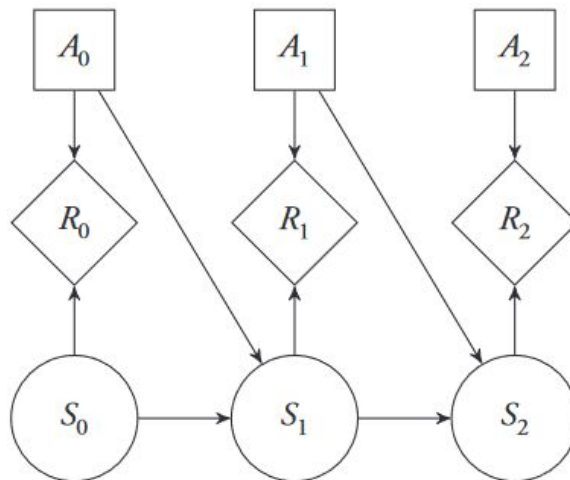# Markov Decision Processes

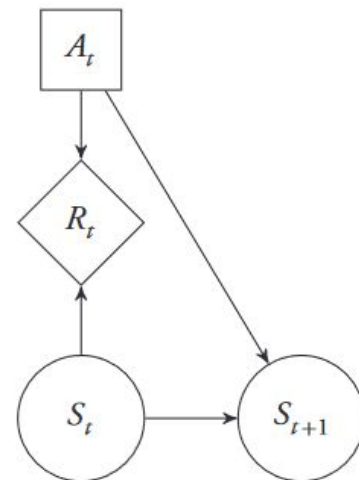## MDPs, POMDPs and DESPOT

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Background

- Discrete time stochastic control process;
- Extensions of Markov chains:
  - Actions
  - Rewards
- Markov assumption;
- Sequential decision making

(a) General representation.

(b) Stationary representation.

The Tutorial

- A mix of three renowned references:
  - Easy to understand
  - Illustrative examples
  - 3 didactic exercises
- Theory:
  - MDPs: Value Iteration
  - POMDPs: offline solver, QMDP
  - Online solver: optional (DESPOT)
- Implementation:
  - Famous Grid World problem
  - From MDP to QMDP
- Extra:
  - Interested to keep learning? Run DESPOT