

## **ASSIGNMENT #1**

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### CHAPTER I Foundations of Artificial Intelligence

#### **ABSTRACT**

In this chapter, I learned about the basic definition of AI and the multitude that it covers. It included tests to define intelligence, distinction between weak and strong AI, problems and algorithms in AI field and the history background of AI.

Questions:

1. How would you define Artificial Intelligence?

The simulation of learning, comprehending, acknowledging and improving on a daily basis by a system created by humans.

2. Distinguish between strong and weak AI?

Strong AI is the simulation and problem solving system based on how a human perceives the world.

Weak AI is also a system to solve problems but by any means necessary without the consideration of imitating humans.

3. ALICE is the software that has won the Loebner Prize several times in the recent past. Go online to find a version of this software. What can you tell us about ALICE?

Alice is an AI chatting system. I tried to talk to it. Apparently there is still much more to be improved. I was asking some questions to it and the responds were not exactly how a human would respond.

4. What was Alan Turing's significant contribution to AI?

He introduced a test on determining whether a computer system can be considered "intelligent" or not. If the computer can deceive a person and pass the test, it's considered intelligent.

5. What did John McCarthy contribute to Artificial Intelligence?

He invented the widely used programming language Lisp which had been the standard language for developing AI programs for many years, particularly in this country. His contributions include topics in logic, natural language processing, computer chess, cognition, counterfactuals, common sense and a number of philosophical problems.

#### Exercises:

1. A variation of the Turing test is the so-called Inverted Turing test; in the test, a computer must determine whether it is dealing with a person or another computer: Can you envision of the Turing test?

From the hint, the computer online for ticket selling requires you to enter a security code based on the characters or a piece of audio shown on the webpage. It is a great way of trying to differentiate computers and human because personal computers can't perceive visuals or audios like we humans do. So it's a great example of the Inverted Turing test.

2. A second variation of the Turing test is the Personal Turing test. Imagine you are trying to determine if you are communicating with your friend or with a computer pretending to be your friend. If a computer passes this test, what legal or ethical questions do you envision will arise?

Since computers can simulate human behaviors, they can be used for deceitful illegal behaviors. For example, the computer can trick a person to get out his or her bank account information that should have been confidential. Or the computer can fool web surfers emotionally when it is talking to the person in replacement of the real person.

3. Suppose you want to design a threshold logic unit to emulate a two-input OR function. Can you determine a threshold and the weights to accomplish this task?

By looking at the table in the book, we only need to change the threshold to be 0.5 while maintaining  $W_1$  and  $W_2$  as 1 to satisfy the OR function.

4. Suggest a strategy for the Iterated Prisoner's Dilemma, wherein the game is repeated  $n$  times for some unknown value  $n$ . How might you measure its success in the long run?

It's an infinite loop, my way of measuring the success would be taking a lot of data and store them inside the computer as a way of solving when  $n$  is finite.

5. A genetic algorithm is to be employed to solve the instance of the 3-puzzle

provided in the text. Suggest a string representation of a potential solution. What fitness function would you suggest?

11100010, 00110110. According to the book, if we assign 00 as the upward motion, 01 as the downward motion, 10 as the right and 11 as the left motion. These are two potential solutions for one situation.