DRL

Deep Reinforcement Learning is a subfield of reinforcement learning that combines the techniques of deep learning with traditional reinforcement learning algorithms. It leverages deep neural networks to represent and learn complex value functions or policies directly from raw input data, such as images or raw sensor data

RL Large-Scale Problems

Reinforcement learning can face significant challenges when dealing with large-scale problems. These challenges include:

- **Large State Spaces:** Many real-world problems have extremely large or even infinite state spaces, making it difficult to explore and learn optimal policies.
- **Long Time Horizons:** Some problems may have long time horizons, meaning that the agent's actions can have long-term consequences. This can make it difficult to evaluate the impact of actions and learn optimal policies.
- **Computational Complexity:** Training deep neural networks can be computationally expensive, especially for large-scale problems.

Experience Replay

This technique stores past experiences in a buffer and samples them randomly to train the neural network. This helps to break the correlation between consecutive experiences and improves stability.

Advantages of DRL

- **Handling High-Dimensional Input:** DRL can effectively process large amounts of raw input data, such as images or sensor readings.
- **Learning Complex Policies:** Deep neural networks can learn complex, nonlinear policies that are difficult to represent using traditional methods.