Deadline: 2018-09-12
Recitation (øvingsforelesning): None

Artificial Intelligence Fundamentals and Intelligent Agents

Practical Information

Read the page "Assignment Information" on Blackboard for practical information about the assignments given in this course.

Theoretical Questions

1. What is the Turing test, and how it is conducted?
2. What is the relationship between thinking rationally and acting rationally? Is rational thinking an absolute condition for acting rationally?
3. What is Tarski's "theory of reference" about?
4. Describe rationality. How is it defined?
5. Consider a robot whose task it is to cross the road. Its action portfolio looks like this: look-back, look-forward, look-left-look-right, go-forward, go-back, go-left and go-right.
   (a) While crossing the road, a helicopter falls down on the robot and smashes it. Is the robot rational?
   (b) While crossing the road on a green light, a passing car crashes into the robot, preventing it from crossing. Is the robot rational?
6. Consider the vacuum cleaner world described in Chapter 2.2.1 of the textbook. Let us modify this vacuum environment so that the agent is penalized 1 point for each movement.
   (a) Can a simple reflex agent be rational for this environment? Explain your answer
   (b) Can a reflex agent with state be rational in this environment? Explain your answer.
   (c) Assume now that the simple reflex agent (i.e., no internal state) can perceive the clean/dirty status of both locations at the same time. Can this agent be rational? Explain your answer. In case it can be rational, design the agent function.
7. Consider the vacuum cleaner environment shown in Figure 2.3 in the textbook. Describe the environment using properties from Chapter 2.3.2, e.g. episodic/sequential, deterministic/stochastic etc. Explain selected values for properties in regards to the vacuum cleaner environment.
8. Discuss the advantages and limitations of these four basic kinds of agents:
   (a) Simple reflex agents
   (b) Model-based reflex agents
   (c) Goal-based agents
   (d) Utility-based agents

Deliverables

Deliver a report (txt or pdf file) on Blackboard with answers to the theoretical questions above.