

Artificial Intelligence: Exercise 1

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Week 1

1. Examine the AI literature to discover whether the following tasks can currently be solved by computers:
 - Playing a decent game of table tennis (Ping-Pong).
 - Driving in the center of Cairo, Egypt.
 - Driving in Victorville, California.
 - Buying a week's worth of groceries at the market.
 - Buying a week's worth of groceries on the Web.
 - Playing a decent game of bridge at a competitive level.
 - Discovering and proving new mathematical theorems.
 - Writing an intentionally funny story.
 - Giving competent legal advice in a specialized area of law.
 - Translating spoken English into spoken Swedish in real time.
 - Performing a complex surgical operation.
2. Read the Chapter 2 of *Russel, P. and Norvig, S., Artificial Intelligence: A Modern Approach., 4th ed., Pearson. 2021.* to answer the following question.
3. Consider a simple thermostat that turns on a furnace when the temperature is at least 3 degrees below the setting, and turns off a furnace when the temperature is at least 3 degrees above the setting. Is a thermostat an instance of a simple reflex agent, a model-based reflex agent, or a goal-based agent? Discuss some limitations of the approach.

Solutions:

1. The answer to this question changes over time, because AI models and systems become more and more powerful. It should just stimulate discussion and motivate you to research which systems can solve these problems.
2. Just read it.

3. The simple thermostat is just a reflex agent, because it just uses the current state of the room. If the thermostat would include a model about the reaction of the house to a certain amount of heating energy, it could become a model based agent. Then, the amount and duration the furnace is on could be controlled by the model too. In addition, if the goal is too keep the house in a certain temperature range using a minimum amount of energy, it can become a goal based agent.