CS331 (Spring 2012): Introduction to Artificial Intelligence
Written Assignment #1

Date handed out: April 6, 2012
Date due: April 13, 2012 at the start of class
Total: 20 points

The written portion of this assignment is to be done individually. Please hand in a hardcopy. Assignments done on a word processor are preferred but not mandatory. For hand written assignments, if we cannot read your writing, we cannot mark your assignment.

1. You will be answering parts (a)-(c) for an agent that recommends people for you to add as a “friend” for a social networking program (eg. Facebook, Google+, LinkedIn, etc.) [11 pts]

a) Develop a description of the task environment using the PEAS description ie.:
   • Performance
   • Environment
   • Actuators
   • Sensors

b) Then describe the environment according to the following properties:
   • fully vs partially observable
   • deterministic vs stochastic
   • episodic vs sequential
   • static vs dynamic
   • discrete vs continuous
   • single vs multi-agent

Note that in some cases, both answers might be correct. Justify each answer to the task environment properties with a one sentence explanation.

c) Suggest the most appropriate agent design by choosing the most appropriate of the following agent types:
   • simple reflex agent
   • model-based reflex agent
   • goal-based agents
   • utility-based agent

Justify your answer with a one sentence explanation.

2. For each of the following assertions, say whether it is true or false and support your answer with examples or counterexamples where appropriate.
a) There exist task environments in which no pure reflex agent can behave rationally. [3 points]

b) Every agent function is implementable by some program/machine combination. [3 points]

c) A perfectly rational poker-playing agent never loses. [3 points]