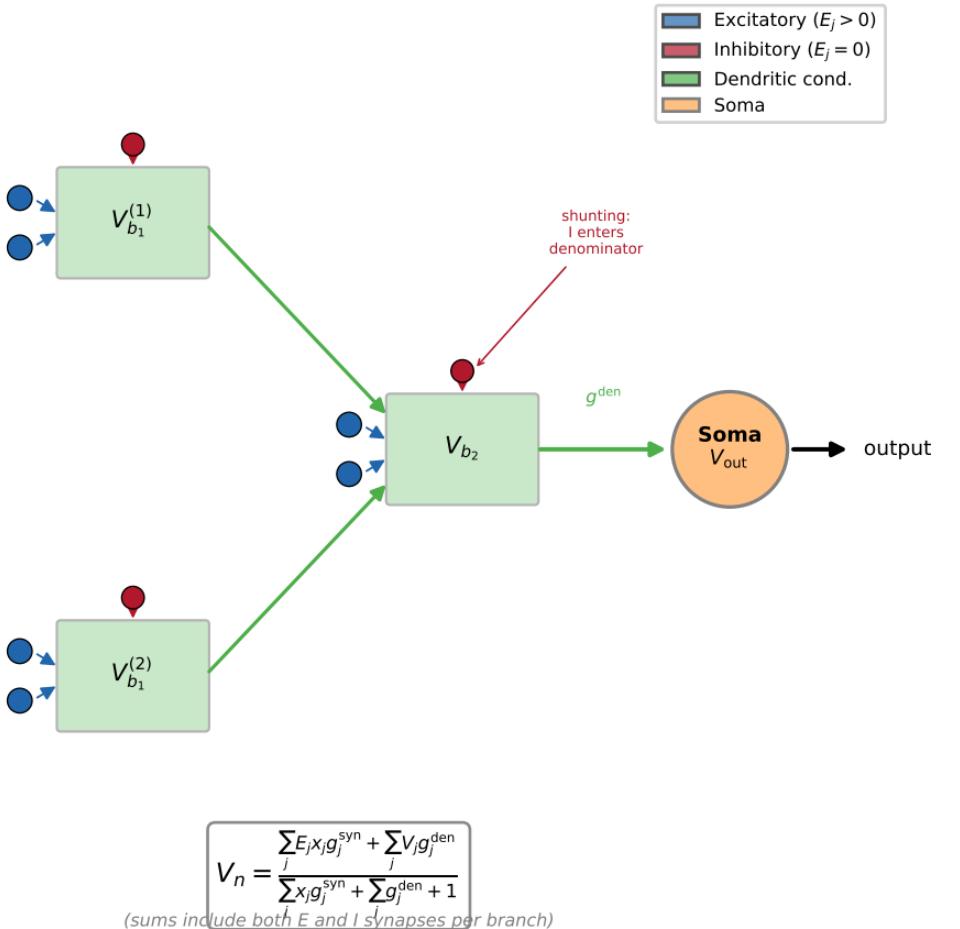


## (A) Compartmental dendritic neuron

Excitatory  
inputs  $x_j^E$



## (B) Local learning rule hierarchy

3F

$$\Delta g \propto x_j \cdot (E_j - V_n) \cdot \delta$$

pre-synaptic  $\times$  driving force  $\times$  broadcast error

4F

$$\Delta g \propto x_j \cdot (E_j - V_n) \cdot \delta \cdot \rho$$

+ variance / EMA modulator  $\rho$

5F

$$\Delta g \propto x_j \cdot (E_j - V_n) \cdot \delta \cdot \rho \cdot \phi$$

+ information-theoretic factor  $\phi$

Broadcast error  $\delta$ : scalar / per-soma / local mismatch

Inhibitory  
inputs  $x_j^I$