

Quiz #8. Decision making

Describe formally, which action should a rational agent choose.

What is a lottery?

How can we transfer preferences to a utility function?

What is a decision network?

Describe a method to do decisions using a decision network.

What is MDP? What is a solution to MDP?

Can classical planning be used to solve MDP?

Prove that utility is finite even for infinite sequences of states, if discount factor is smaller than 1.

What is the difference between reward and utility?

Does the optimal policy depend on an initial state?

Which action does the rational agent select at state (1,3) in example at slide 11?

What is a Bellman equation? Describe Bellman equation when we know the policy.

Describe value iteration for MDP.

Look at the graph of evolution of utility values at slide 12. Explain what happened at time around 5.

Which algorithm does converge faster, value iteration or policy iteration?

Prove that the policy iteration algorithm always stops.

How can we evaluate a policy?

What is the major difference between MDP and POMDP?

Why do we need a sensor model in POMDP (and not in MDP)?

What is a belief state? How does the belief state look like for the problem at slide 8.

Explain the method for action selection under the POMDP setting.