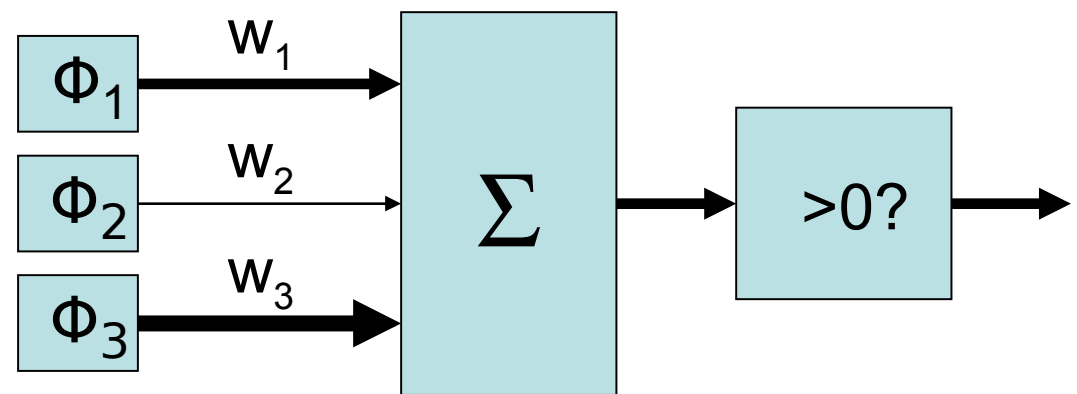
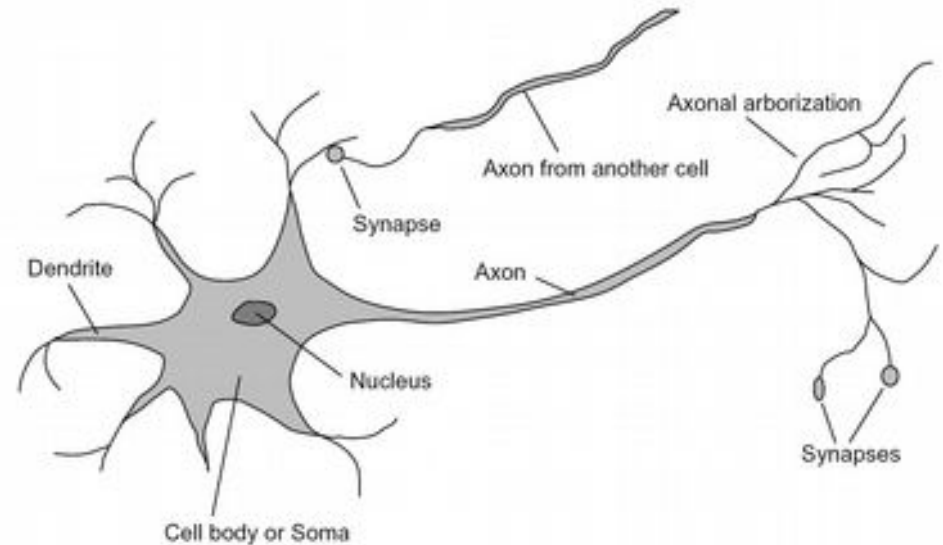


The perceptron

- Inputs = **feature values**
- Params = **weights**
- Sum is the **response**
- If the response is:
 - Positive, output +1
 - Negative, output -1



- When training, update on errors:

$$\mathbf{w} = \mathbf{w} + y \mathbf{x}$$

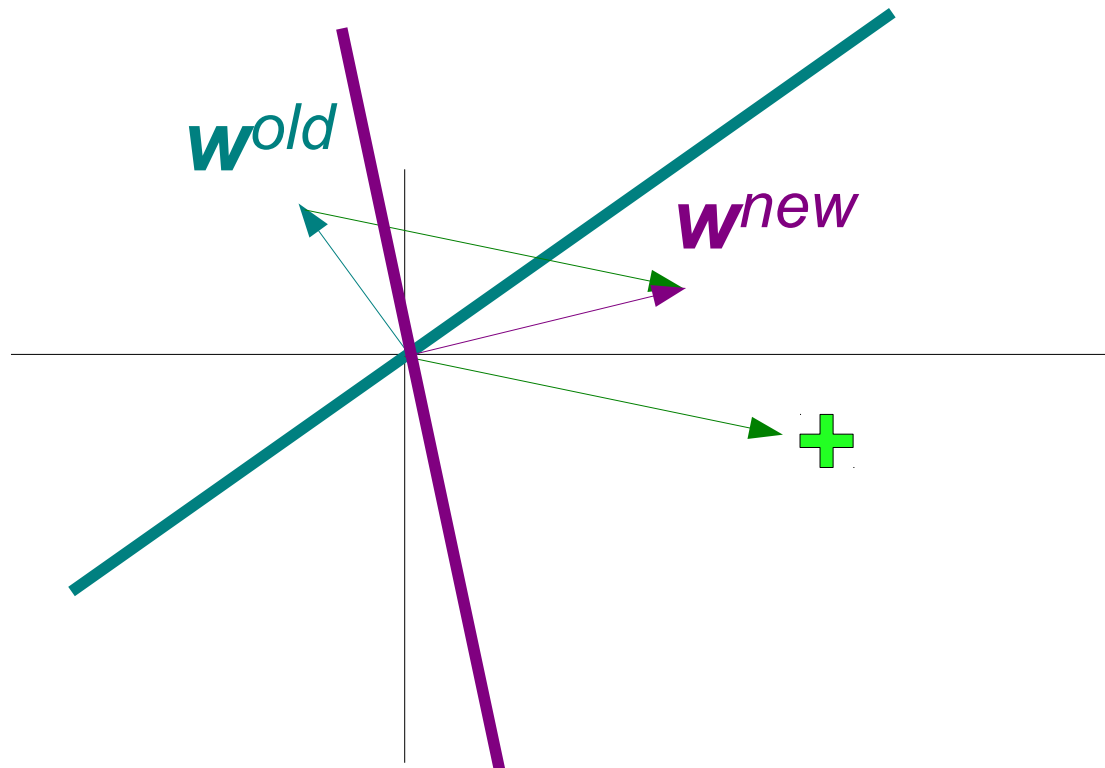
“Error” when:
 $y \mathbf{w} \cdot \mathbf{x} \leq 0$





Why does that update work?

- When $y w^{old} \cdot x \leq 0$, update: $w^{new} = w^{old} + y x$



$$\begin{aligned} y w^{new} \cdot x &= y (w^{old} + y x) \cdot x \\ &= \underbrace{y w^{old} \cdot x}_{<0} + \underbrace{y y x \cdot x}_{>0} \end{aligned}$$