**MCS 380/590 Intro To Artificial Intelligence**
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*Homework Assignment #1* –**UPDATED**
Artificial Intelligence (Russell / Norvig)

**DUE DATE: THURSDAY, OCTOBER 05**

1.1 Read Turing's original paper on AI (Turing, 1950). In the paper he discusses several potential objections to his proposed enterprise and his test for intelligence. Which objections still carry some weight? Are his refutations valid? Can you think of new objections arising from developments since he wrote the paper? In the paper, he predicts that by the year 2000, a computer will have a 30% chance of passing a five-minute Turing Test with an unskilled interrogator. Do you think this is reasonable?

1.3 There are well-known classes of problems that are intractably difficult for computers, and other classes that are provably undecidable by any computer. Does this mean that AI is impossible?

1.5 Examine the AI literature to discover whether or not the following tasks can currently be solved by computers. For the currently infeasible tasks, try to find out what the difficulties are and estimate when they will be overcome.

a. Drive a car at 70 miles per hour.
b. Playing a decent game of bridge at a competitive level.
c. Translating spoken Russian to spoken English in real time.
d. Create robotic creatures that breed offspring.
e. Give component medical advice in an area of medicine.
f. Identify an individual person in a photo or image.
g. Operate a factory floor.

1.9 "Surely computers cannot be intelligent-they can only do what their programmers tell them." Is the latter statement true, and does it imply the former?

1.10 “Surely animals cannot be intelligent-they can only do what their genes tell them.” Is the latter statement true, and does it imply the former?

2.1 What is the difference between a performance measure and a utility function?

2.3 Choose a domain that you are familiar with, and write a PAGE description of an agent for the environment. Characterize the environment as being accessible, deterministic, episodic, static, and continuous or not. What agent architecture is best for this domain?

2.8 Explain why it is impossible to have a reflex agent that returns home and shuts itself off. Speculate on what the best possible reflex agent could do. What prevents a reflex agent from doing very well?

2.10 Calculate the size of the table for a table-lookup agent in the domain of Exercise 2.7. Explain your calculation. You need not fill in the entries for the table.