Reinforcement Learning: an Overview

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Reinforcement learning is a field of machine learning that focuses on learning from interactions with an environment. Any learning algorithm should be able to adapt itself from the environmental feedback, and its performance should be measured throughout its life-time of execution. As an example, a recommendation system should suggest a variety of items in order to probe user preferences and make the suggestion more focused based on implicit or explicit user feedback. It has to make the tradeoff: variety for probe versus focus for sales. Reinforcement learning is about the design and analysis of such learning algorithms. It is now widely used in real-world applications such as targeted ads, recommendation systems, robotics, and games. In this talk, I will overview classical backgrounds as well as the state-of-the-art advances in reinforcement learning.