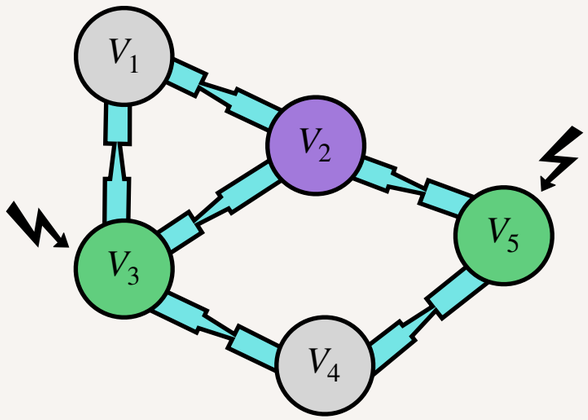
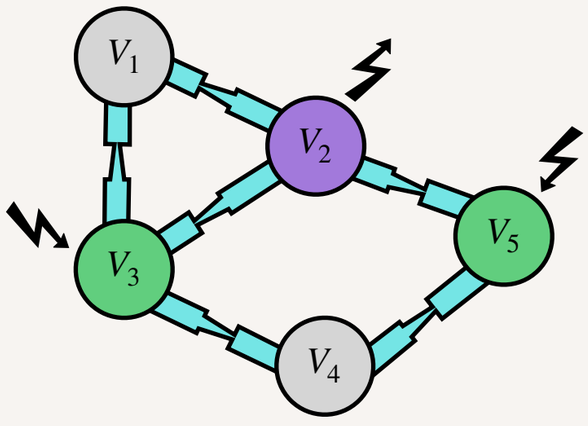
FORWARD PASS



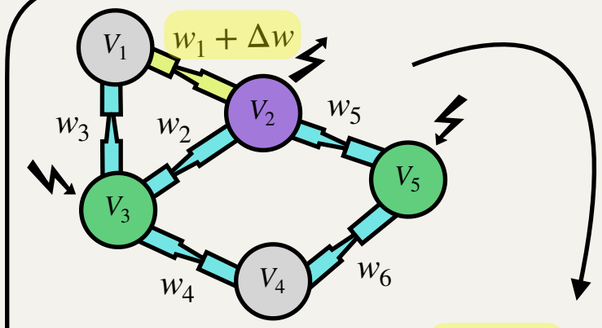
Physical relaxation



Cost function $C(\boldsymbol{w})$

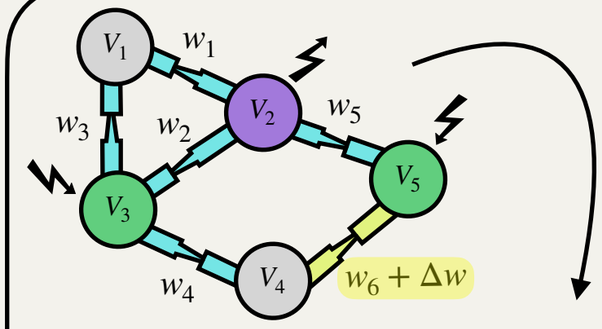
BACKWARD PASS

EDGE PERTURBATION



$$C(w_1 + \Delta w, w_2, \ldots, w_6)$$

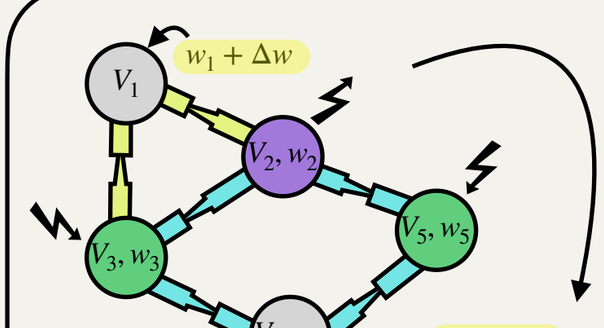
$$\frac{\partial C(\boldsymbol{w})}{\partial w_1} = -\alpha \frac{C(w_1 + \Delta w, w_2, \ldots, w_6) - C(\boldsymbol{w})}{\Delta w}$$



$$C(w_1, w_2, \ldots, w_6 + \Delta w)$$

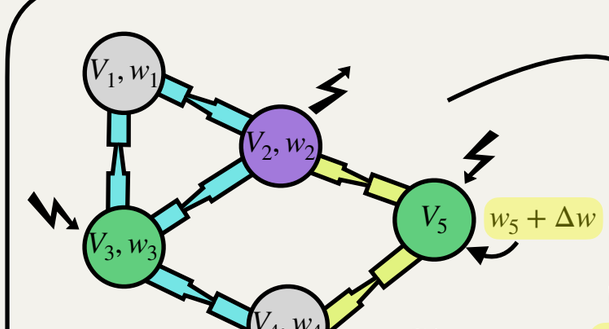
$$\frac{\partial C(\boldsymbol{w})}{\partial w_6} = -\alpha \frac{C(w_1, w_2, \ldots, w_6 + \Delta w) - C(\boldsymbol{w})}{\Delta w}$$

NODE PERTURBATION



$$C(w_1 + \Delta w, w_2, \ldots, w_5)$$

$$\frac{\partial C(\boldsymbol{w})}{\partial w_1} = -\alpha \frac{C(w_1 + \Delta w, w_2, \ldots, w_5) - C(\boldsymbol{w})}{\Delta w}$$



$$C(w_1, w_2, \ldots, w_5 + \Delta w)$$

$$\frac{\partial C(\boldsymbol{w})}{\partial w_5} = -\alpha \frac{C(w_1, w_2, \ldots, w_5 + \Delta w) - C(\boldsymbol{w})}{\Delta w}$$