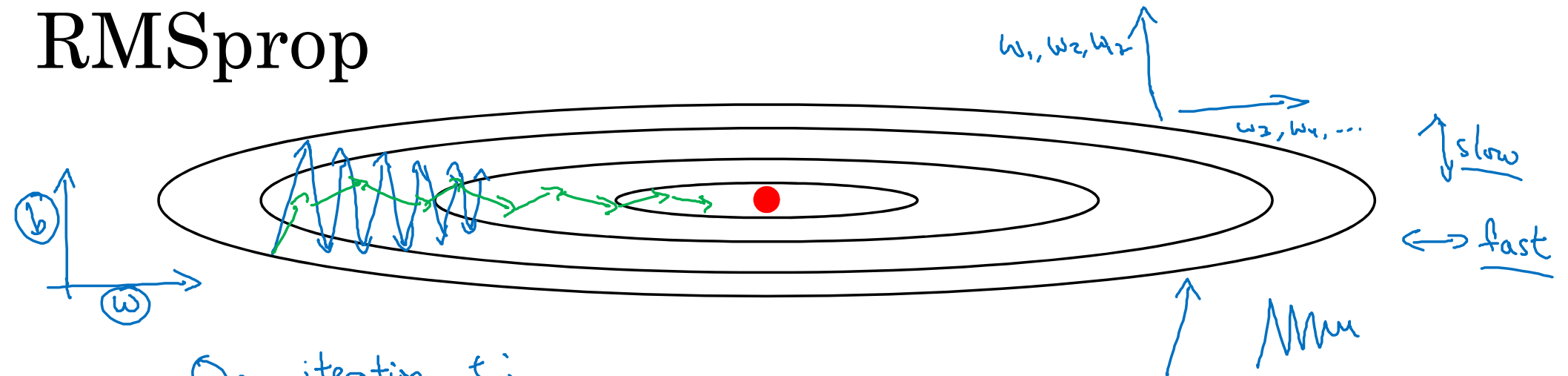
deeplearning.ai

# Optimization Algorithms

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## RMSprop

# RMSprop



On iteration  $t$ :

Compute  $dW, db$  on current mini-batch

$$\underline{S_{dW}} = \beta_2 \underline{S_{dW}} + (1 - \beta_2) \underline{dW^2} \leftarrow \begin{matrix} \text{element-wise} \\ \text{small} \end{matrix}$$

$$\rightarrow \underline{S_{db}} = \beta_2 \underline{S_{db}} + (1 - \beta_2) \underline{db^2} \leftarrow \text{large}$$

$$w := w - \alpha \frac{dW}{\sqrt{\underline{S_{dW}} + \epsilon}} \leftarrow$$

$$b := b - \alpha \frac{db}{\sqrt{\underline{S_{db}} + \epsilon}} \leftarrow$$

$$\epsilon = 10^{-8}$$