



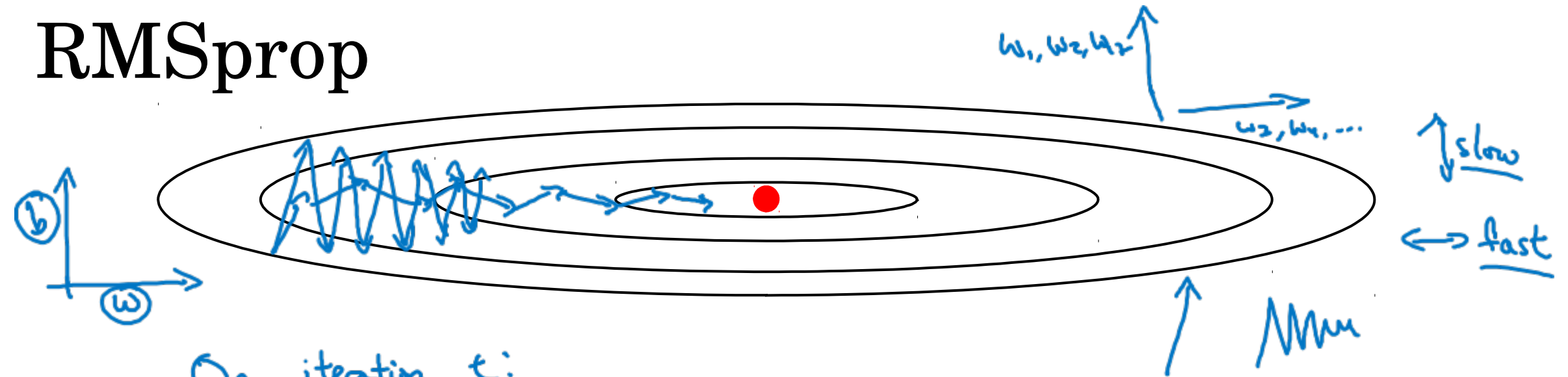
**deeplearning.ai**

# Optimization Algorithms

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## RMSprop

# RMSprop



On iteration  $t$ :

Compute  $dw, db$  on current mini-batch

$$\underline{S_{dw}} = \beta_2 \underline{S_{dw}} + (1 - \beta_2) \underbrace{dw^2}_{\text{element-wise}} \leftarrow \text{small}$$

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

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

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

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