



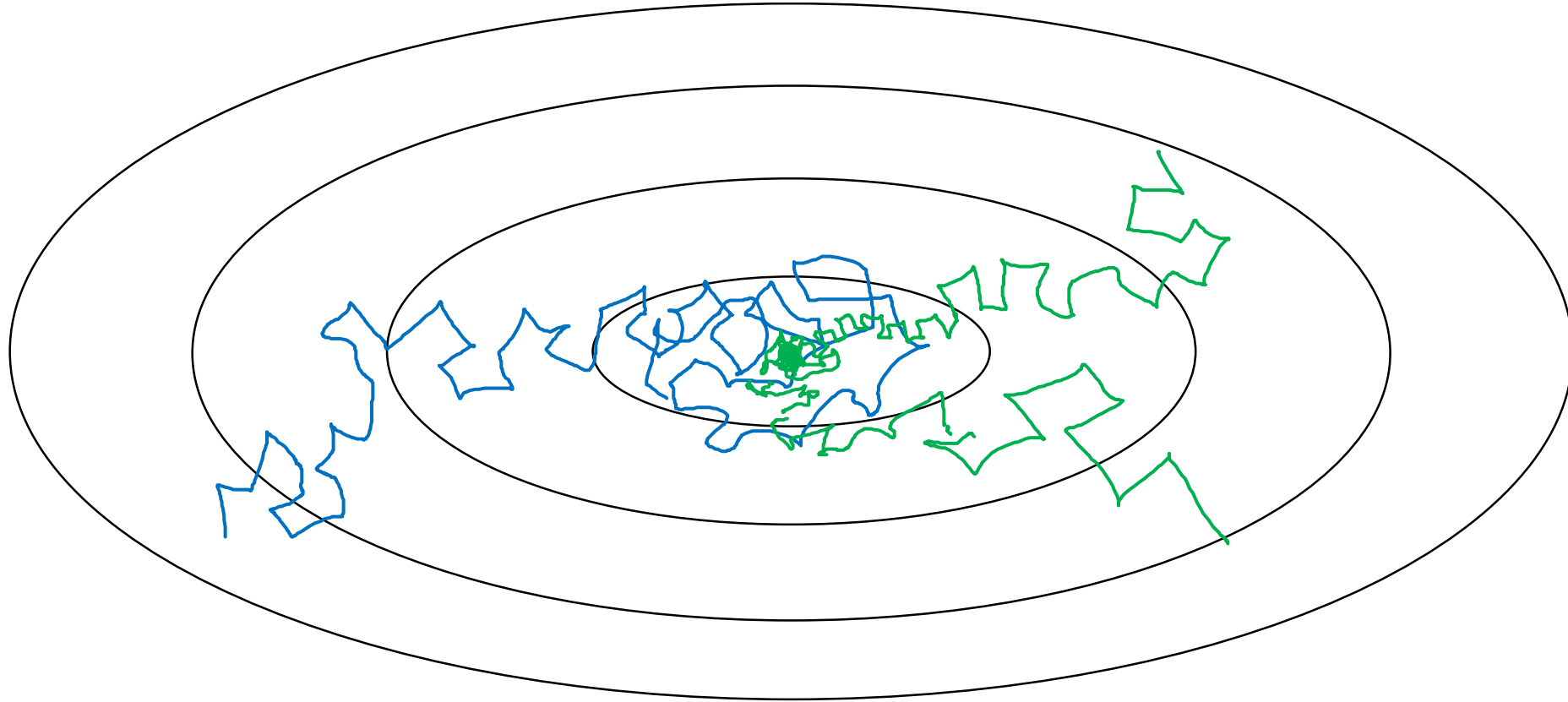
deeplearning.ai

Optimization Algorithms

Learning rate decay

Learning rate decay

Slowly reduce α

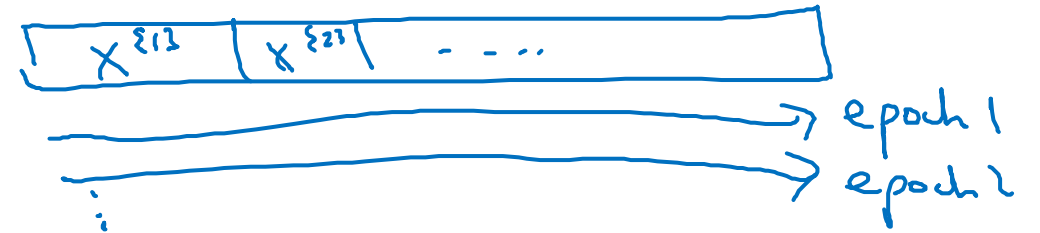


Learning rate decay

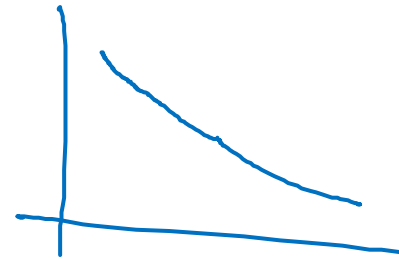
1 epoch = 1 pass through data.

$$\alpha = \frac{1}{1 + \text{decay-rate} * \text{epoch-num}} \alpha_0$$

Epoch	α
1	0.1
2	0.67
3	0.5
4	0.4
\vdots	\vdots



$$\alpha_0 = 0.2$$
$$\text{decay-rate} = 1$$



Other learning rate decay methods

formula { $\alpha = 0.95^{\text{epoch-num}} \cdot \alpha_0$ — exponentially decay.

$\alpha = \frac{k}{\sqrt{\text{epoch-num}}} \cdot \alpha_0$ or $\frac{k}{\sqrt{t}} \cdot \alpha_0$



discrete staircase

Manual decay.