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CSC 482
Chapter 3: AI Spring → Reading/Mining/Discussion Assignment

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?

"As soon as it works, no one calls it AI any more."

2). TRUE or FALSE: By the end of the first decade of the third millennium, 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 ("acqui-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.

True

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?

"Take X and add AI" if a startup wants to get instant millionaire status.
"AI Spring is once again in full bloom"

4). Contrast narrow/weak AI with general/strong AI, by describing these two varieties of AI.

- Narrow/weak AI: can only do one narrowly defined task.
- General/strong AI: can do most everything humans can do, and possibly more.

5). TRUE or FALSE: No AI program has been created yet that could be called intelligent in any general sense.

True

6). TRUE or FALSE: General intelligence isn't about the number of abilities, but about the integration of those abilities.

True

7). What is the title of Alan Turing's 1950 paper in which he introduced the imitation game? What is the imitation game?

"Can machines think"

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?

John Searle's "Minds, Brains, and Programs". He argued against the possibility of machines actually thinking

10). What, according to Searle, is weak AI? What, according to Searle, is strong AI?

Weak AI: Computers are tools to simulate human intelligence.

Strong AI: The programmed digital computer has a mind.

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.

True

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?

Ray Kurzweil

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.

True

15). Describe the “exponential fable” that MM recounts to illustrate the principle of exponential growth.

A sage asked that on a chessboard, the first square starts with 2 rice, and for each subsequent square of a chessboard the rice shall be doubled of the previous one, and sent to his village. (Y = 2x)

While not even halfway done, it was requiring more rice harvested in the entire kingdom to fill one square.

16). What is Moore’s law?

The number of components on a computer chip doubles approximately every one to two years.

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.

True

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.

True

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.

True

20). MM suggests that Douglas Hofstadter straddles the fence between Singularity skepticism and worry. How so?

Hofstadter said that for every seemingly crazy prediction Kurzweil made, they have either surprisingly come true or will soon. It's like when they laughed at Christopher Columbus.