Biologically Plausible Deep Learning: A Critical Review

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[1] https://github.com/RobertTLange/Bio-Plausible-DeepLearning

Conclusion

What's next?

- Large action spaces $\Rightarrow$ Combine with DQNs:

$$L(\theta) = \mathbb{E}_{s,a,r,s' \sim D}\left[(r + \gamma \max_{a'} Q(s', a'; \theta^-) - Q(s, a; \theta))^2\right]$$

$$L(\theta) = \mathbb{E}_{s,m,r^{\tau_m},s',\tau \sim D_{\tau_m}}\left[(r^{\tau_m} + \gamma^{\tau_m} \max_{m'} Q(s', m'; \theta^-) - Q(s, m; \theta))^2\right]$$

- Large terminal vocabularies ($\mathcal{A}$) $\Rightarrow$ Motor control tasks
- Investigate grammar development $\rightarrow$ Observation: First update is especially important
  $\Rightarrow$ Grammar Learning as a form of decaying exploration?

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