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## Chapter 3: AI Spring

### → Reading/Mining/Discussion Assignment

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Please ...

1. Read “Chapter 3: AI Spring” of Melanie Mitchell’s “Artificial Intelligence: A Guide for Thinking Humans” book.
2. With respect to the “20 Questions” presented for the “Chapter 3: AI Spring” reading, construct a document containing 20 question/answer pairs, where the answers, with just a few exceptions (most notably with respect to the last question), are simply lifted from Melanie Mitchell’s text. Save your document as a **pdf** file.
3. Post your question/answer document to your Web worksite.
4. Do your best to internalize your twenty question/answer pairs in some sort of semantic sense, so that the answers are likely to come back to you when prompted by the questions.
5. Come to class for the discussion of “Chapter 3: AI Spring,” when the time rolls around, prepared to participate in the discussion.
6. Please do all of this within one week of the “distribution” of this assignment.

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## The Questions ...

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1. What words of lament did John McCarthy voice in order to capture the perceived phenomenon that when computers surpass humans on a particular task, we conclude that the task doesn’t actually require intelligence?
2. TRUE or FALSE: By the end of the first decade of the third millenium, the buzz over artificial intelligence was quickly becoming deafening, and the commercial world took notice. Around this time, all of the largest technology companies were pouring billions of dollars into AI research and development, either hiring AI experts directly or acquiring smaller start-up companies for the sole purpose of grabbing (“aqui-hiring”) their talented employees. The potential of being acquired, with its promise of instant millionaire status, fueled a proliferation of start-ups, often founded and run by former university professors, each with his or her own twist on AI.
3. In light of the aforementioned “deafening buzz,” what did technology journalist Kevin Kelly observe about business plans? How did Melanie Mitchell qualify what he said?
4. Contrast *narrow/weak AI* with *general/strong AI*, by describing these two varieties of AI.
5. TRUE or FALSE: No AI program has been created yet that could be called intelligent in any general sense.
6. TRUE or FALSE: General intelligence isn’t about the number of abilities, but about the integration of those abilities.
7. What is the title of Alan Turing’s 1950 paper in which he introduced the imitation game? What is the imitation game?

8. According to MM, the “argument from consciousness” goes like this: (1) Only when a machine *feels* things and is aware of its own actions and feelings – in short, is conscious – could we consider it actually *thinking*, and (2) No machine could ever do this. Ergo, no machine could ever *actually* think. What does MM think of this argument?
- (a) She thinks it is a strong argument.
  - (b) She thinks that it resonates with our intuitions about what machines are and how they are limited.
  - (c) She doesn’t agree with it.
  - (d) All of the above.
9. What, within the academic realm, is the most famous version of the “argument from consciousness” called? Who put forth this argument? What is the title of the article in which this argument was proposed, and defended?
10. What, according to Searle, is *weak AI*? What, according to Searle, is *strong AI*?
11. TRUE or FALSE: Most AI experts hate manifestations of the Turing test, at least as it has been carried out to date. They see such competitions as publicity stunts whose results say nothing about progress in AI.
12. He is director of engineering at Google, and he believes that a properly designed version of the Turing test will indeed reveal machine intelligence. Furthermore, he predicts that a computer will pass this test by 2029, a milestone event on the way to his forecasted Singularity. Who is he?
13. The “Singularity” is:
- (a) A future period during which the pace of technological change will be so rapid, its impact so deep, that human life will be irreversibly transformed.
  - (b) A unique event with ... singular implications.
  - (c) An event capable of rupturing the fabric of human history.
  - (d) The point in time when AI exceeds human intelligence.
  - (e) All of the above.
14. TRUE or FALSE: Kurzweil bases all of his predictions on the idea of “exponential progress” in many areas of science and technology, especially computers.
15. Describe the “exponential fable” that MM recounts to illustrate the principle of exponential growth.
16. What is Moore’s law?
17. TRUE or FALSE: Computer software has not shown the same exponential progress as computer hardware; it would be hard to argue that today’s software is exponentially more sophisticated, or brain-like, than the software of fifty years ago, or that such a trend has ever existed.
18. TRUE or FALSE: Part of Kurzweil’s Singularity argument relies on reverse engineering the human brain, a neural engineering feat that some find improbable in light of how little is known about the human brain, and in view of the fact that his claims about exponential trends in neuroscience are highly disputed.

19. TRUE or FALSE: Mitch Kapor is an outspoken skeptic of the Singularity idea. His main argument centers on the influence of our physical bodies and emotions on our cognition. He argues that without the equivalent of a human body, and everything that goes along with it, a machine will never be able to learn all that's needed to pass a strict Turing test, and machines will never achieve the Singularity. Moreover, Kapor doesn't buy Kurzweil's contention that exponential advancement in virtual reality will play the role of experiential learning, tacit knowledge, and emotions needed to achieve the Singularity.
20. MM suggests that Douglas Hofstadter straddles the fence between Singularity skepticism and worry. How so?