A Distributional Perspective on Reinforcement Learning

1 Main Ideas

Despite a long history, the distributional perspective of Bellman equation has been ignored to a certain level. This paper tries to makes the point that we should start to care about this approach. The main advantage of distributional approach is the quality of approximation. It preserves multimodality of value distribution. As a result, the learning process becomes more stable.

Being familiar with famous algorithm SLAM [1], it was surprisingly relieving to see the Bellman update I saw in SLAM was actually based on the real Bellman equation (figure 1).

This paper studies the probabilistic approach to the Bellman equation and tries to define all necessary elements required for implementing an algorithm to put the whole idea into practice. At the end, they show the results are comparable with the cutting edge algorithms in RL.

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[1]Simultaneously Localization and Mapping