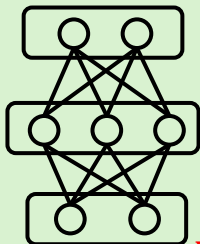


Dormant Neuron Reactivation (DNR)

Q
Network

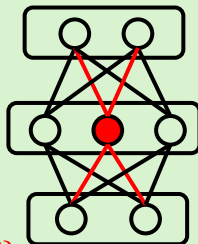
$\theta_{o,t}$



Locate Dormant Neuron

$$I = \{i | \frac{\mathbb{E}_{x \in D} |h_i^\ell(x)|}{\frac{1}{H^\ell} \sum_{k \in h} \mathbb{E}_{x \in D} |h_k^\ell(x)|} \leq \delta\}$$

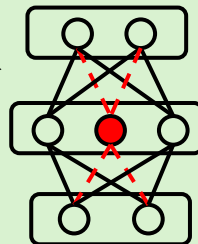
θ_o



Reactive Dormant Neuron

$$\theta_{rea}^{l,I} = \beta * \theta_o^{l,I} + (1 - \beta) * \theta_{init}^{l,I}$$

$\theta_o^{l,I}$



$\theta_{rea}^{l,I}$

$\theta_{rea,t}$

Momentum Update

Stable Policy Update (SPU)

$$\theta_m = \tau \theta_o + (1 - \tau) \theta_m$$

Actor
Network

ϕ_t

Momentum Q
Network

$\theta_{m,t}$

Actor Loss
Backpropagation

Q Loss
Backpropagation

ϕ_{t+1} $\theta_{o,t+1}$

Next Optimization
or Periodic Resetting