Reinforecment Learning: Notes and Selected Exercises

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Chapter 1

Markov Decision Processes

1.1 Introduction

Problems in reinforcement learning are typically formulated in the formal setting of a Markov Decision Process (MDP). An MDP is a five-tuple $\langle \mathcal{S}, \mathcal{A}, p, \mathcal{R}, \gamma \rangle$

- a set $\mathcal{S}$ of states

- a set $\mathcal{A}$ of actions

- a set $\mathcal{R}$ of rewards

- a probability function $p \colon \mathcal{S} \times \mathcal{R} \times \mathcal{S} \times \mathcal{A} \to [0, 1]$

- a discount factor $\gamma \in [0, 1]$