

DECISION PROCESSES

Why

We want to talk about making a sequence of decisions.

Definition

Let S and A be finite sets. Let $T: S \times A \to (S \to [0, 1])$ so that for each $s \in S$ and $a \in A$, $T_{sa}: S \to [0, 1]$ is a probability distribution over S. We call the ordered triple (S, A, T) a finite state-action process.

A trajectory in the state set S and action set A is a sequence in $S \times A$.

Let
$$r: S \times A \times S \to \mathbf{R}, N \in \mathbf{N}$$
.

A decision process is a sequence (S, A, T, r, γ) , consists of two sets, a function set, an action

Other terminology

Decision processes are commonly called markov decision processes.¹

¹As usual, we avoid this terminology in connection with the projects guidelines against using particular names.

