ULiège
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INFO8003-1
Optimal decision making
for complex problems

Evaluation 2

1 QUESTIONS

1. Define the recurrence equation used to compute $J^{\mu}(x)$. Provide a bound on $||J^{\mu}(x) - J_N^{\mu}(x)||_{\infty}$. Explain through words why this bound is important.

2. Describe the main high-level characteristics of the RL problem given in Assignment 1.

3. Define, for a given system dynamics f, reward function r and conditional disturbance probability distribution P_w, the corresponding components of the "equivalent" MDP. Describe an algorithm which computes these components from a given trajectory. How can you compute the sequence of Q_N-functions using the "equivalent" MDP?

4. For a given systems dynamics f, reward function r and conditional disturbance probability distribution P_w, is there always an MDP structure to which the algorithm defined in Question 3 will converge to when the length of the trajectory increases? Motivate your answer.

5. What is a contraction mapping? What is a fixed point of a mapping? What can be said about the set of fixed points of a contraction mapping?

6. Define the mapping H that corresponds to the recursive equation used for computing the Q_N-functions. Prove that it is a contraction mapping.