Book Question Set #1: Ertel, Chapter 1: Introduction

1. How did John McCarthy, the guy who is credited with coining the term, define the term artificial intelligence?

   John McCarthy said, “The goal of AI is to develop machines that behave as though they were intelligent.”

2. How did Elaine Rich define the term artificial intelligence?

   Elaine Rich said, “Artificial Intelligence is the study of how to make computers do things at which, at the moment, people are better.”

3. Go to cleverbot.com and interact with the chatterbot for two or three minutes. Copy and paste the most interesting 10 lines (5 of yours; 5 of its) of interaction.

   Harris: What do you think about Alan Turing?
   Cleverbot: What is Turing?

   Harris: How's life?
   Cleverbot: Life's okay.

   Harris: Can you think in other languages?
   Cleverbot: Yes.

   Harris: What is reality?
   Cleverbot: Right now.

   Harris: I'm not sure if I dislike you or not.
   Cleverbot: That makes me sad.

4. Say something, in two sentences or less, about Kurt Godel that is at least a little bit interesting from an AI perspective.

   Godel shows that any system that is based on predicate logic and can formulate Peano arithmetic is incomplete.

5. Say something, in two sentences or less, about Alan Turing that is at least a little bit interesting from an AI perspective.

   Alan Turing showed that there is no program that can decide whether a given arbitrary program will run in an infinite loop, and with this, he discovered a limit for intelligent programs.
6. Say something, in two sentences or less, about Alonzo Church that is at least a little bit interesting from an AI perspective.

Alonzo Church is responsible for the Church-Turing Thesis, which essentially states that a function is algorithmically computable if and only if it is computable by a Turing machine.

7. Say something, in two sentences or less, about Warren McCulloch and Walter Pitts that is at least a little bit interesting from an AI perspective.

McCulloch and Pitts were the first to design the first mathematical models of neural networks in the 1940s. Unfortunately, computers were not powerful enough to simulate.

8. On the top of page 9 your author writes:
   “The above systems offered by AI today are not a universal recipe, but a workshop with a manageable number of tools for very different tasks. Most of these tools are well-developed and are available as finished software libraries, often with convenient user interfaces. The selection of the right tool and its sensible use in each individual case is left to the AI developer or knowledge engineer. Like any other artisanship, this requires a solid education, which this book is meant to promote.”
   What are the “systems” that your author is referring to? Identify at least a few of them.

First: hybrid systems. Neural networks were used to learn heuristics for reduction of the huge combinatorial search space in proof discovery. Second: decision tree learning. CART, ID3, and C4.5 quickly and automatically build very accurate decision trees which can represent propositional logic concepts and then be used as expert systems. Third: data mining. Instead of new techniques, data mining introduces large databases in order to gain explicit knowledge.

9. Does your author suggest that AI is an interdisciplinary pursuit? Rather than merely answering “yes” or “no,” please write a sentence or two that says something meaningful about the proposition.

I think so. Those working in the field of artificial intelligence cannot possibly shoulder the entire requirement of knowledge. That is, there are several aspects (hardware, software, etc.) which not just one person can even hope to manage by themselves.

10. Your author talks a bit about intelligent agents. Google the term, and find three sites that say something interesting about intelligent agents from an AI perspective. Strive to find three sites that are somewhat different in nature.
For each site: (1) provide the URL, and (2) write a 2 or three sentence characterization of the site.


   This is someone from UMich’s page detailing intelligent agents. They answer simple questions about intelligent agents and seems to give whoever stumbles upon the site a very brief overview of what intelligent agents are.


   This is Carnegie Mellon’s webpage for the Advanced Agent-Robotics Technology Lab. At this lab they address the problem of how to facilitate communication among agents of different types.


   FIPA is an IEEE Computer Society standards organization that promotes agent-based technology and the interoperability of its standards with other technologies. FIPA maintains the software standards for agents and multi-agent systems.

11. Pick one of the “milestones” listed in Table 1.1. Write a 300-500 word passage in your own words on the milestone, and be sure to indicate where you got the material for your passage.