Rapport de stage

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Introduction

Reinforcement learning

Reinforcement Learning is a kind of learning mechanism where an agent tries to maximise a reward by doing some specific action in an environment. Reinforcement learning is thought to be

Learning by replay

In reinforcement learning

So as to improve the efficiency of reinforcement learning methods, Someone proposed to replay . [Vanseijen and Sutton, 2015] offers a good analysis about learning by replay. The goal of replay is to use the maximum of information an experience offers. Compared to TD(0), replay techniques offers a better

convergence to the optimal solution with the same number of episodes. Replay methods are more expensive than TD(0) both in memory and in computations, though the memory and computational power needed can be reduced a lot as [Vanseijen and Sutton, 2015] shows.

In vivo

[Gupta et al., 2010]

- Equivalence between replay and planning as show in [Vanseijen and Sutton, 2015].
- Can one use Linear dyna with prioritised sweeping as a learning by replay method?
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Modeling navigation learning

Place cells

Place cells are high level integrative neurons in the hippocampus. They have a specific

What are the sequences that are replayed? How are they selected?

Limitations

Bibliography

[Gupta et al., 2010] Gupta, A. S., van der Meer, M. A., Touretzky, D. S., and Redish, A. D. (2010). Hippocampal Replay Is Not a Simple Function of Experience. *Neuron*, 65(5):695–705.

[Vanseijen and Sutton, 2015] Vanseijen, H. and Sutton, R. (2015). A Deeper Look at Planning as Learning from Replay. In *Proceedings of the 32nd International Conference on Machine Learning (ICML-15)*, pages 2314–2322.