CS 470 Homework
Agents and Environments
72 Points

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1. **[32 points]** [from Exercise 1.14 from R&N] For 4 of the following tasks, examine the AI literature to discover whether the following tasks can currently be solved by computers/robots.

   (a) **[8 points]** Playing a decent game of table tennis (Ping-Pong)
   (b) **[8 points]** Driving in the center of Cairo, Egypt
   (c) **[8 points]** Driving in Victorville, California
   (d) **[8 points]** Buying a week's worth of groceries at the market
   (e) **[8 points]** Buying a week's worth of groceries on the Web
   (f) **[8 points]** Playing a decent game of bridge at a competitive level
   (g) **[8 points]** Discovering and proving new mathematical theorems
   (h) **[8 points]** Writing an intentionally funny story.
   (i) **[8 points]** Giving competent legal advice in a specialized area of law
   (j) **[8 points]** Translating spoken English to spoken Swedish in real time
   (k) **[8 points]** Performing a complex surgical operation

   For the currently infeasible tasks, try to find out what the difficulties are and predict when, if ever, they will be overcome. Please include links to sources in your response.

2. **[7 points]** Pick another activity that you enjoy or are interested in, or think would be helpful, and repeat the previous exercise for it.

3. **PEAS and environment types [21 points]**

   For each of the following agents:

   - Develop a PEAS description of the task environment (see Section 2.3)
   - Characterize the environment according to the properties given in Section 2.3. Please include a short justification for each property you assign.

   (a) **[7 points]** A computer poker playing agent
   (b) **[7 points]** A security robot that monitors a building's hallways during the night
   (c) **[7 points]** A scheduling agent that coordinates employee schedules and staff meetings

4. **[12 points]** For each of the following, think of a task, situation, or problem that you face or have faced which has the described property. Briefly describe how it has the property.

   (a) **[3 points]** Stochastic results of actions
   (b) **[3 points]** Partially observable states
   (c) **[3 points]** Multiple agents
   (d) **[3 points]** Dynamically changing state